Mastery Learning

An Interactive Qualifying Project Report:

Submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

In partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

_____   _____

Christopher M. Gamache   Billy Zhong

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Anas Maghfur

Date: May 5, 2009

Advisors:

_____

Professor Neil Heffernan

1

ABSTRACT

The ASSISTment is a cognitive computer tutoring system targeted towards middle school math students. Mastery learning was recently implemented into the system. This paper focuses on the effectiveness of mastery learning in the ASSISTment system. Results from a controlled experiment conducted in middle schools did not show significant results that mastery learning in the ASSISTment is effective. However, case studies of certain test subjects suggest that mastery learning could be effective for certain kinds of students. Hence, further work needs to be done on only certain kinds of students, particularly low achieving students.

Table of Contents

4

5

1. LITERATURE REVIEW

Mastery learning is the new feature we intend to implement into our ASSISTment intelligent tutoring system. Our literature review shows that mastery learning in cognitive computer tutoring systems can have significant positive effects on student achievement.

1.1 Meta-Analysis of Mastery Learning

Mastery learning is the idea that virtually all students can achieve expertise in a field if the field is analyzed into a hierarchy of component skills and the students must master prerequisite skills before moving on to higher level skills. Two forms of mastery learning were developed: (1) Bloom's "learning for mastery" (LFM), where a group of students move through a curriculum together and individual students get extra assistance as needed and (2) Keller's "personalized system of instruction" (PSI), where students move through the curriculum at their own pace.

In Kulic & Kulic's "Effectiveness of Mastery Learning Programs: A Meta-Analysis", Kulic & Kulic showed that mastery learning programs does indeed have positive effects on student achievement. Such programs were found to raise final examination scores by an average of about 0.5 standard deviations, or from the 50th to the 70th percentile, in school levels ranging from upper grades of grade school to college. In the meta-analysis, some types of studies had very large effect sizes. Studies with large effect sizes, first of all, tend to come from to those that involved teaching in the social sciences rather than in mathematics, the natural sciences, or humanities. Second, the studies with large effect size tend to use locally developed rather than nationally standardized tests as criterion measures of student achievement. Third, the mastery programs in studies with large effect sizes require

8

students to move through course material at teacher's pace as oppose to individual student rates. Fourth, the mastery programs in these studies have higher achievement standards, that is, students are required to perform at a high level on unit quizzes (e.g., 100% correct) before being able to proceed to the next unit. And fifth, in studies that report strong effects, control students receive less quiz feedback than experimental students do. In fact, having the same amount of quiz feedback for experimental and control students reduces the effect size.

The meta-analysis also suggests that effects of mastery programs differ between high and low aptitude students. Both types of students gain from mastery programs, but low aptitude students tend to gain more. The average improvement in scores of high aptitude students is 0.40 standard deviations; the improvement of low aptitude students is 0.61 standard deviations. With low aptitude students attaining higher gains, mastery programs may smooth out differences between high and low aptitude learners. This is supported by the fact that variation in final examination scores is smaller in mastery classes than in other classes, and the correlation between aptitude and achievement is also reduced in mastery classes.

The benefits of mastery programs appear to be relatively enduring, not just short-term, effects. This is evident in studies that have follow-up examinations as well as end-of-instruction examinations. Mastery learning programs also seem to have a positive effect on student attitudes. Mastery students are more satisfied with the instruction they receive and more positive toward the content they are taught than are students in conventional classes.

Despite these positive effects, mastery learning consistently has one negative effect that is to do

9

with course completion. Fewer students in mastery learning classes that follow the PSI format complete their class than those in conventional classes. Although the difference in percentage of completion is not large and the difference is not found in every PSI study, the finding is common enough to be a concern. Surprisingly, the effect of PSI on course completion does not appear to be related to its effect on student achievement. Examination scores in PSI classes with below-average completion rates are still comparable to PSI classes with normal and even above-average completion rates.

The meta-analysis also suggests that mastery classes make greater demands on student time than do conventional classes. Two points should be kept in mind about these time demands, however. First, the increase in student workload in mastery programs is, on the average, relatively modest in size. Kulic & Kulic believes that most teachers will find this increase in student workload to be a reasonable one, given the gain in learning that is likely to result from it. Second, the best available data suggests that an increase in examination score is not a result from an increase in instructional time alone. Mastery programs produce larger effects on examination scores with far smaller commitments of instructional time.

It should also be noted that the findings of this analysis are consistent with predictions of mastery theory. The meta-analysis found that mastery learning predicts higher examination scores, reduced variation in examination scores, and more positive academic attitudes with mastery teaching. The effects, however, were not as large as those sometimes claimed for mastery procedures (it is often cited to be able to produce an increase of 2 standard deviations). Such a predicted effect is far larger than the increase of 0.5 standard deviations found in this meta-analysis. Even though an improvement of 0.5 standard deviations may fall far below expectations, it is nonetheless a relatively strong one for

an educational effect. Therefore it makes sense to try to implement it into cognitive computer tutors which may be able to replace the more expensive individual human tutoring without sacrificing effectiveness.

1.2 Mastery Learning in Cognitive Computer Tutors

In Corbett's "Cognitive Computer Tutors: Solving the Two-Sigma Problem", Corbett examined the achievement effect size of mastery learning in a cognitive computer tutoring system. His findings suggest that cognitive tutors have closed the gap with and arguably surpass human tutors. The cognitive computer tutor he used is the APT Lisp Tutor from Carnegie-Mellon's Human-Computer Interaction Institute.

APT, like all cognitive tutors, is constructed around a cognitive model of the knowledge students are acquiring. APT uses this knowledge for two purposes: *model tracing* and *knowledge tracing*. Knowledge tracing is the process in which the tutor tracks the student's growing problem solving knowledge across problems. In cognitive mastery learning, the student completes an individualized sequence of problems in each curriculum section until "mastering" each of the cognitive problem solving rules introduced in the section; hence cognitive mastery learning is essentially knowledge tracing.

Corbett examines three studies of cognitive model-driven instructional interventions that APT, like cognitive computer tutors, uses. The three instructional interventions are (a) model tracing, (b) cognitive mastery learning and (c) cognitive mastery learning with augmented support (scaffolding and step-by-step feedback). He then proceeds to calculate the effect size of each intervention and examines
11

the aggregate effect of these student-adapted interventions.

1.2.1 Model Tracing

Model tracing is the process in which the "cognitive model enables the tutor to trace the student's solution path, providing immediate step-by-step feedback on problem solving actions and advice on steps that achieve problem solving goal". (Corbett) In Corbett's study, he uses the APT Lisp Tutor with model tracing turned on for the experimental group and model tracing turned off for the control. Students in the control group instead were given problem sets with answers (no step-by-step solution) so that it was similar to doing practice problems. Model tracing yielded an achievement effect size of +0.75 SD compared to the conventional problem solving condition. Students in the model tracing condition finished the fixed problem set in 1/3 the time required by students in the conventional group.

1.2.2 Cognitive Mastery Learning

A second study compared students working through the APT Lisp Tutor with just model tracing to students working with both model tracing and cognitive mastery learning. Students in the model tracing comparison group completed a fixed set of programming problems. Students in the cognitive mastery condition completed this fixed set plus additional problems as individually needed in each curriculum section to master the cognitive programming rules introduced in the section. Cognitive mastery yielded an achievement effect size of +0.89, compared to model tracing. However, students in the cognitive mastery condition had to complete 40% more problems than students in the fixed curriculum condition and therefore spent about 15% more time in the program than students in the fixed curriculum condition.

12

1.2.3 Cognitive Mastery Learning with Augmented Support

In a recent study, Corbett compared the standard cognitive mastery learning condition (as in the previous study) with cognitive mastery learning that has augmented support (scaffolding only). The achievement effect size of the cognitive mastery learning with the augmented support was +0.42 SD. Furthermore, students in that condition reached mastery in about 25% less time than the condition without the augmented support.

1.2.4 Aggregate Effect of the Three Instructional Interventions

Corbett calculated that the aggregate effect size of the three instruction interventions (model tracing, cognitive mastery learning and cognitive mastery learning with augmented support) to be 1.76 SD. This is virtually as large as that obtained by the best human tutors. Even with the extra time cost of cognitive mastery, students would be finishing in no more than 40% the time required due to the help of augmented support and model tracing. So by integrating mastery learning into cognitive computer tutoring systems, the empirical evidence that Corbett presented suggest that it is almost possible to solve Bloom's "two-sigma problem", which states that students provided with individual tutors typically perform at a level about two standard deviations (two "sigma's") above where they would perform with ordinary group instruction.

1.3 Literature Review Conclusion

After reviewing Kulic & Kulic's meta-analysis of mastery learning and Corbett's examination of mastery learning in cognitive computer systems, it is clear that implementing mastery learning is the next step in developing our ASSISTment intelligent tutoring system.

13

2. IMPLEMENTATION

2.1 Introduction

As mentioned before, the method that we will use to improve ASSISTment's tutoring system is Mastery Learning. However, Mastery Learning requires that we generate a large number of Assistments so that the student can repeatedly tackle different problems. In general we need roughly about 20 to 40 Assistments per mathematical skill. Each Assistment also must have a different answer so the student cannot use the same answer every time. With the old traditional format where we manually generate one Assistment at a time for the students to take, it is extremely difficult to make enough Assistments for our Mastery Learning system. The way to solve this is to use another method; one that allows us to generate Assistments artificially through coding. Thus in order to generate large amounts of Assistments, we used a method that we refer to as, "Variabilization."

2.2 What is Variabilization?

In the Assistments world, it is the use of variables to hold a selected range of numbers, or to set numbers or words in a particular order. Instead of manually creating Assistments, we only have to create one template that can generate multiple Assistments. Depending on the skill that the Assistment reviews, on average one variabilized Assistment can produce up to 50 Assistments, each with different numbers, and answers. We typically referred to these generated Assistments as Instantiated Assistments. Even though we can generate that many Assistments, we only use about 30 of them. Furthermore, each generated Assistment retains the same content as its parent, which is the template. Overall instead of manually making 30 Assistments, we only have to make one variabilized template.

2.3 Design of Variabilized Templates

There are two types of variables that we commonly use in variabilization, a random variable, and a set variable. To create a random variable, we took advantage of a command called "rand()." The way we incorporated this command into a template is shown on the following figure.
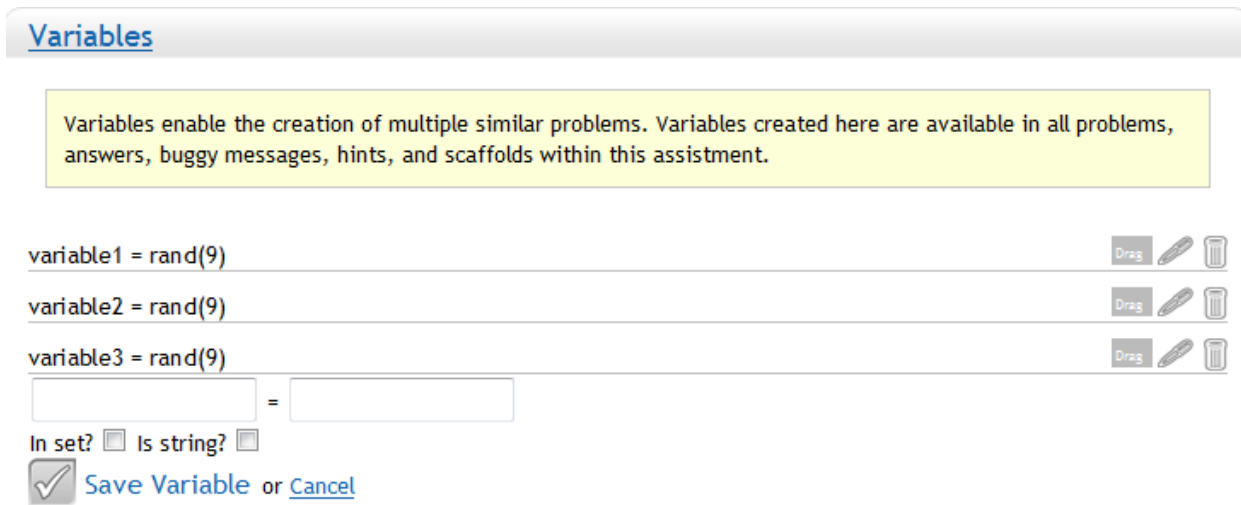
Figure 2.1 Randomized Variables

From the above figure, variables, "variable1", "variable2", and "variable3" can all generate a random number that ranges from 0-8. Basically we can make use of these variables to manipulate the numbers in a problem. For example, we can change all the numbers in a stem and leaf type problem, so that the answer is always different for each Assistment. Another benefit of this is that it also prevents cheating.

The second type of variables we use is set variables. These are variables that allow for numbers or words to always occur together for a particular Assistment. A clearer example of this is shown on Figure 2.2.

Figure 2.2 Set Variables

From the above figure, since variables "variable4", "variable5", and "variable6" are in a set, the values that these variables hold occur together. So, "apple, 1, Billy" will always be shown together in one Assistment, as will "oranges, 2, John", and "bananas, 3, Chris." This gives us further control over the numbers that occur in the generated Assistments. For example, if we want to make an Assistment that focuses on division and "non-decimal" answers, then we will use set variables. If we know what numbers will occur together, then we can manipulate the numbers in such a way that the answer is a non-decimal number. Also, we cannot use random variables in this case, since they have a chance of producing an answer that is a decimal.

With the above two forms of variables, we can easily create templates that can generated many different Assistments. A simple "rand(9)" variable can already create up to 9 different Assistments, so with variabilization it is very easy to generate many Assistments. Here is a look of how the main problem of a variabilized template would look like.

17

Find the greatest common factor of:

$$\%v\{v1\}xy^{\%v\{v4\}} + \%v\{v3\}x^{\%v\{v5\}}$$

☑ Save Problem Body

Problem Type: Algebra

Variables

v1 = rand(9) + 2

v2 = rand(4) + 2

v3 = v1*v2

v4 = rand(2) + 2

v5 = rand(2) + 3

➕ New variable

Figure 2.3 Main Problem of Assistment #43052

In order to use these variables in the main problem, hints, or scaffolds, we have to add "%v{}" to the variable name so that Assistments can decipher between variable names, and regular names. Now that we can create the templates, how will it generate Assistments?

2.4 Instantiated Assistments

It is actually very easy to generate Assistments through the variabilized templates. Literally, it can be done with a click of a button.
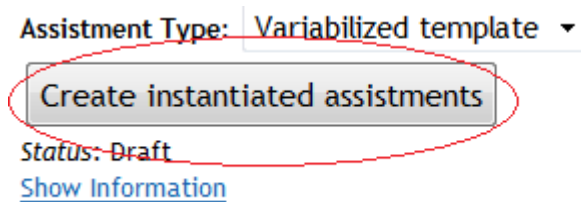
Figure 2.4 Generating Instantiated Assistments

By clicking the above bar, the system will automatically generate 10 Assistments. Since we want to create 30, we simply have to click that bar three times. The next two figures illustrate two instances of the previous Assistment, 43052.

Figure 2.5 1ˢᵗ Instance of Assistment #43052

Find the greatest common factor of:

$$5xy^2 + 15x^4$$

Break this problem into steps

Type your answer below (mathematical expression):

Submit Answer

Figure 2.6 2ⁿᵈ Instance of Assistment #43052

As shown from the above two figures, both Assistments depict a difference in their values, which also results in a difference in the answer. Thus, this makes it very easy to create up to 30 and more Assistments.

2.5 Incorporating Variabilization with Mastery Learning

With Variabilization, we wanted to incorporate it with Mastery Learning. So we decided on the following approach. This approach mainly consists of six steps.

1. We created Variabilized Templates that focuses on particular skills such as histograms, scatter plots, etc.
2. For each template, we generated 30 instantiated Assistments.
3. Next, we bundled all the Assistments with the same skill into one problem set.
4. Students will be tested on the material from these problem sets.
5. In order to achieve mastery for that skill, students will have to satisfy one of the two conditions:
     -Get the first Assistment correct on the problem set.
     -Get three in a row correct on the problem set.
6. Those who do not achieve mastery will continue doing Assistments from the problem sets that they are assigned.

The above listing summarizes how variabilization was used in Mastery Learning.

2.6 Content Walkthrough

This section discusses the types of Assistment in a Mastery Learning problem set that focuses on the skill, Box and Whisker. This problem set is made of the instantiated Assistments generated from 3 variabilized templates. Thus, this set has 90 Assistments, but we will only take a look at a 6.

2.6.1 Assistment #30059

The following example is one that focuses on finding the median in a box and whisker plot. This figure only portrays the main problem of that Assistment.

Assistment #30059 "30059 - 27763 - Box and Whisker - Median - Between 2 Numbers"
%v{name} made a box-and-whisker plot on the number of %v{candy} that he sold per week in a year.
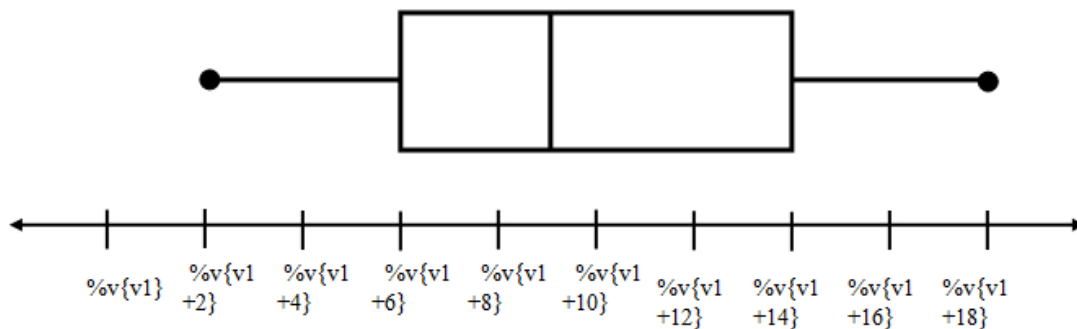
From this plot, what is the median number of %v{candy} sold per week?

Figure 2.7 Main Problem of Assistment #30059

This Assistment asks the student to find the median using a box and whisker plot. However, the "median line" on this plot lies between two numbers on the number line. Thus, in order to get the correct answer, the student must average those two numbers together. Here is the first instance of the above template.

22

1) Assistment #33107 "33107 - 30059 - 27763 - Box and Whisker - Median - Between 2 Numbers"
John made a **box-and-whisker plot** on the number of chocolate bars
that he sold per week in a year.
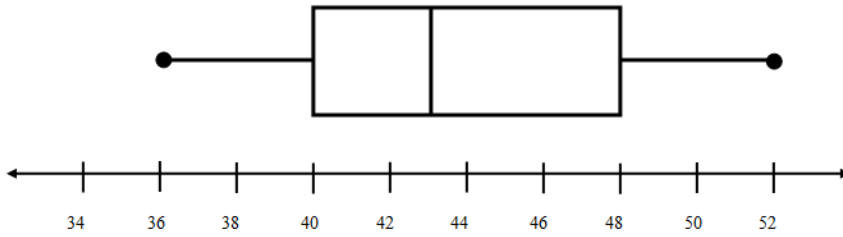
From this plot, what is the **median** number of chocolate bars sold per week?

Figure 2.8 1ˢᵗ Instance of Assistment #30059

Here is the second instance from the same template.

2) Assistment #33108 "33108 - 30059 - 27763 - Box and Whisker - Median - Between 2 Numbers"
Billy made a **box-and-whisker plot** on the number of apple pies
that he sold per week in a year.
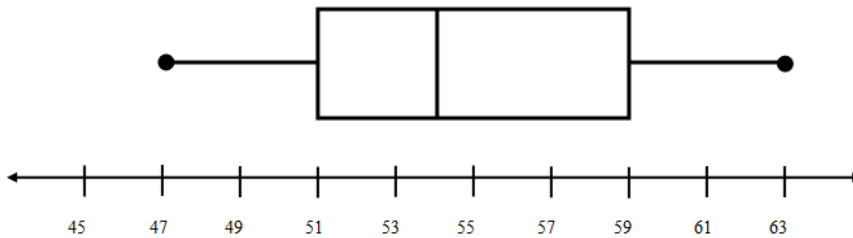
From this plot, what is the **median** number of apple pies sold per week?

Figure 2.9 2ⁿᵈ Instance of Assistment #30059

23

On the first example, the number line starts at 34 and increments by 2 until it gets to 52. The answer for this one is 43. On the other hand, for the second example the number line starts at 45 and increments by 2 until it gets to 63. The answer for this one is 54. There is a clear difference in answers between Figure 2.8 and Figure 2.9. Thus for this particular template, the numbers on the number line vary so that the answer would also vary.

2.6.2 Assistment #30799

This next variabilized template also focuses on finding the median using a box and whisker plot. However, the approach to this problem is different from the previous problem.

Assistment #30799 "30799 - Box and Whisker - Median - Points to 1 Number"
%v{name} made a box-and-whisker plot on the number of %v{candy}
that he sold per week in a year.

%v{v1}   %v{v1 +2}   %v{v1 +4}   %v{v1 +6}   %v{v1 +8}   %v{v1 +10}   %v{v1 +12}   %v{v1 +14}   %v{v1 +16}   %v{v1 +18}

From this plot, what is the median number of %v{candy} sold per week?

Figure 2.10 Main Problem of Assistment #30799

The picture for this template is not shown on the above figure, because there are 3 images that this problem uses. To understand this better, take a look at the instances of this template. The first instance is shown on the following figure.

24

31) Assistment #33137 "33137 - 30799 - Box and Whisker - Median - Points to 1 Number"

John made a **box-and-whisker plot** on the number of chocolate chip cookies that he sold per week in a year.
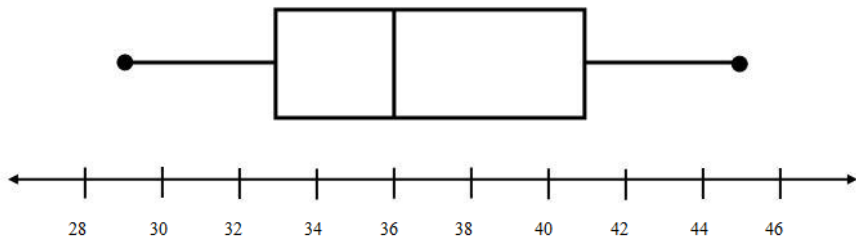
From this plot, what is the **median** number of chocolate chip cookies sold per week?

Figure 2.11 1ˢᵗ Instance of Assistment #30799

Here is the second instance of the variabilized template.

32) Assistment #33138 "33138 - 30799 - Box and Whisker - Median - Points to 1 Number"

David made a **box-and-whisker plot** on the number of cups of lemonade that he sold per week in a year.
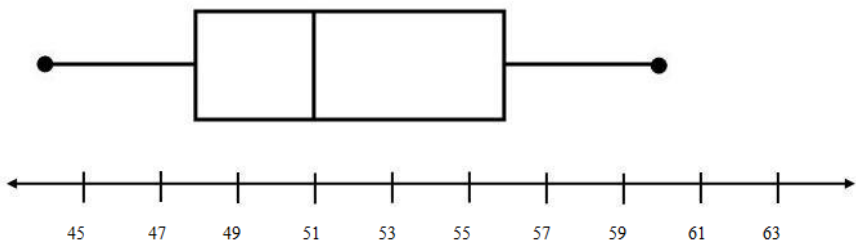
From this plot, what is the **median** number of cups of lemonade sold per week?

Figure 2.12 2ⁿᵈ Instance of Assistment #30799

25

There are two differences between this template and the previous template. For this template, the median line points to a point on the line as opposed to the previous one that points to a section between two points. Another difference is that image for this one changes while the previous one does not. On Figure 2.11, the median line points to the 5th point on the axis, while on Figure 2.12, the median line points to the 4th point on the axis. Since the images for this template varies, Figure 2.10 shows an empty image for the template. Now let's take a look at the final template in this Mastery Learning problem set on box and whisker plots.

2.6.3 Assistment #30060

The last 30 Assistments in this Mastery Learning problem set involves asking the student to find the range of the box and whisker plot. This template is shown on the following figure.

Assistment #30060 "30060 - 27764 - Box and Whisker - Range"
%v{name} made a box-and-whisker plot on the %v{candy1}
that he sold per week in a year.

%v{v1}   %v{v1 +v2}   %v{v1 +v2*2}   %v{v1 +v2*3}   %v{v1 +v2*4}   %v{v1 +v2*5}   %v{v1 +v2*6}   %v{v1 +v2*7}   %v{v1 +v2*8}   %v{v1 +v2*9}

From this plot, what is the range of the %v{candy2} sold per week?

Figure 2.13 Main Problem of Assistment #30060

From the figure, this template also uses multiple images so the main problem of this template does not

26

show any images. But if we take a look at the instantiated Assistments as shown on the next figure, we can clearly see the image.

61) Assistment #33167 "33167 - 30060 - 27764 - Box and Whisker - Range"
John made a box-and-whisker plot on the number of chocolate bars that he sold per week in a year.
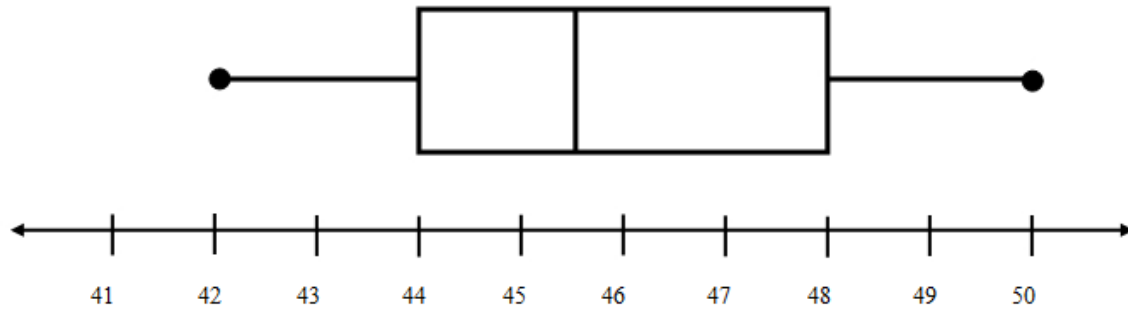
From this plot, what is the range of the chocolate bars sold per week?

Figure 2.14 1ˢᵗ Instance of Assistment #30060

Since this problem involves finding the range, it was necessary to use a few images as well as change the number line. The next figure shows the second instance of this template.

62) Assistment #33168 "33168 - 30060 - 27764 - Box and Whisker - Range"
Steve made a **box-and-whisker plot** on the number of chocolate chip cookies that he sold per week in a year.
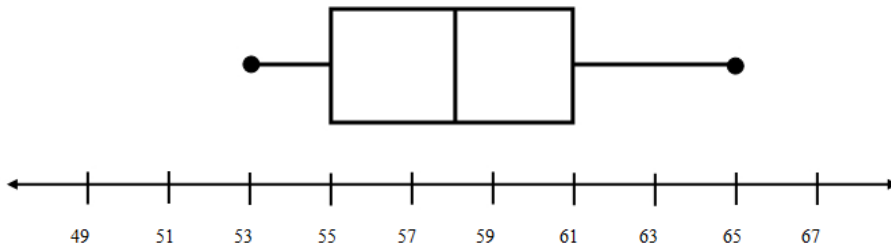
From this plot, what is the **range** of the chocolate chip cookies sold per week?

Figure 2.15 2nd Instance of Assistment #30060

As shown from the above two figures, the image of the box and whisker plot shrinks or grows in size for each Assistment generated from this template. This allows for more variations of the answer for the range of this plot. Overall, this mastery learning problem set is composed of the three templates in this sub section. In order for a student to master out of this problem set, he or she is required to either get the first problem in this set correct or get 3 in a row correct. Finally, once we have completed our implementation of Mastery Learning, we proceeded to designing the experiment.

3. EXPERIMENT

3.1 Hypothesis

The hypothesis of our experiment was Mastery learning would increase the amount learned by the average student who used the Assistment program. We believe by reinforcing the problem areas of students who use Assistment program we can increase the overall amount learned.

3.2 Overview

To test our experiment we built Mastery learning problem sets, that each focused on one specific skill. A Mastery learning problem set consists of 50 problems of the specific skill presented in a random order. When a student has to take a mastery learning problem set, they can finish it in one of three different ways. The student can either test out by getting the first problem in the set correct, or if the student gets the first problem wrong they can test out by getting three correct answers in a row. The third way a student can finish a mastery learning problem set is by completing all 50 problems without getting three correct answers in a row. If a student gets the first problem in a mastery learning set correct or gets three correct in a row, they are labeled has having mastered that skill.

The Mastery learning problem sets also have hints and or scaffolding that go along with them. If a student requests hints they automatically get the problem wrong, but are walked through the problem step by step until, they are either given the right answer in the last hint, or they discover the answer for themselves. In addition to this if a student answers a problem incorrectly in the Mastery learning problem set; they are forced to go through the hints until they enter the correct answer.

3.3 The Experiment

To test the effectiveness of mastery learning, we ran four separate experiments on two separate groups of students. In each experiment the students were split into two groups, mastery and control. In a normal Assistment assignment all the students would do an Assistment problem set focused on one skill set, and the teacher would get to review the results and see the class problem areas. For this experiment both the mastery and control groups took two tests, the first one the pretest consisted of a set of problems focus around a skill such as data analysis. The post-test was taken two weeks later and was a direct "morph" of the pretest problem set. A morph is essentially a copy of the original problem with some values and names changed as not to be directly the same, an example of a pretest question and its morph are shown below in figures 3.1 and 3.2. For the experiment, both the mastery and control groups received the pretest at the same time. The difference was after the pretest the control group did no extra learning on the skill tested in the pretest, while the mastery group went on to do the mastery learning set or sets associated with each pretest problem. Two weeks after the pretest both the mastery and control groups took the post-test for the skill given in the pretest.

"Pre-test"

Assistment #28808 "28808 - Variables and Patterns Inv3 #2 morph"

John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to

his savings. How many dollars will he have in total after 4 weeks?

Figure 3.1

Assistment #31055 "31055 - 28808 - Variables and Patterns Inv3 #2 morph"

Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to

his savings. How many dollars will he have in total after 5 weeks?

Figure 3.2

To run our four experiments we used two different test groups. For the first test group, we got

four different 8th grade class periods, from the same school with the same teacher. The four periods

were split into two different groups, mastery and control, each consisting of two periods. For the

second test group we got three more 8th grade class periods from the same school with the same

teacher. This time to get an equal number of mastery and control students one class was split, with half

the students in the mastery group and half in the control.

Experiment one was conducted on the first test group, for this experiment the students were

tested on Data Analysis. The pretest for Data Analysis in experiment one had the hints turned on,

which means when a student got the problem wrong, they were helped by the Assistment program to

obtain the correct answer.

Experiment two was also conducted on the first test group, except experiment two tested the

students on Moving Strait Ahead. The pretest for Moving Strait Ahead in experiment two had the hints

turned on.

Experiment three was conducted on the second test group, this experiment tested the students on

Data Analysis. In this experiment however the students were no longer able to get hints on the pretest;

therefore cutting off the control group from all Assistment based help. When a student completes a problem with hints disabled they are not told whether or not they were correct, they are just taken to the next problem in the set.

Experiment four was conducted on the second test group, and tested the students on Moving Strait Ahead. The pretest for Moving Strait Ahead in experiment four had the hints turned off.

Since the two test groups had test methods that differed by how the pretest was preformed we will be analyzing each set of data separately to determine if there is a significant difference in the results of the post-test between the mastery and control groups.

4. ANALYSIS & RESULTS

The following tables show the results of the experiments. They show the average score of the pretest and posttest in percentages for each group. The average gain (the posttest average score subtracted by the pretest average score) shows by how much each group improved by.

4.1 Experiment 1

	n	Pretest Average	Posttest Average	Gain Average	Standard Deviation
Mastery	40	46%	79%	33%	30.3%
Control	38	48%	70%	22%	22.5%
P-Value	N/A	.652	.117	.105	N/A

Figure 4.1

4.1.1 Results

For experiment one, the mastery group got a pretest average of 46% and the control group got an average of 48%. After taking the posttest the mastery group's score increased from 33% to 79%, and the control's score increased from 22% to 70%. The gains produced a low P-Value of .105, which is not statistically significant, and a medium effect size of .436.

4.1.2 Analysis

Experiment one was done on the data analysis problem set, and taken by the first test group of students. The experiment showed positive results for mastery learning giving a P-Value of .105. While this value is not considered statistically significant, it does tell us there is an 89% chance that the deviation in scores was not caused by chance.

Since hints were activated on the pretest, students received computer based help when they answered a question wrong. As a result, the control group still had a significant gain despite not

34

receiving any mastery learning. However the mastery group still posted an 11% higher gain than the

control group.

4.1.3 Special Problem Case 1

Students who had to do the mastery learning problem set for Assistments #27831 showed

extremely high pretest/posttest gain scores. Assistment #27831 is shown below in Figure 4.1.1.

"Pre-test"

Assistment #27831 "27831 - Problem 30a - 1998"

The coach of the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	15, 24, 32, 15, 22, 19, 26, 29, 11, 17
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the **mean** number of points scored by Geltz?

Figure 4.1.1

The students who took the mastery learning problem set associated with this problem posted an average

gain on the post-test of 44%, while their classmates in the control group only showed a gain of 10%.

This yields a statistically significant result for this problem set with a P-Value of .0105, and a medium

effect size of .552 as shown below in Figure 4.1.2.

	n	Gain Average	Standard Deviation
Mastery	40	44%	55.2%
Control	38	10%	61.7%
P-Value	N/A	.0105	N/A
Effect-Size	N/A	.552	N/A

Figure 4.1.2

Further analysis of just the mastery learning group with a pivot table shown in Figure 4.1.3, shows the effectiveness of mastery learning on students that got the pretest problem incorrect. The table shows the average scores of each student on the mastery learning section, a lower percentage means the student was forced to do **more** mastery learning problems, and 100% means the student tested out by getting the first question right. The table below shows all of the students that got the pretest wrong and there gains on the posttest. From the table you can see that 17 out of 22 students who got the pretest wrong got the post-test correct after completing mastery learning.

Post-Test(27831-27906)	Mastery Learning Score (%)	
Student Names	Gain = 0	Gain = 1
Student A	42.00%	
Student B		100.00%
Student C		100.00%
Student D		100.00%
Student E		66.00%
Student F		75.00%
Student G		100.00%
Student H		100.00%
Student I		100.00%
Student J		100.00%
Student K		60.00%
Student L		100.00%
Student M		75.00%
Student N	100.00%	
Student O		75.00%
Student P	40.00%	
Student Q	75.00%	
Student R		100.00%
Student S		60.00%
Student T		100.00%
Student U	100.00%	
Student V		100.00%

Figure 4.1.3

4.1.4 Special Problem Case 2

Like the previous special case, students who had to do the mastery learning problem set for

Assistment #27832 also showed extremely high pretest/posttest gain scores. Assistment # 27832 is

shown below in Figure 4.1.4.

"Pre-test"

Assistment #27832 "27832 - Gr.8 2007 - #13 - Histogram (Morph)"

Abe tested 85 Brand X light bulbs to determine their life spans.

The histogram below shows the results of his test.
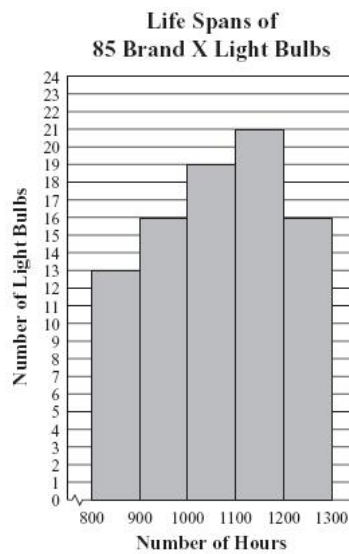
What was the total number of Brand X light bulbs that had life spans greater than or equal to 900

hours?

Figure 4.1.4

The students whom completed the mastery learning set designed to teach the skills associated

with this problem received an average gain in posttest scores of 28%. The control group who did not take the mastery learning set only received an average gain of 7% on the posttest. The data from this individual experiment does not show statistically significant results, but it does have a low P-Value of .118 and a small effect size of .329, these results are shown below in Figure 4.1.5.

	n	Gain Average	Standard Deviation
Mastery	40	28%	56%
Control	38	7%	64%
P-Value	N/A	.118	N/A
Effect-Size	N/A	.329	N/A

Figure 4.1.5

We further analyzed this problem set using a pivot table isolating the students that got the pretest question wrong in the mastery learning group, the pivot table is shown below in Figure 4.1.6. The table shows that among the 18 students in the mastery learning group to get the pretest problem wrong, 13 got the posttest correct while only 5 answered incorrectly. Also shown in the pivot table is the percentage correct each student received on the mastery learning problem set, the lower percent correct the more mastery problems the student did.

Post-Test(27832-36639)	Mastery Learning Score (%)	
Student Names	Gain = 0	Gain = 1
Student A		42.00%
Student B		100.00%
Student C	18.00%	
Student D		100.00%
Student E		50.00%
Student F		100.00%
Student G	100.00%	
Student H		100.00%
Student I		50.00%
Student J		50.00%
Student H		75.00%
Student K	57.00%	
Student L	42.00%	
Student M		61.00%

Post-Test(27832-36639)	Mastery Learning Score (%)	
Student O		100.00%
Student P		100.00%
Student Q		62.00%
Student R	100.00%	

Figure 4.1.6

4.1.5 Special Student Case 1

Student 6 from the mastery learning group of experiment one posted a 64% pretest/posttest gain. This special student case shows the positive effect mastery learning can have. Figure 4.1.7 below shows the amount of problems Student 6 completed for each mastery learning set and her gain scores for those problems, indicated by color.
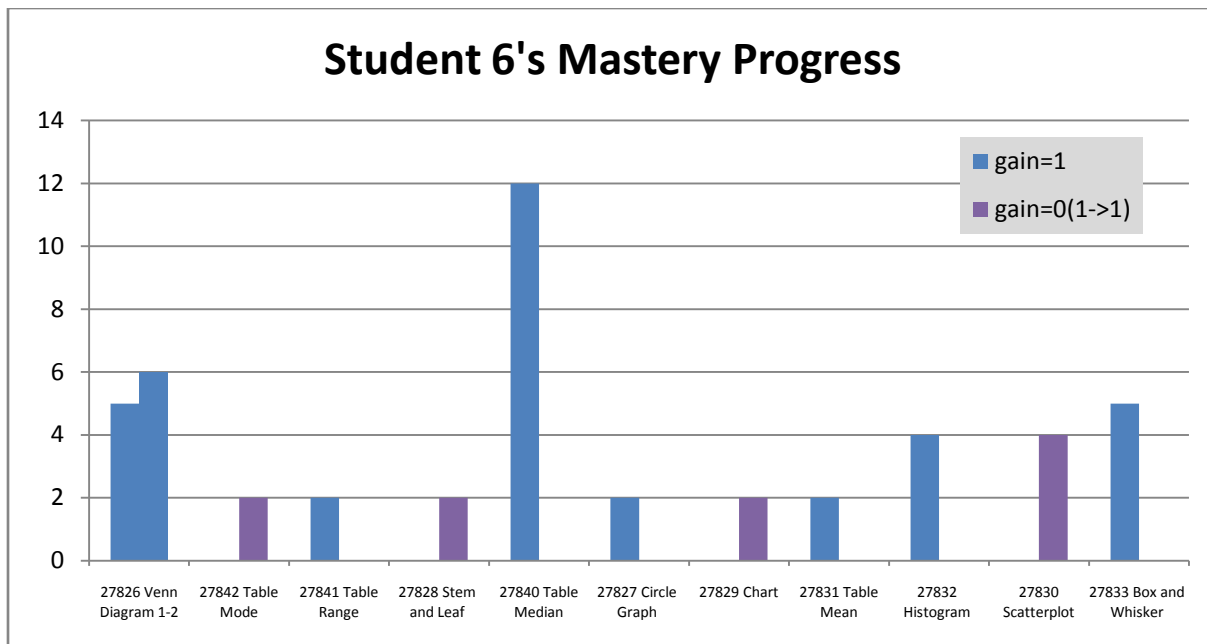
Figure 4.1.7

As you can see from the graph, she did a minimum of two problems on a mastery learning problem set and a maximum of 12 on another. In this case the extra practice given by mastery learning seems to have paid off.

39

4.1.6 Special Student Case 2

Student 7 is another example of a student who received an exceptional score increase, from the data analysis problem sets mastery learning. Student 7 gained 64% from a pretest score of 36% to a posttest score of 100%. Figure 4.1.8 below shows the amount of problems student 7 completed for each mastery learning set and his gain scores for those problems, indicated by color.
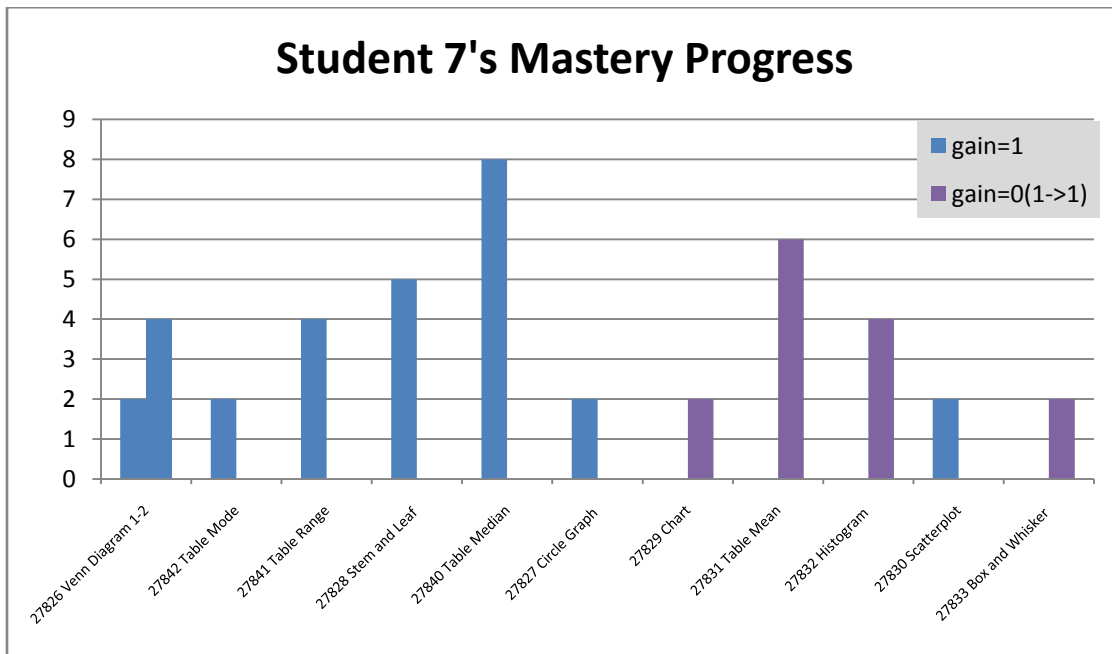
Figure 4.1.8

From the graph you can see that Student 7 did a maximum of 8 mastery learning problems on table median. The gains posted by both Student 7 and Student 6 in this experiment show the effectiveness of the data analysis mastery learning problem sets on helping students with less than average pretest scores.

4.1.7 Conclusion

While the experiment itself did not yield statistically significant results, the four special cases highlight the best parts of mastery learning in this problem set. From the special cases we can see the positive effect that mastery learning can have on some students, particularly low-achieving ones, and

40

the positive effect that certain mastery learning problem sets have on the class.

4.2 Experiment 2

	n	Pre-Test Average	Post-Test Average	Gain Average	Standard Deviation
Mastery	39	59%	78%	19%	13.8%
Control	41	60%	78%	18%	14.7%
P-Value	N/A	.765	.948	.741	N/A

Figure 4.2

4.2.1 Results

For experiment two, the mastery group got a pretest score of 59% and the control group got a

pretest score of 60%. After taking the posttest, the mastery group gain 19% points for a posttest

average of 78%, and the control group gained 8% points for a posttest average of 78%. These gains

show no statistically significant results for mastery learning giving a P-Value of .741 and an effect size

of .073.

4.2.2 Analysis

Experiment two was done on the Moving Straight Ahead problem set and taken by the first

group of students. The results of this experiment show no statistically significant data, with both

groups posting gains within 1% of each other. There was no significant difference between the control

and mastery groups in the pretest either, so the data does suggest equal improvement from just the hints

given on the pretest. However, there is a possible explanation for the results we received. When this

test was preformed the students had just finished learning the section covered by the Moving Straight

Ahead problem set in class. This could have canceled out the effectiveness of mastery learning due to

the students already being fresh in the subject. Also the pretest for this experiment had the hints active,

so the students got help on wrong answers. This could have had a negative effect on our test as well because the control group was given opportunity to be corrected for their mistakes.

4.2.3 Special Problem Case 1

On the second main problem of Moving Straight Ahead Assistment #28768, the mastery learning group had significant score increases. Assistment #28768 main problem 2 is shown below in Figure 4.2.1 and required the students to complete two mastery learning problem sets before the post-test.

"Pre-test"

Assistment #28768 "28768 – 8th grade: Moving Straight Ahead – Solve for x"

P.   Use the properties of equality to solve the equation for **x**.
$$2x - 40 = 60$$

What is the value of x?

Figure 4.2.1

The students in the mastery learning group got an average gain of 23% on the posttest of this problem, while the control group only received an average gain of 3%. These results yield a P-Value of .109 which is not statistically significant, and a small effect size of .336 shown below in Figure 4.2.2.

	n	Gain Average	Standard Deviation
Mastery	39	23%	48%
Control	41	3%	59%
P-Value	N/A	.109	N/A
Effect-Size	N/A	.336	N/A

Figure 4.2.2

4.2.4 Special Student Case 1

Student 5 from the mastery learning group got a pretest score of 61% on the moving straight ahead problem set. After taking mastery learning, she received a score of 92% on the post-test, giving her a gain of 31%. Figure 4.2.3 below shows the amount of problems Student 5 completed for each mastery learning set and her gain scores for those problems, indicated by color.
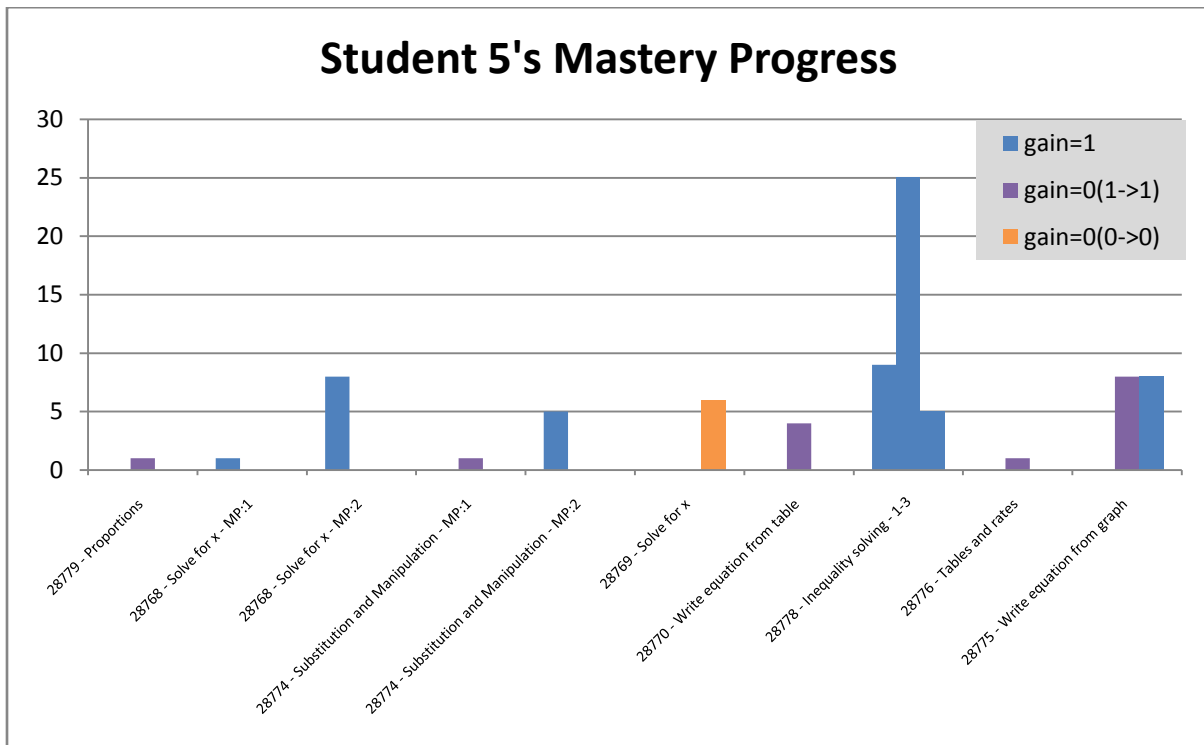
Figure 4.2.3

From the graph you can see there was only one problem that Student 5 did not get right on the posttest. Also Student 5 got some significant practice in inequality solving; she did a total 38 problems between 3 mastery sets. Student 5's hard work paid off in all but one problem for the set.

4.2.5 Special Student Case 2

Student 9 is another student who showed an exceptional gain of 31% from the pretest to the

posttest on the moving straight ahead problem set. Student 9 went from a pretest score of 61% to a posttest score of 92% after completing the mastery learning associated with moving straight ahead. Figure 4.2.4 below shows the amount of problems Student 9 completed in each mastery learning set and his gain scores for those problems, indicated by color.
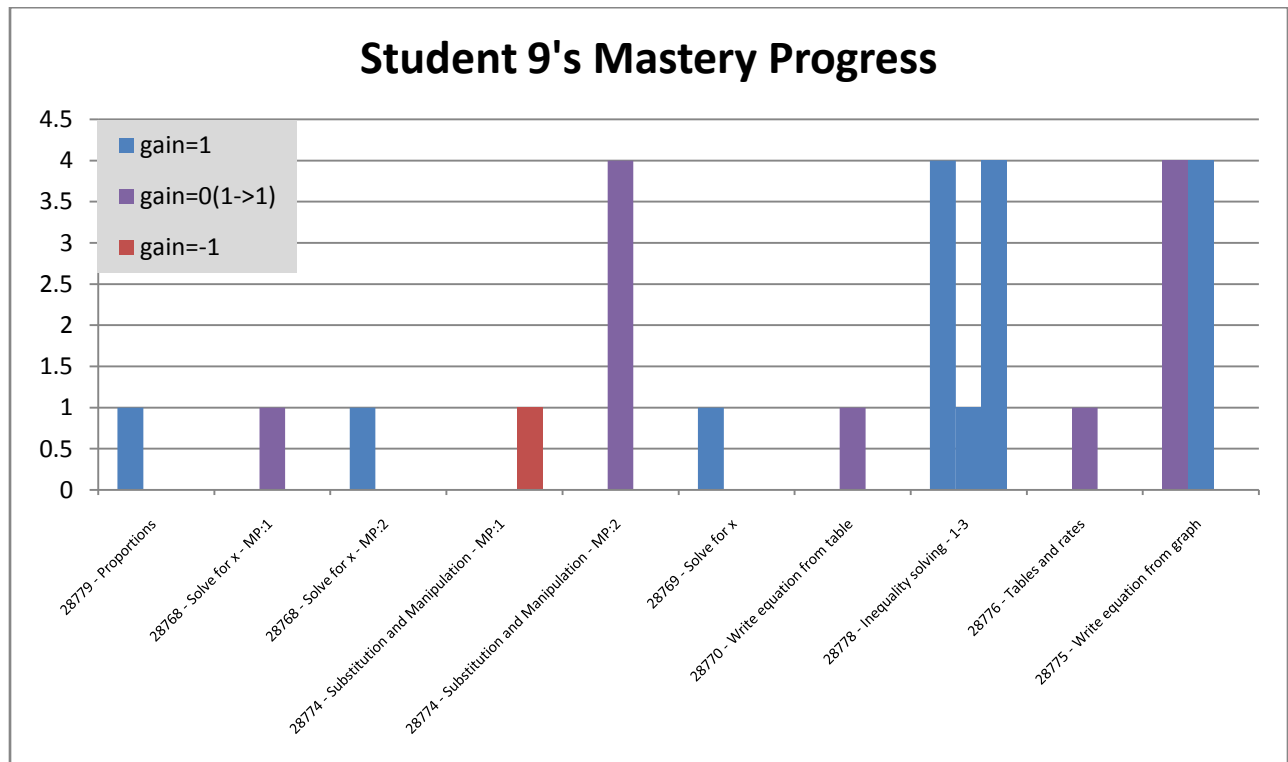
Figure 4.2.4

From the graph you see that Student 9 did get a negative gain on one problem, however he also tested out of the mastery learning problem set for that problem meaning he got minimal help. Student 9 did a maximum of 4 mastery problems in one mastery learning problem set. The problems student 9 got the most practice in he either got a gain of zero but got the pre and post-test problems right or got a gain of 1.

4.2.6 Conclusion

Overall mastery learning on this problem was not very effective although, on a student level basis, mastery learning did have some positive effects. However, we hypothesize that mastery learning's effect is greatly diminished if the material has just been or is currently being taught in class. It suggests that mastery learning is great for a "refresher" course.

4.3 Experiment 3

	n	Pre-Test Average	Post-Test Average	Gain Average	Standard Deviation
Mastery	39	64%	83%	18%	23.1%
Control	41	49%	69%	20%	20.7%
P-Value	N/A	.00318	.0018	.734	N/A

Figure 4.3

4.3.1 Results

For experiment three, the mastery group got a pretest average of 64%, and the control group got a pretest average of 49%. From these two scores we received a P-Value of .00318 which shows their significant difference. On the post-test the mastery learning group scored 83% gaining 18%, and the control group scored 69% gaining 20%. The P-Value of .734 for the gains shows no statistically significant results, we also obtained an insignificant effect size of -.085.

4.3.2 Analysis

Experiment three was done on data analysis, and taken by the second test group of students. The results of experiment three were unexpected, with the control group getting a 2% better gain in scores then the experiment. However in the pretest the mastery learning group scored a much higher average than the control group. This puts the mastery group at a disadvantage for increasing their

scores since the groups average started out 15% higher than the control group. The P-Value of the pretest shows in this case there is a 99.7% chance the groups were different to start.

Since the two groups differed so greatly in scores to start, the resulting test data and P-Value for the gains, is not an effective representation of the performance of the mastery learning Assistments. Even though the gains of the mastery group did not outweigh the gains of the control, the mastery group did maintain a significant lead in overall percentage scores with a posttest score of 83%, while the control had a 69%. The P-Value from the posttest shows a statistically significant result, but we cannot make much of it because, of the two groups extreme difference to start.

4.3.3 Special Problem Case 1

One of the skills that the mastery learning students improved significantly on is Assistment #27828, which is an Assistment problem that focuses on the concept of "Stem and Leaf". Figure 4.3.1 illustrates the main problem of this Assistment.

"Pre-test"

Assistment #27828 "27828 - 2201 - Problem 8 - 2003"

The stem-and-leaf plot below shows the ages of the people who bought skateboards at a store during a sale. What is the median age of the people who bought skateboards during the sale?

Ages of People

Stem	Leaf
1	234566789
2	3568
3	5
4	45
6	77
7	2

Key
6|2 = 62

Figure 4.3.1

After completing the mastery learning problem sets for this Assistment, the experimental

achieved a gain of 30%. On the other hand, the control group only had a gain of 15%. Using these

averages, we computed the p-value for this problem which resulted in 0.299. Also, the standard

deviations only yield an effect size of 0.127.

	n	Gain Average	Standard Deviation
Mastery	43	30%	0.558
Control	33	15%	0.667
P-Value	N/A	.299	N/A
Effect-Size	N/A	.226	N/A

Figure 4.3.2

To further analyzing our data, we constructed a pivot to view the number of students who got

the posttest correct after doing mastery learning. This table is shown on Figure 4.3.3.

Post-Test(27828-27904)	Mastery Learning Score (%)	
Student Names	Gain = 0	Gain = 1
Student A		100.00%
Student B	100.00%	
Student C		75.00%
Student D		100.00%
Student E		100.00%
Student F		100.00%
Student G		100.00%
Student H		100.00%
Student I		100.00%
Student J		0.00%
Student K		100.00%
Student L		63.00%
Student M	100.00%	
Student N		100.00%
Student O		50.00%
Student P		0.00%

Student Q		100.00%
Student R	75.00%	

<div align="center">Figure 4.3.3</div>

Out of the 18 students who got this Assistment incorrect on the pretest, 15 of those students managed to answer this Assistment correctly. From the 15 students who answered this Assistment correctly on the posttest, 13 of them tested out of the mastery learning problems. This is a tremendous improvement, considering that most of the students, who got the problem incorrect on the pretest, got the problem correct on the posttest.

4.3.4 Special Problem Case 2

Another mastery learning problem set that showed the greatest difference in gain between the experimental group and control group is Assistment #27832, which focuses on Histograms. Figure 4.3.3 shows the main problem for this particular Assistment.

<div align="center">"Pre-test"</div>
<div align="center">**Assistment #27832 "27832 - Gr.8 2007 - #13 - Histogram (Morph)"**</div>

<div align="center">Abe tested 85 Brand X light bulbs to determine their life spans.</div>

<div align="center">The histogram below shows the results of his test.</div>
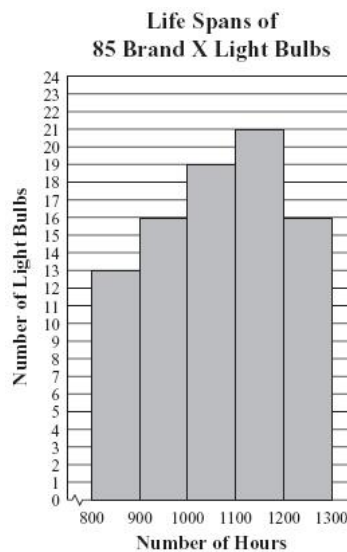
What was the total number of Brand X light bulbs that had life spans greater than or equal to 900 hours?

Figure 4.3.4

The average gain of the experimental group for this Assistment is 12%, while the gain of the control group is -12%. Instead of improving from past performances, the control actually worsened without mastery learning. The averages and standard deviations from Figure 4.3.4 yield a p-value of 0.113 and an effect size of 0.365. Both values are relatively close to being statistically significant.

	n	Gain Average	Standard Deviation
Mastery	43	12%	0.625
Control	33	-12%	0.650
P-Value	N/A	.113	N/A
Effect-Size	N/A	.365	N/A

Figure 4.3.5

We conducted a more in-depth analysis of this Assistment by performing a pivot table, which is shown on following figure.

Post-Test(27832-36639)	Mastery Learning Score (%)	
Student Names	Gain = 0	Gain = 1
Student A	62%	
Student B		33%
Student C		75%
Student D	0%	
Student E		50%
Student F	42%	
Student G		66%
Student H		40%
Student I		60%
Student J	75%	

Student K	100%	
Student L		75%
Student M		66%
Student N	66%	
Student O	75%	
Student P		75%
Student Q		80%

Figure 4.3.6

From our pivot table, it is quite clear that students who took mastery learning showed an improvement on this Assistment during the posttest. Out of the 17 students who got this Assistment incorrect on the pretest, 10 of them got it correct after doing mastery learning.

4.3.5 Special Student Case 1

One of the students who showed a significant increase in gain is Student 25. This student scored 36% on her pretest, but after taking mastery learning, she aced the posttest with a score of 100%. The gain of these two scores is 64%. Her hard work is easily depicted from the number of mastery learning problem sets that she completed. Out of the 12 mastery learning problem sets that Student 25 was assigned, she managed to complete and test out every single one of them. The following is the outline of her mastery learning progress.
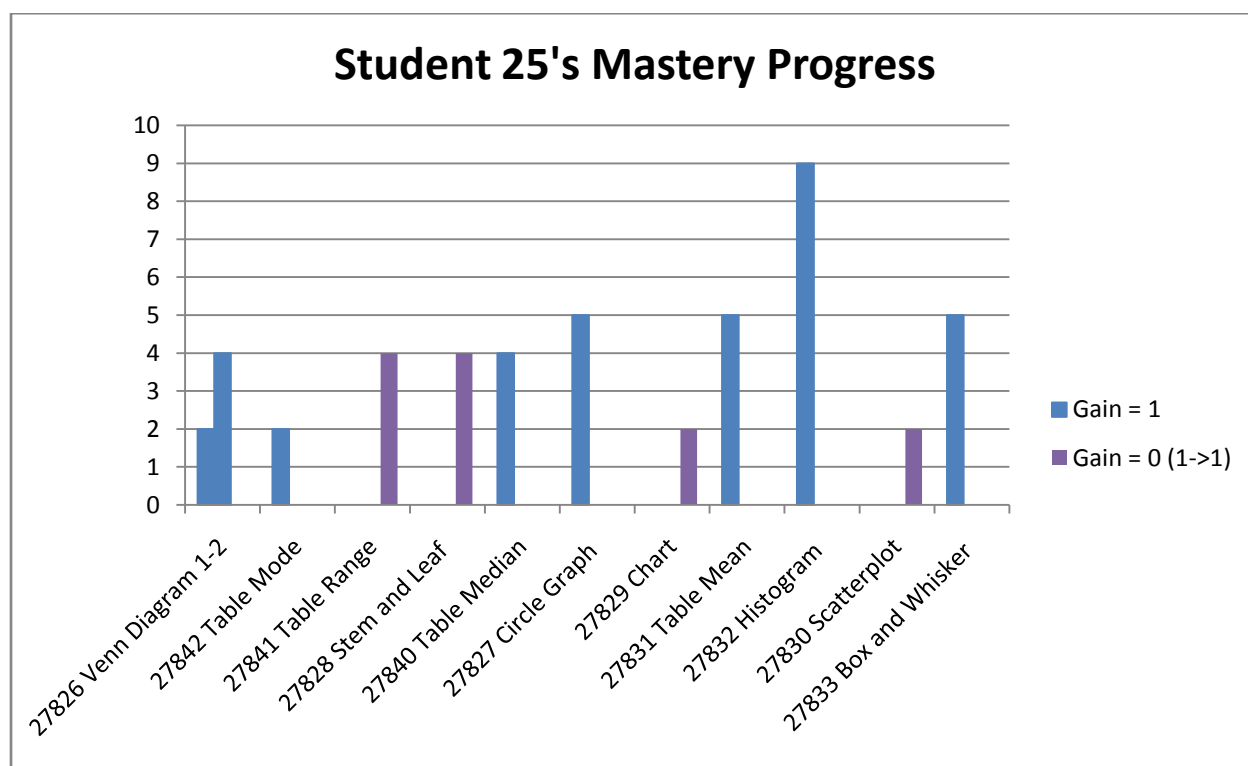
Figure 4.3.7

The above histogram shows the number of mastery learning problem sets that Student 25 completed. Four of the problem sets (purple bars) showed that Student 25 did not gain anything. She got the pretest and the posttest correct on those problems. The remaining 8 problem sets show that Student 25 did indeed gain from doing the mastery learning sets. The highest number of Assistment that she completed is 9, which is from the set involving Histograms. Overall, mastery learning helped improve her test scores tremendously.

4.3.6 Special Student Case 2

Another student who performed similar to Student 25 is Student 7. This student failed the pretest miserably with a mere 9%, but showed significant improvement by passing the posttest with a 72%. The difference of these two scores is 63%. Likewise to Student 25, Student 7 also completed and tested out of all 12 of the mastery learning problem sets that he was assigned. This next figure

51

outlines his mastery learning progress.
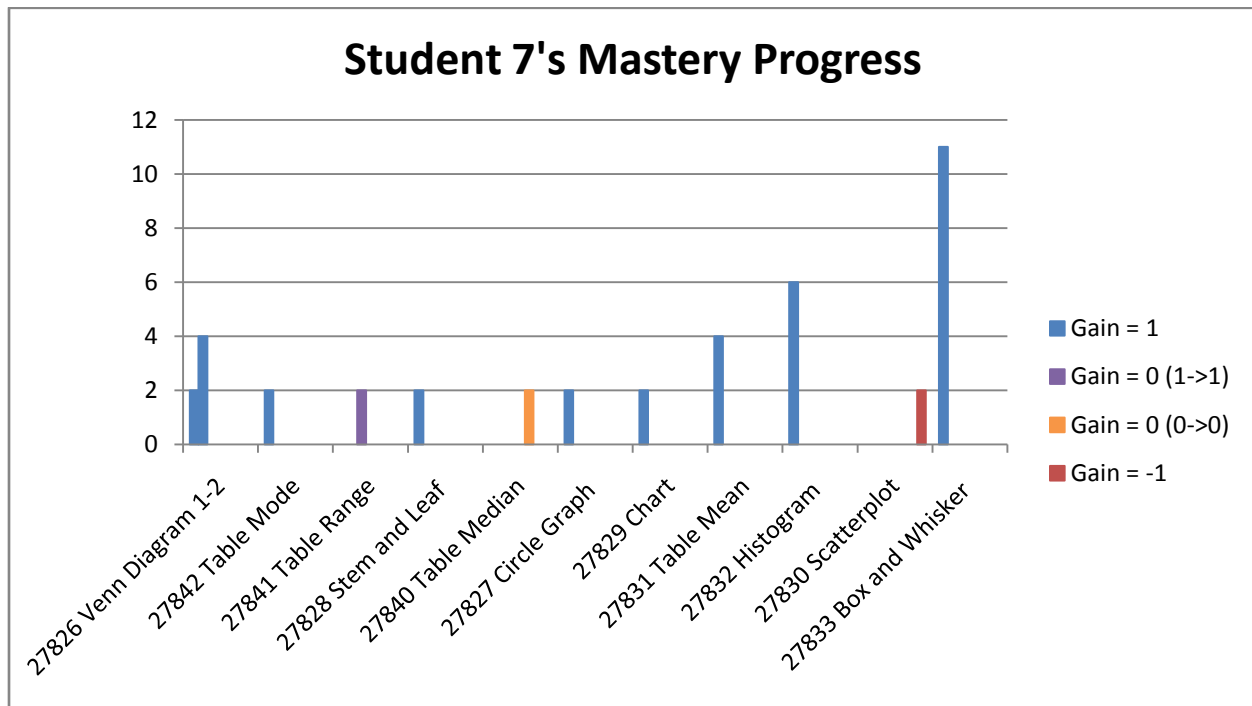
Figure 4.3.8

The maximum number of Assistments that this student completed is 11, from Box and Whisker plots. After doing so many Assistments, he achieved a gain. Although there are 3 problem sets that this student did not improve on, he was able to gain something from the other 9 problem sets. Obviously, the result of this is that he passed the posttest.

4.3.7 Conclusion

In conclusion, students who took mastery learning improved greatly on their posttest scores. Most of the students who failed the pretest managed to pass and even to some extent ace the posttest. Although there are some students and Assistments that mastery learning did not improve, in general mastery learning helped a great deal on data analysis.

4.4 Experiment 4

	n	Pre-Test Average	Post-Test Average	Gain Average	Standard Deviation
Mastery	39	63%	81%	18%	13.8%
Control	40	69%	74%	5%	13.7%
P-Value	N/A	.149	.114	.000145	N/A

Figure 4.4

4.4.1 Results

For experiment four the mastery group got a pretest average of 63% and the control group got a pretest average of 69%. On the post-test the mastery group got an 81% average gaining 18% from the pretest, and the control group got 74% gaining 5% from the pretest. The results in the gains between the mastery and control groups produced statistically significant results with a P-Value of .000145, and a large effect size of .968.

4.4.2 Analysis

Experiment four was done on the moving straight ahead problem set, and taken by the second test group of students. The results given by experiment four were interesting; we got a statistically significant P-Value from the gains of an impressive .000145. We also received a large effect size of .968, which is almost 1 standard deviation difference between the two groups. The only limiting factor to our data is the pretest P-Value reports that there is an 85% chance the two groups were different to start. However the mastery group started 6% lower in average score then the control group, but on the pretest scored 7% above the control. The P-Value on the posttests suggest that there is only a 11% chance that their difference in scores were caused by chance, and even if you consider this value more highly then the gain value, there is still a relatively low P-Value of .11.

Also here you can see the significance of just receiving the mastery learning and no computer based help, because hints in the pretest were turned off and students got no corrections on their

53

mistakes.

4.4.3 Special Problem Case 1

One of the problem sets that students learned the most from involves solving inequalities, Assistment #28778. The main problem for this Assistment is shown on Figure 4.4.1.

"Pre-test"

Assistment #28778 "28778 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #13"

Which graph below represents the solution to the inequality below?

$$2(2x - 3) \geq x + 3$$
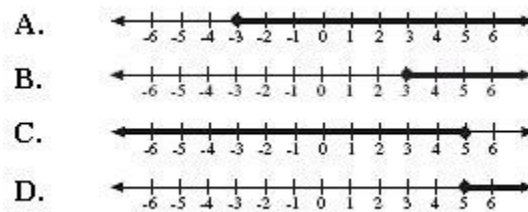
Figure 4.4.1

For this particular skill, the mastery group had an average gain of 23%, while the control group had an average of -23%. The result of these average values is a p-value of 0.00614 which makes this problem significant. We are 99.4% confident that this difference in gain is not contributed by randomness. Our large effect size of 0.683 also contributes to the significance of this Assistment.

	n	Gain Average	Standard Deviation
Mastery	31	23%	0.669
Control	40	-23%	0.660
P-Value	N/A	.006144	N/A
Effect-Size	N/A	.683	N/A

Figure 4.4.2

We also further analyzed this Assistment by performing a pivot table, which is shown on Figure

54

4.4.3. For this Assistment, there were 3 mastery learning problem sets that were made to tutor it.

Post-Test(28778-37003)	Mastery Learning Score (%)					
	28778(1)		28778(2)		28778(3)	
Student Names	0	1	0	1	0	1
Student A		100%		29%		22%
Student B		100%		100%		100%
Student C		100%		100%		75%
Student D		66%		100%		55%
Student E		41%		44%		100%
Student F		27%		28%		26%
Student G		60%		33%		100%
Student H		75%		42%		100%
Student I	40%		41%		100%	
Student J		100%		36%		66%
Student K	100%		27%		100%	
Student L	29%			100%	100%	
Student M		100%		75%		60%

Figure 4.4.3

From the above table, it is evident that most students who complete all 3 mastery learning problem sets were able to get this Assistment correct on the posttest. Out of the 13 students who got this problem incorrect on the pretest, 10 of them were able to get this correct on the posttest. Therefore, the experimental group was able to learn greatly from mastery learning for solving inequalities. This result will be very important in the future.

4.4.4 Special Problem Case 2

Another Assistment that mastery learning helped students improve on involves understanding line-slope concepts. This Assistment, #28775 had two main problems, which are shown on the following figure.

"Pre-test"

Assistment #28775 "28775 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #18"
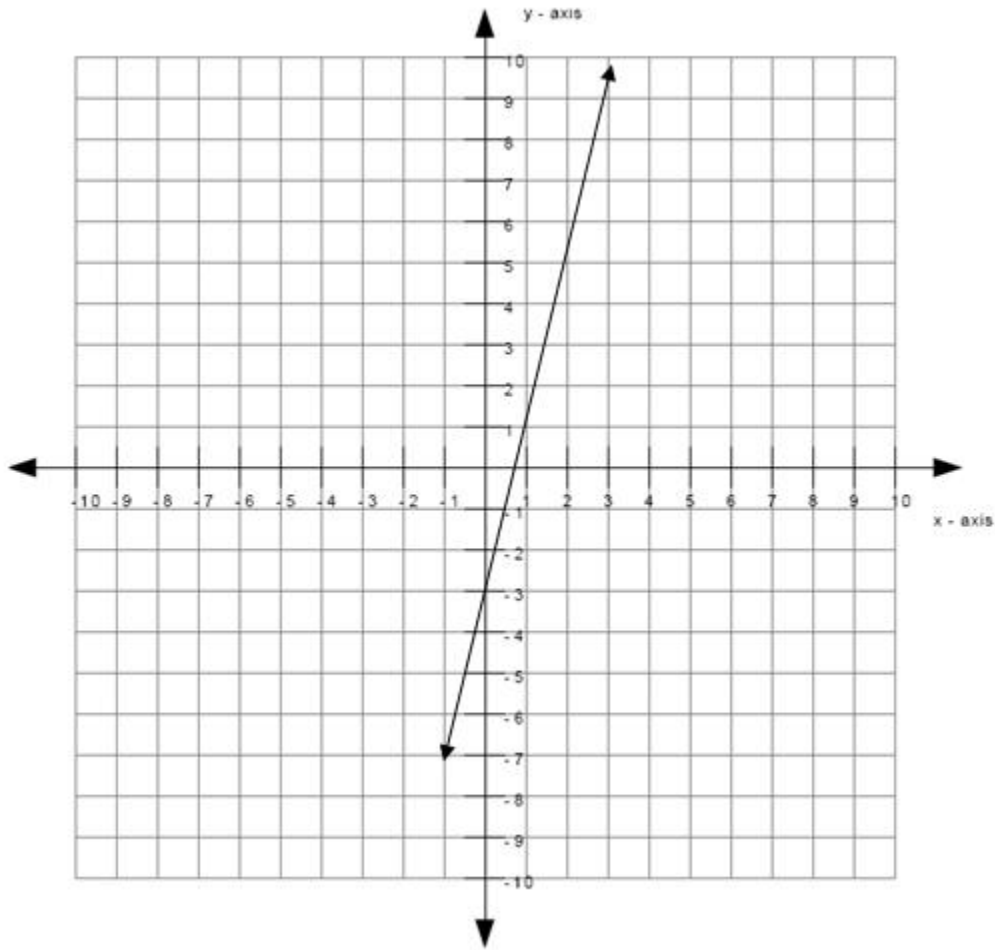
a. What is the slope of the line graphed above?

b. Write an equation for this line in the form y = _____

Figure 4.4.4

The average gain of the experimental group is 71% while the gain of the control group is only

28%. The huge difference in gain yielded a p-value of 0.00342 and an effect size of 0.859. Both of

these values are statistically significant, meaning that the results of the two groups are independent of

one another and that the results are not caused by random occurrence.

	n	Gain Average	Standard Deviation
Mastery	31	71%	0.461
Control	40	28%	0.506
P-Value	N/A	.000342	N/A
Effect-Size	N/A	.859	N/A

Figure 4.4.5

From our p-value test and effect size, we wanted to further analyze this Assistment. Thus, we conducted a pivot to see how many students from the experimental group improved because of mastery learning. Since this problem involves two main problems, we had to perform two pivot tables. The first pivot, shown on Figure 4.4.3 illustrates the results from the first main problem.

Average of 28775 Mastery Learning	Mastery Learning Score (%)	
Student Names	**Gain = 0**	**Gain = 1**
Student A		100%
Student B		38%
Student C	44%	
Student D		75%
Student E		42%
Student F		41%
Student G	21%	
Student H	0%	
Student I	50%	
Student J		35%
Student K	100%	

Figure 4.4.6

From this table, only about 6 of the students who got this problem wrong on the pretest, got it correct on the posttest. Since this problem only involves finding the slope of a line, it is relatively straightforward. Thus, only a few students got this problem incorrect on the pretest, making it difficult to see if mastery learning was the cause of their improvement. However, the next pivot table shows quite evidently the value of mastery learning.

Average of 28775 Mastery Learning	Mastery Learning Scores (%)	
Student Names	Gain = 0	Gain = 1
Student A		100%
Student B		38%
Student C		100%
Student D		60%
Student E		55%
Student F		0%
Student G	44%	
Student H		100%
Student I		75%
Student J		75%
Student K		42%
Student L		44%
Student M		0%
Student N		60%
Student O	21%	
Student P		0%
Student Q		62%
Student R		50%
Student S		35%
Student T		60%
Student U		100%
Student V		75%
Student W		100%

Figure 4.4.7

The second main problem for Assistment #28775 focuses on writing the line-slope equation using the y-intercept and the slope. (y = mx + b) From Figure 4.4.7, we can clearly see that out of the 23 students who got this main problem wrong, 18 (ignoring the 0% students) of them improved after doing mastery learning.

4.4.5 Special Student Case 1

In the mastery group, Student 3 scored 100% on the posttest after scoring only 53% on the pretest two weeks before. The tremendous amount of effort that this student has put into completing the Moving Straight Ahead problems finally paid off. He spent hours answering some of these mastery

58

learning problem sets. He had average scores of 19%, 27%, 28%, and 26% on several of them. From the averages of 19%, 27%, 28%, and 26%, Student 3 answered correctly 5/26, 3/11, 6/21, and 4/15 respectively. Even though for these four problem sets, Student 3 never managed to test out of them, his hard work allowed him to get them correctly on his posttest. The following figure outlines his mastery progress in much more detail.
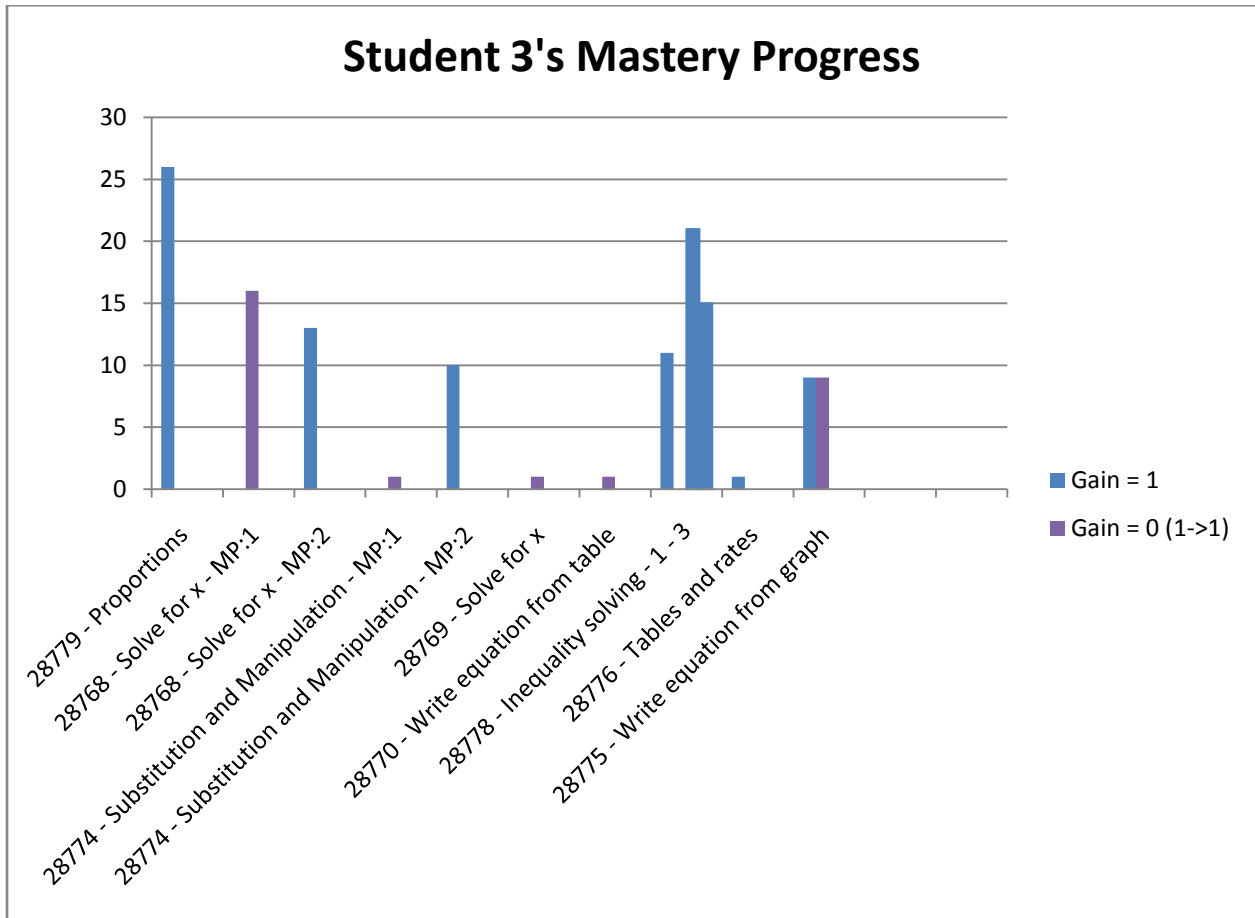
Figure 4.4.8

From the table, Student 3 achieved a gain in 8 of the problem sets. For the ones that he did not improve on, he answered that problem correct on both the pretest and the posttest. Overall, mastery learning significantly helped increase Student 3's scores on the tests.

4.4.6 Special Student Case 2

Another student who performed similarly like Student 3 is Student 22. He too scored 100% on the posttest after scoring only 53% on the pretest. His results also showed a gain of 47%. Student 2's working habit is portrayed by the number of mastery learning problem sets that he tested out of. Out of the 12 problem sets that he was assigned, he managed to test out of 11 of them.
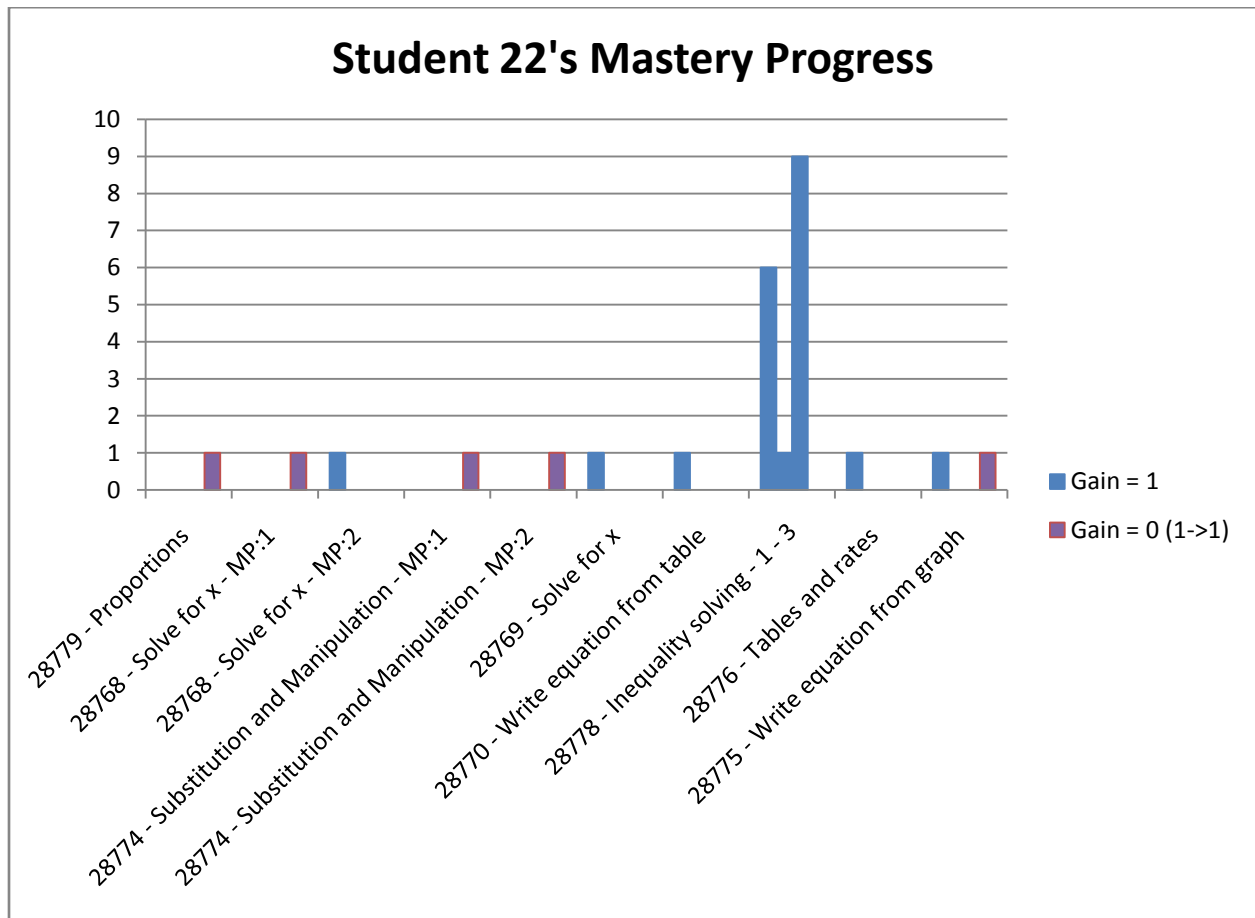
Figure 4.4.9

From the table, we can clearly see for the problems that this student got wrong on the pretest; he was able to make up for them in the posttest. There were 6 Assistments that Student 22 improved on. The result of his effort is achieving a perfect score on the posttest.

4.4.7 Conclusion

Overall the results from experiment 4 were very positive. The p-value, effect size, individual student cases, and Assistment cases all depict that mastery learning help students improve on some of the concepts of pattern-finding.

5. DISCUSSION

5.1 Experiments

Experiment #	Strand Type	Significant Results?	Test Group
1	Data Analysis	Yes	1
2	Moving Straight Ahead	No	1
3	Data Analysis	No	2
4	Moving Straight Ahead	Yes	2

Figure 5.1

Figure 5.1 above shows the four experiments and whether we got significant results or not from each. As you can see we did not get consistent results from our experiments, the first test group showed significant results for data analysis and the second group did not. Also the first test group showed no significant results for Moving Straight Ahead, and the second test group did. However we do have some hypothesis on why the two experiments did not show significant results.

Experiment two was conducted around the time the students were learning the same material in the class room. This leads us to suggest a hypothesis that mastery learning is more effective for someone who is out of practice on the material, or does not have high background knowledge of information. However this still does not explain the ineffectiveness of the test run in experiment two because, the average pretest score for the class was a 60%, and in experiment four on the same pretest the average score was 66% but this test showed significant results.

Experiment three had a very large difference in pretest scores between the mastery group and the control group; the mastery group had a 64% average while the control had a 49% average. This large difference could have allowed the control group to gain a lot of percentage points even by chance on the post-test. Based on the results of the two tests a third test is needed to tell for sure, whether data

62

analysis produces significant results or not.

Our third hypothesis based on the full experiment, relates to the way in which mastery learning is conducted. For this test the students should not have been allowed to test-out of mastery learning after only one problem, especially if they got the pretest problem wrong. While one problem is still some mastery learning, it is minimal and compared to the four problems you do if you get the first wrong, it is little work. We hypothesize, the tests would show better results if all students were made to do at least 3 mastery learning problems before testing out.

5.2 *Variabilized Mastery Learning*

One of the problems with the tests, and the Assistments mastery learning in general is the way in which the problem sets are produced. The Variabilized templates used to produces the problem sets work very well in some cases, but in others do not. For example it is very hard to get variety into a problem set using graphs, since many times this involves making sets. Also in some cases the variabilization of problems causes the hints to be more generalized and less effective than the original. However, in the more recent Variabilized Assistments this is fixed by using worked examples of a problem similar to the one currently being tested. What this comes down to is some mastery learning sets are more effective than others due to the fact that Variabilized templates work better for that skill, and this can hinder the overall effect of the mastery learning test.

6. CONCLUSION

From the results we are unable to conclude significant results for either of the two mastery learning strand types. However after reviewing our data and that of our peers, one conclusion that can be drawn is that mastery learning does not negatively affect the student gains. Sometimes experiments report great gains sometimes not, our experiments does seem to show that mastery learning is helpful for low-achieving but hardworking students and it might be good for students who need to review old material. The special student cases had a failing grade on the pretest; however, the mastery learning seemed to helped them do well on the posttest. The primarily reason for their success is their relentless effort in answering most if not all of the mastery learning problem sets that they were assigned. There were numerous cases in which students answered anywhere between 14 to 30 Assistments just to test out of the problem set.

Furthermore, there were several exceptional Assistments that students learned more from as opposed to others. In general these Assistments involved concepts that were relatively difficult to grasp at first sight; thus, requiring several hours of practice to master. For data analysis, these Assistments consist of but are not limit to box and whisker plots, stem and leaf plots, mean, median, mode, and range. And for pattern finding concepts, the particular useful mastery learning problem sets are solving for variables, solving inequalities, and understanding line-slope-intercept. Even though there were many students who benefited from our experiment, there are also some who did not.

Although some students did not gain as much from mastery learning as opposed to others, a possible explanation for this lies in their working conditions, and their behaviors. Under their environment, some students are much more prone to cheating than others, which results in a negative gain in pretest to posttest scores. Lastly, mastery learning can only aid a student in learning the material only if the student makes an attempt to better themselves. Those who are unwilling to work

will never achieve the real benefits of mastery learning.

In conclusion, the results from experiments suggest that mastery learning can be effective. Mastery learning seems to be the most effective for hardworking but low-achieving students. Two of our experiments depicted very significant results such that there is a clear difference in the scores between the experimental group and the control group. Although the other two experiments were not statistically significant, they illustrated a gain in scores for the experimental group. Even though there were some negative cases, overall students who took mastery learning, achieved our expected results. These results simply mean that those students were educated. However to prove the effectiveness of mastery learning, more tests have to be conducted.

6.1 Implications

There are a few implications of this study although the experiments did not produce statistically significant results. The first and possibly most important is related to the effect mastery learning has shown on students whom did not have sufficient background knowledge entering the pretest. Teachers can use this for the students that lag behind the class, to help them catch up and gain knowledge without taking the teachers time or a tutor's time. This is important because there is not always enough human help to go around and personal tutors are expensive. Mastery learning and Assistments in general can help bridge this gap.

Another implication of this study is the potential effectiveness of mastery learning for content review. Mastery learning could prove to be good, cheap, and simple way to review for a test such as the SATs, or MCAS.

In addition, mastery learning also allows students to be more involved in their education.

65

Generally, failing exams generates a sort of "I don't care" attitude that some students never seem to overcome, resulting in drop-outs in the high school and college level. However, with mastery learning, students are given a second chance in which they can make up for their past mistakes through their current and future hard work.

In all the above cases, these are not just implications of mastery learning in Assistments but mastery learning as a whole.

6.2 Implications for WPI

There are also implications from this study for WPI, especially since the school already has Assistments type methods in place such as mastering physics. In the case of mastering physics students could be assigned additional mastery learning problems, related to those they got wrong either in mastering physics or on a test. The extra problems forced upon students could help keep the class on the same level of knowledge, and help to ensure no one falls behind.

Also mastery learning could be very effective in the beginning math classes, when there might not always be a teacher readily available for questions. Having mastery learning sets for practice or assigned would allow students to get the practice they need with built in help. This allows for more help with less staff.

Lastly, mastery learning could also be an alternative to some of the online tutoring web sites that students are currently using such as "Mastering Physics." Similar to our implementation methods, Mastering Physics also uses a variabilization method, but they do not use mastery learning. If a student answers a problem incorrectly, they simply just lose their points on that problem. Under this condition, students care more about their scores as oppose to learning the material. However, mastery learning reverses this sort of attitude. It stresses the importance of education as opposed to scoring points. Thus in this sense, mastery learning is far superior to some of the tutoring websites that WPI uses, precisely

66

because it allows the student to learn and become educated.

7. REFERENCES

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8. APPENDIX

8.1 Experiment One Table

8.1.1 Part One

Student Name	Condition	Period	8th Data Pre-Test	8th Data Post-Test	Gain	Pre 27826 - 27902	Post 27826 - 27902	27826 - 27902 Gain	27826 Venn Diagram 1	27826 Venn Diagram 2	Pre 27842 - 27909	Post 27842 - 27909	27842 - 27909 Gain	27842 Table 4
Student 1	Mastery	6	9%	45%	36%	0	0	0	62%	18%	0	1	1	100%
Student 2	Mastery	5	54%	81%	27%	1	1	0	100%	60%	1	1	0	100%
Student 3	Mastery	5	36%	81%	45%	1	0	-1	100%	75%	0	1	1	100%
Student 4	Mastery	6	63%	54%	-9%	0	0	0	50%	66%	1	1	0	100%
Student 5	Mastery	5	27%	72%	45%	0	1	1	60%	33%	0	1	1	100%
Student 6	Mastery	6	54%	72%	18%	0	1	1	80%	75%	1	0	-1	75%
Student 7	Mastery	5	72%	72%	0%	0	1	1	60%	60%	1	1	0	100%
Student 8	Mastery	5	45%	72%	27%	1	1	0	75%	23%	1	1	0	100%
Student 9	Mastery	6	63%	81%	18%	0	0	0	100%	75%	1	1	0	100%
Student 10	Mastery	6	63%	45%	-18%	0	0	0	46%	75%	0	0	0	100%
Student 11	Mastery	5	54%	90%	36%	0	0	0	75%	71%	1	1	0	100%
Student 12	Mastery	6	54%	90%	36%	0	1	1	100%	100%	1	1	0	100%
Student 13	Mastery	5	63%	90%	27%	0	1	1	100%	100%	1	1	0	100%
Student 14	Mastery	6	54%	90%	36%	0	1	1	75%	60%	1	1	0	100%
Student 15	Mastery	5	63%	90%	27%	0	1	1	100%	75%	1	1	0	100%
Student 16	Mastery	5	45%	72%	27%	0	1	1	100%	75%	1	1	0	100%
Student 17	Mastery	5	0%	90%	90%	0	1	1	100%	80%	0	1	1	100%
Student 18	Mastery	6	9%	81%	72%	0	1	1	75%	75%	0	1	1	75%
Student 19	Mastery	6	72%	81%	9%	0	1	1	100%	75%	1	1	0	100%
Student 20	Mastery	5	36%	100%	64%	0	1	1	60%	50%	1	1	0	100%
Student 21	Mastery	6	27%	90%	63%	0	1	1	100%	57%	0	0	0	75%
Student 22	Mastery	6	90%	81%	-9%	0	1	1	100%	100%	1	1	0	100%
Student	Mastery	6	54%	63%	9%	0	1	1	80%	100%	1	1	0	100%

67

Student Name	Condition	Period	8th Data Pre-Test	8th Data Post-Test	Gain	Pre 27826 - 27902	Post 27826 - 27902	27826 - 27902 Gain	27826 Venn Diagram 1	27826 Venn Diagram 2	Pre 27842 - 27909	Post 27842 - 27909	27842 - 27909 Gain	27842 Table 4
23														
Student 24	Mastery	6	18%	63%	45%	0	0	0	41%	18%	0	1	1	75%
Student 25	Mastery	6	0%	63%	63%	0	0	0	55%	11%	0	0	0	
Student 26	Mastery	6	100%	100%	0%	1	1	0	75%	75%	1	1	0	100%
Student 27	Mastery	5	18%	54%	36%	0	1	1	100%	66%	0	1	1	100%
Student 28	Mastery	5	9%	81%	72%	0	1	1	100%	62%	0	1	1	100%
Student 29	Mastery	6	0%	100%	100%	0	1	1	75%	50%	0	1	1	100%
Student 30	Mastery	6	9%	90%	81%	0	1	1	75%	33%	0	1	1	100%
Student 31	Mastery	5	90%	72%	-18%	0	0	0	100%	100%	1	1	0	100%
Student 32	Mastery	6	36%	81%	45%	0	1	1	100%	57%	0	1	1	100%
Student 33	Mastery	6	63%	72%	9%	0	0	0	100%	100%	0	1	1	100%
Student 34	Mastery	5	63%	81%	18%	1	1	0	100%	100%	0	1	1	100%
Student 35	Mastery	5	90%	63%	-27%	1	1	0	75%	100%	1	1	0	100%
Student 36	Mastery	5	72%	90%	18%	1	1	0	100%	80%	0	1	1	100%
Student 37	Mastery	5	63%	100%	37%	1	1	0	75%	50%	0	1	1	75%
Student 38	Mastery	5	54%	100%	46%	0	1	1	100%	100%	1	1	0	100%
Student 39	Mastery	6	36%	100%	64%	0	1	1	100%	75%	0	1	1	100%
Student 40	Control	7	100%	100%	0%	1	1	0			1	1	0	
Student 41	Control	7	45%	90%	45%	0	1	1			0	1	1	
Student 42	Control	7	45%	63%	18%	0	0	0			0	1	1	
Student 43	Control	4	27%	9%	-18%	0	0	0			1	0	-1	
Student 44	Control	7	90%	100%	10%	1	1	0			1	1	0	
Student 45	Control	4	27%	81%	54%	0	1	1			0	1	1	
Student 46	Control	4	45%	63%	18%	0	0	0			0	1	1	
Student 47	Control	7	81%	90%	9%	0	1	1			0	1	1	
Student 48	Control	7	54%	100%	46%	0	1	1			1	1	0	
Student 49	Control	7	45%	90%	45%	0	1	1			0	1	1	
Student 50	Control	4	81%	72%	-9%	1	1	0			0	1	1	
Student 51	Control	7	72%	90%	18%	0	1	1			1	1	0	
Student 52	Control	7	36%	81%	45%	0	1	1			0	1	1	
Student 53	Control	7	63%	45%	-18%	0	0	0			1	1	0	
Student 54	Control	7	36%	100%	64%	0	1	1			0	1	1	
Student 55	Control	4	36%	72%	36%	0	1	1			1	1	0	
Student 56	Control	7	18%	27%	9%	0	0	0			0	1	1	
Student 57	Control	7	54%	72%	18%	0	1	1			1	1	0	
Student 58	Control	4	45%	63%	18%	0	1	1			0	1	1	
Student 59	Control	7	54%	63%	9%	0	1	1			1	1	0	
Student 60	Control	7	81%	90%	9%	1	1	0			0	1	1	
Student 61	Control	4	9%	0%	-9%	0	0	0			1	0	-1	
Student 62	Control	7	36%	81%	45%	1	1	0			0	1	1	
Student	Control	4	0%	36%	36%	0	0	0			0	1	1	

Student Name	Condition	Period	8th Data Pre-Test	8th Data Post-Test	Gain	Pre 27826 - 27902	Post 27826 - 27902	27826 - 27902 Gain	27826 Venn Diagram 1	27826 Venn Diagram 2	Pre 27842 - 27909	Post 27842 - 27909	27842 - 27909 Gain	27842 Table 4
63														
Student 64	Control	7	63%	90%	27%	0	1	1			1	1	0	
Student 65	Control	4	45%	81%	36%	0	0	0			0	1	1	
Student 66	Control	4	27%	72%	45%	0	0	0			0	1	1	
Student 67	Control	7	72%	90%	18%	0	1	1			1	1	0	
Student 68	Control	4	63%	54%	-9%	0	0	0			1	1	0	
Student 69	Control	7	90%	81%	-9%	1	1	0			1	1	0	
Student 70	Control	4	72%	81%	9%	1	1	0			0	1	1	
Student 71	Control	7	9%	63%	54%	0	1	1			0	1	1	
Student 72	Control	4	36%	100%	64%	0	1	1			0	1	1	
Student 73	Control	4	0%	27%	27%	0	0	0			0	0	0	
Student 74	Control	7	63%	90%	27%	1	1	0			0	1	1	
Student 75	Control	7	72%	100%	28%	0	1	1			1	1	0	
Student 76	Control	7	45%	72%	27%	0	0	0			1	1	0	
Student 77	Control	4	63%	90%	27%	0	1	1			0	1	1	
Student 78	Control	4	27%	45%	18%	0	0	0			1	1	0	
Student 79	Control	7	27%	81%	54%	0	1	1			1	0	-1	
Student 80	Control	7	36%	63%	27%	0	0	0			1	1	0	
Student 81	Control	4	90%	72%	-18%	0	1	1			1	1	0	
Average (All)			48%	76%	27%			51%					41%	
Average (Mastery)			47%	79%	32%			54%					38%	
Average (Control)			50%	72%	23%			48%					43%	
P-Value			0.6515	0.1169	0.1046			0.5999					0.7372	
Standard Deviation (All)			0.2611	0.2082	0.2685			0.5273					0.5869	
Standard Deviation (Mastery)			0.2714	0.1513	0.3031			0.5547					0.5436	
Standard Deviation (Control)			0.2537	0.2467	0.2253			0.5055					0.6302	
EFFECT SIZE					0.4358			0.1232					-0.0697	

8.1.2 Part Two

Student Name	Condition	Period	Pre 27841 - 27908	Post 27841 - 27908	27841 - 27908 Gain	27841 Table 3	Pre 27828- 27904	Post 27828- 27904	27828 - 27904 Gain	27828 Stem and Leaf	Pre 27840 - 27907	Post 27840 - 27907	27840 - 27907 Gain	27840 Table 2
Student 1	Mastery	6	0	1	1	100%	1	1	0	75%	0	0	0	100%
Student 2	Mastery	5	0	0	0	100%	0	1	1	72%	1	1	0	60%
Student 3	Mastery	5	0	1	1	100%	1	1	0	100%	0	0	0	66%
Student 4	Mastery	6	0	1	1	100%	1	0	-1	41%	0	0	0	33%
Student 5	Mastery	5	1	0	-1	75%	0	1	1	52%	0	0	0	100%
Student 6	Mastery	6	0	1	1	60%	1	1	0	55%	0	0	0	75%
Student 7	Mastery	5	1	0	-1	100%	1	0	-1	100%	1	1	0	100%
Student 8	Mastery	5	0	0	0	100%	0	1	1	75%	1	0	-1	33%
Student 9	Mastery	6	1	1	0	100%	1	1	0	66%	1	0	-1	71%
Student 10	Mastery	6	0	1	1	100%	1	0	-1	60%	1	0	-1	100%
Student 11	Mastery	5	1	1	0	100%	1	1	0	62%	1	1	0	100%
Student 12	Mastery	6	1	1	0	100%	0	1	1	100%	1	0	-1	100%
Student 13	Mastery	5	1	1	0	100%	0	1	1	100%	1	1	0	100%
Student 14	Mastery	6	0	1	1	100%	0	1	1	60%	1	1	0	100%
Student 15	Mastery	5	1	1	0	100%	1	1	0	100%	1	1	0	75%
Student 16	Mastery	5	1	0	-1	100%	0	1	1	100%	1	0	-1	100%
Student 17	Mastery	5	0	1	1	75%	0	1	1	100%	0	1	1	50%
Student 18	Mastery	6	0	0	0	100%	0	0	0	50%	0	1	1	41%
Student 19	Mastery	6	1	1	0	100%	1	1	0	60%	0	0	0	60%
Student 20	Mastery	5	0	1	1	100%	1	1	0	100%	0	1	1	50%
Student 21	Mastery	6	1	1	0	100%	0	1	1	75%	0	1	1	100%
Student 22	Mastery	6	1	1	0	100%	1	1	0	100%	1	0	-1	66%
Student 23	Mastery	6	1	0	-1	80%	1	1	0	60%	1	1	0	29%
Student 24	Mastery	6	0	1	1	100%	0	1	1	75%	0	0	0	60%
Student 25	Mastery	6	0	1	1		0	1	1	30%	0	1	1	0%
Student 26	Mastery	6	1	1	0	75%	1	1	0	63%	1	1	0	100%
Student 27	Mastery	5	1	0	-1	100%	0	0	0	100%	0	0	0	100%
Student 28	Mastery	5	0	1	1	100%	0	0	0	80%	0	1	1	100%
Student 29	Mastery	6	0	1	1	75%	0	1	1	60%	0	1	1	40%
Student 30	Mastery	6	0	1	1	75%	0	1	1	71%	0	0	0	100%
Student 31	Mastery	5	1	1	0	100%	1	0	-1	100%	1	1	0	100%
Student 32	Mastery	6	1	1	0	60%	0	1	1	66%	0	0	0	75%
Student 33	Mastery	6	1	0	-1	100%	1	1	0	100%	1	1	0	71%
Student 34	Mastery	5	1	1	0	80%	0	1	1	50%	0	0	0	100%
Student 35	Mastery	5	1	1	0	100%	1	0	-1	75%	1	0	-1	100%
Student 36	Mastery	5	1	1	0	100%	0	1	1	58%	1	0	-1	100%
Student 37	Mastery	5	1	1	0	75%	1	1	0	37%	0	1	1	66%
Student 38	Mastery	5	1	1	0	100%	0	1	1	75%	0	1	1	80%

Student Name	Condition	Period	Pre 27841 - 27908	Post 27841 - 27908	27841 - 27908 Gain	27841 Table 3	Pre 27828- 27904	Post 27828- 27904	27828 - 27904 Gain	27828 Stem and Leaf	Pre 27840 - 27907	Post 27840 - 27907	27840 - 27907 Gain	27840 Table 2
Student 39	Mastery	6	0	1	1	75%	0	1	1	60%	0	1	1	62%
Student 40	Control	7	1	1	0		1	1	0		1	1	0	
Student 41	Control	7	1	1	0		1	1	0		0	1	1	
Student 42	Control	7	1	0	-1		0	1	1		1	0	-1	
Student 43	Control	4	0	0	0		0	0	0		0	0	0	
Student 44	Control	7	1	1	0		1	1	0		1	1	0	
Student 45	Control	4	1	1	0		0	1	1		1	1	0	
Student 46	Control	4	0	1	1		1	1	0		1	0	-1	
Student 47	Control	7	1	1	0		1	1	0		1	1	0	
Student 48	Control	7	0	1	1		1	1	0		0	1	1	
Student 49	Control	7	0	1	1		1	1	0		1	1	0	
Student 50	Control	4	1	1	0		1	0	-1		0	0	0	
Student 51	Control	7	1	1	0		1	1	0		0	1	1	
Student 52	Control	7	0	0	0		1	1	0		0	1	1	
Student 53	Control	7	1	1	0		0	0	0		0	1	1	
Student 54	Control	7	0	1	1		0	1	1		0	1	1	
Student 55	Control	4	1	0	-1		0	1	1		0	0	0	
Student 56	Control	7	0	1	1		0	1	1		0	0	0	
Student 57	Control	7	0	0	0		1	0	-1		0	0	0	
Student 58	Control	4	1	1	0		1	1	0		1	0	-1	
Student 59	Control	7	1	1	0		0	0	0		1	0	-1	
Student 60	Control	7	1	1	0		1	0	-1		1	1	0	
Student 61	Control	4	0	0	0		0	0	0		0	0	0	
Student 62	Control	7	0	1	1		0	1	1		0	1	1	
Student 63	Control	4	0	1	1		0	1	1		0	0	0	
Student 64	Control	7	1	1	0		1	1	0		1	0	-1	
Student 65	Control	4	1	1	0		1	1	0		0	1	1	
Student 66	Control	4	0	0	0		0	1	1		0	1	1	
Student 67	Control	7	1	1	0		0	1	1		1	1	0	
Student 68	Control	4	1	0	-1		1	0	-1		0	0	0	
Student 69	Control	7	0	1	1		1	1	0		1	1	0	
Student 70	Control	4	1	1	0		0	1	1		1	1	0	
Student 71	Control	7	0	1	1		0	1	1		0	0	0	
Student 72	Control	4	1	1	0		1	1	0		0	1	1	
Student 73	Control	4	0	0	0		0	0	0		0	0	0	
Student 74	Control	7	1	1	0		1	1	0		0	1	1	
Student 75	Control	7	0	1	1		1	1	0		1	1	0	
Student 76	Control	7	0	1	1		0	1	1		0	0	0	
Student 77	Control	4	1	1	0		0	1	1		1	1	0	
Student 78	Control	4	0	1	1		0	0	0		0	0	0	

Student Name	Condition	Period	Pre 27841 - 27908	Post 27841 - 27908	27841 - 27908 Gain	27841 Table 3	Pre 27828-27904	Post 27828-27904	27828 - 27904 Gain	27828 Stem and Leaf	Pre 27840 - 27907	Post 27840 - 27907	27840 - 27907 Gain	27840 Table 2
Student 79	Control	7	1	1	0		0	1	1		0	1	1	
Student 80	Control	7	0	1	1		0	1	1		0	0	0	
Student 81	Control	4	1	0	-1		1	0	-1		1	1	0	
Average (All)					21%				28%				11%	
Average (Mastery)					21%				33%				5%	
Average (Control)					21%				24%				17%	
P-Value					0.9499				0.5303				0.4313	
Standard Deviation (All)					0.6465				0.6752				0.6519	
Standard Deviation (Mastery)					0.6951				0.7009				0.6863	
Standard Deviation (Control)					0.6063				0.6555				0.6214	
EFFECT SIZE					-0.0151				0.1453				-0.1857	

8.1.3 Part Three

Student Name	Condition	Period	Pre 27827 - 27903	Post 27827 - 27903	27827 - 27903 Gain	27827 Circle Graph	Pre 27829 - 27905	Post 27829 - 27905	27829 - 27905 Gain	27829 Chart	Pre 27831 - 27906	Post 27831 - 27906	27831 - 27906 Gain	27831 Table 1
Student 1	Mastery	6	0	0	0	20%	0	1	1	50%	0	0	0	42%
Student 2	Mastery	5	0	1	1	24%	1	1	0	80%	0	1	1	100%
Student 3	Mastery	5	0	1	1	100%	1	1	0	60%	0	1	1	100%
Student 4	Mastery	6	0	0	0	75%	1	1	0	100%	1	1	0	100%
Student 5	Mastery	5	0	1	1	37%	1	1	0	75%	0	1	1	100%
Student 6	Mastery	6	1	0	-1	100%	1	1	0	100%	0	1	1	66%
Student 7	Mastery	5	0	1	1	62%	1	1	0	100%	1	1	0	100%
Student 8	Mastery	5	0	1	1	15%	1	1	0	100%	0	1	1	75%
Student 9	Mastery	6	0	1	1	46%	1	1	0	100%	1	1	0	100%
Student 10	Mastery	6	0	0	0	37%	1	1	0	100%	1	1	0	60%
Student 11	Mastery	5	0	1	1	100%	1	1	0	66%	1	1	0	100%
Student 12	Mastery	6	1	1	0	57%	1	1	0	100%	0	1	1	100%
Student 13	Mastery	5	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 14	Mastery	6	0	0	0	50%	1	1	0	71%	1	1	0	100%
Student 15	Mastery	5	0	1	1	100%	1	0	-1	100%	1	1	0	100%
Student 16	Mastery	5	0	0	0	60%	1	1	0	100%	0	1	1	100%
Student 17	Mastery	5	0	0	0	62%	0	1	1	75%	0	1	1	100%
Student 18	Mastery	6	0	1	1	100%	1	1	0	100%	0	1	1	100%

Student Name	Condition	Period	Pre 27827 - 27903	Post 27827 - 27903	27827 - 27903 Gain	27827 Circle Graph	Pre 27829 - 27905	Post 27829 - 27905	27829 - 27905 Gain	27829 Chart	Pre 27831 - 27906	Post 27831 - 27906	27831 - 27906 Gain	27831 Table 1
Student 19	Mastery	6	1	0	-1	80%	1	1	0	100%	0	1	1	60%
Student 20	Mastery	5	0	1	1	100%	1	1	0	100%	0	1	1	100%
Student 21	Mastery	6	0	1	1	27%	0	1	1	66%	0	1	1	75%
Student 22	Mastery	6	1	1	0	100%	1	1	0	70%	1	1	0	100%
Student 23	Mastery	6	0	1	1	50%	0	1	1	100%	0	0	0	100%
Student 24	Mastery	6	0	0	0	53%	1	1	0	75%	0	1	1	75%
Student 25	Mastery	6	0	1	1	6%	0	0	0	0%	0	1	1	
Student 26	Mastery	6	1	1	0	50%	1	1	0	100%	1	1	0	100%
Student 27	Mastery	5	0	0	0	26%	1	1	0	60%	0	0	0	40%
Student 28	Mastery	5	0	1	1	100%	1	1	0	100%	0	0	0	75%
Student 29	Mastery	6	0	1	1	35%	0	1	1	100%	0	1	1	100%
Student 30	Mastery	6	0	1	1	30%	1	1	0	100%	0	1	1	60%
Student 31	Mastery	5	1	1	0	54%	1	1	0	100%	1	1	0	100%
Student 32	Mastery	6	0	1	1	75%	1	1	0	100%	0	1	1	100%
Student 33	Mastery	6	1	1	0	80%	1	1	0	80%	0	0	0	100%
Student 34	Mastery	5	1	0	-1	100%	1	1	0	100%	1	1	0	100%
Student 35	Mastery	5	1	0	-1	100%	1	1	0	100%	1	0	-1	80%
Student 36	Mastery	5	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 37	Mastery	5	0	1	1	54%	1	1	0	100%	0	1	1	100%
Student 38	Mastery	5	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 39	Mastery	6	0	1	1	100%	1	1	0	100%	1	1	0	66%
Student 40	Control	7	1	1	0		1	1	0		1	1	0	
Student 41	Control	7	1	1	0		1	1	0		0	1	1	
Student 42	Control	7	0	1	1		1	1	0		1	1	0	
Student 43	Control	4	0	0	0		0	0	0		1	0	-1	
Student 44	Control	7	1	1	0		1	1	0		1	1	0	
Student 45	Control	4	0	0	0		0	1	1		1	1	0	
Student 46	Control	4	0	1	1		1	0	-1		1	1	0	
Student 47	Control	7	1	0	-1		1	1	0		1	1	0	
Student 48	Control	7	1	1	0		1	1	0		0	1	1	
Student 49	Control	7	1	1	0		1	1	0		0	0	0	
Student 50	Control	4	1	1	0		1	1	0		1	1	0	
Student 51	Control	7	1	1	0		1	1	0		1	1	0	
Student 52	Control	7	0	1	1		1	1	0		0	0	0	
Student 53	Control	7	0	0	0		1	0	-1		1	0	-1	
Student 54	Control	7	0	1	1		1	1	0		1	1	0	
Student 55	Control	4	0	1	1		1	1	0		0	1	1	
Student 56	Control	7	1	0	-1		0	0	0		0	0	0	
Student 57	Control	7	1	1	0		1	1	0		1	1	0	
Student 58	Control	4	0	0	0		1	1	0		0	1	1	

Student Name	Condition	Period	Pre 27827 - 27903	Post 27827 - 27903	27827 - 27903 Gain	27827 Circle Graph	Pre 27829 - 27905	Post 27829 - 27905	27829 - 27905 Gain	27829 Chart	Pre 27831 - 27906	Post 27831 - 27906	27831 - 27906 Gain	27831 Table 1
Student 59	Control	7	0	1	1		1	1	0		1	0	-1	
Student 60	Control	7	1	1	0		1	1	0		1	1	0	
Student 61	Control	4	0	0	0		0	0	0		0	0	0	
Student 62	Control	7	0	1	1		1	0	-1		0	1	1	
Student 63	Control	4	0	0	0		0	0	0		0	1	1	
Student 64	Control	7	0	1	1		1	1	0		1	1	0	
Student 65	Control	4	0	0	0		0	1	1		1	1	0	
Student 66	Control	4	0	1	1		1	1	0		1	1	0	
Student 67	Control	7	0	1	1		1	1	0		1	0	-1	
Student 68	Control	4	0	1	1		1	1	0		1	1	0	
Student 69	Control	7	1	0	-1		1	1	0		1	1	0	
Student 70	Control	4	0	0	0		1	0	-1		1	1	0	
Student 71	Control	7	0	0	0		1	1	0		0	1	1	
Student 72	Control	4	0	1	1		1	1	0		0	1	1	
Student 73	Control	4	0	0	0		0	1	1		0	1	1	
Student 74	Control	7	1	1	0		1	1	0		1	0	-1	
Student 75	Control	7	0	1	1		1	1	0		1	1	0	
Student 76	Control	7	0	1	1		1	0	-1		1	1	0	
Student 77	Control	4	0	1	1		1	1	0		1	0	-1	
Student 78	Control	4	0	0	0		0	1	1		0	1	1	
Student 79	Control	7	0	1	1		0	1	1		1	1	0	
Student 80	Control	7	0	1	1		1	1	0		0	0	0	
Student 81	Control	4	1	1	0		1	1	0		1	1	0	
Average (All)					40%				5%				26%	
Average (Mastery)					46%				10%				44%	
Average (Control)					33%				0%				10%	
P-Value					0.3773				0.2980				0.0105	
Standard Deviation (All)					0.6457				0.4444				0.6078	
Standard Deviation (Mastery)					0.6823				0.3835				0.5523	
Standard Deviation (Control)					0.6115				0.4939				0.6172	
EFFECT SIZE					0.2096				0.2077				0.5519	

8.1.4 Part Four

Student Name	Condition	Period	Pre 27832 - 36639	Post 27832 - 36639	27832 - 36639 Gain	27832 Histogram	Pre 27830 - 36638	Post 27830 - 36638	27830 - 36638 Gain	27830 Scatterplot	Pre 27833 - 27833	Post 27833 - 27833	27833 - 27833 Gain	27833 Box and Whisker
Student 1	Mastery	6	0	1	1	42%	0	0	0	66%	0	0	0	100%
Student 2	Mastery	5	1	0	-1	50%	1	1	0	100%	0	1	1	80%
Student 3	Mastery	5	0	1	1	100%	1	1	0	100%	0	1	1	66%
Student 4	Mastery	6	1	1	0	23%	1	0	-1	60%	1	1	0	66%
Student 5	Mastery	5	1	1	0	50%	0	0	0	33%	0	1	1	100%
Student 6	Mastery	6	1	1	0	100%	1	1	0	100%	0	1	1	100%
Student 7	Mastery	5	1	1	0	100%	1	0	-1	75%	0	1	1	100%
Student 8	Mastery	5	0	0	0	18%	1	1	0	100%	0	1	1	100%
Student 9	Mastery	6	0	1	1	100%	0	1	1	100%	1	1	0	100%
Student 10	Mastery	6	1	1	0	100%	1	1	0	60%	1	0	-1	33%
Student 11	Mastery	5	0	1	1	50%	0	1	1	100%	0	1	1	100%
Student 12	Mastery	6	0	1	1	100%	1	1	0	100%	0	1	1	80%
Student 13	Mastery	5	0	0	0	100%	1	1	0	100%	1	1	0	100%
Student 14	Mastery	6	1	1	0	100%	1	1	0	100%	0	1	1	57%
Student 15	Mastery	5	1	1	0	100%	0	1	1	100%	0	1	1	100%
Student 16	Mastery	5	0	1	1	100%	1	1	0	100%	0	1	1	75%
Student 17	Mastery	5	0	1	1	50%	0	1	1	75%	0	1	1	100%
Student 18	Mastery	6	0	1	1	50%	0	1	1	100%	0	1	1	100%
Student 19	Mastery	6	1	1	0	50%	1	1	0	100%	1	1	0	75%
Student 20	Mastery	5	0	1	1	75%	1	1	0	75%	0	1	1	60%
Student 21	Mastery	6	1	1	0	75%	1	1	0	100%	0	1	1	100%
Student 22	Mastery	6	1	0	-1	100%	1	1	0	100%	1	1	0	100%
Student 23	Mastery	6	1	1	0	75%	1	0	-1	100%	0	0	0	100%
Student 24	Mastery	6	0	0	0	57%	0	1	1	100%	1	1	0	66%
Student 25	Mastery	6	0	0	0	42%	0	1	1	50%	0	1	1	50%
Student 26	Mastery	6	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 27	Mastery	5	0	1	1	61%	0	1	1	100%	0	1	1	100%
Student 28	Mastery	5	0	1	1	100%	0	1	1	80%	0	1	1	80%
Student 29	Mastery	6	0	1	1	100%	0	1	1	100%	0	1	1	60%
Student 30	Mastery	6	0	1	1	62%	0	1	1	100%	0	1	1	100%
Student 31	Mastery	5	1	1	0	60%	1	0	-1	100%	1	1	0	60%
Student 32	Mastery	6	0	0	0	100%	1	1	0	100%	1	1	0	100%
Student 33	Mastery	6	1	1	0	100%	1	1	0	80%	0	1	1	80%
Student 34	Mastery	5	1	1	0	75%	1	1	0	100%	0	1	1	100%
Student 35	Mastery	5	1	1	0	100%	1	1	0	100%	0	1	1	100%
Student 36	Mastery	5	1	1	0	50%	1	1	0	75%	1	1	0	100%
Student 37	Mastery	5	1	1	0	66%	1	1	0	100%	1	1	0	100%
Student 38	Mastery	5	1	1	0	100%	1	1	0	100%	0	1	1	100%

Student Name	Condition	Period	Pre 27832 - 36639	Post 27832 - 36639	27832 - 36639 Gain	27832 Histogram	Pre 27830 - 36638	Post 27830 - 36638	27830 - 36638 Gain	27830 Scatterplot	Pre 27833 - 27833	Post 27833 - 27833	27833 - 27833 Gain	27833 Box and Whisker
Student 39	Mastery	6	1	1	0	75%	0	1	1	100%	1	1	0	100%
Student 40	Control	7	1	1	0		1	1	0		1	1	0	
Student 41	Control	7	0	1	1		0	0	0		1	1	0	
Student 42	Control	7	0	0	0		0	1	1		1	1	0	
Student 43	Control	4	1	0	-1		0	0	0		0	1	1	
Student 44	Control	7	1	1	0		0	1	1		1	1	0	
Student 45	Control	4	0	0	0		0	1	1		0	1	1	
Student 46	Control	4	0	0	0		1	1	0		0	1	1	
Student 47	Control	7	1	1	0		1	1	0		1	1	0	
Student 48	Control	7	0	1	1		1	1	0		1	1	0	
Student 49	Control	7	1	1	0		0	1	1		0	1	1	
Student 50	Control	4	1	0	-1		1	1	0		1	1	0	
Student 51	Control	7	1	0	-1		1	1	0		0	1	1	
Student 52	Control	7	0	1	1		1	1	0		1	1	0	
Student 53	Control	7	1	0	-1		1	1	0		1	1	0	
Student 54	Control	7	0	1	1		1	1	0		1	1	0	
Student 55	Control	4	0	0	0		1	1	0		0	1	1	
Student 56	Control	7	0	0	0		0	0	0		1	0	-1	
Student 57	Control	7	0	1	1		1	1	0		0	1	1	
Student 58	Control	4	0	0	0		1	0	-1		0	1	1	
Student 59	Control	7	0	1	1		1	1	0		0	0	0	
Student 60	Control	7	1	1	0		1	1	0		0	1	1	
Student 61	Control	4	0	0	0		0	0	0		0	0	0	
Student 62	Control	7	1	0	-1		1	1	0		0	1	1	
Student 63	Control	4	0	0	0		0	0	0		0	0	0	
Student 64	Control	7	0	1	1		1	1	0		0	1	1	
Student 65	Control	4	1	1	0		1	1	0		0	1	1	
Student 66	Control	4	0	1	1		0	1	1		1	0	-1	
Student 67	Control	7	1	1	0		1	1	0		1	1	0	
Student 68	Control	4	1	1	0		1	0	-1		0	1	1	
Student 69	Control	7	1	0	-1		1	1	0		1	1	0	
Student 70	Control	4	1	1	0		1	1	0		1	1	0	
Student 71	Control	7	0	0	0		0	0	0		0	1	1	
Student 72	Control	4	1	1	0		0	1	1		0	1	1	
Student 73	Control	4	0	0	0		0	1	1		0	0	0	
Student 74	Control	7	0	1	1		0	1	1		1	1	0	
Student 75	Control	7	1	1	0		1	1	0		1	1	0	
Student 76	Control	7	1	1	0		1	1	0		0	1	1	
Student 77	Control	4	1	1	0		1	1	0		1	1	0	
Student 78	Control	4	0	0	0		1	1	0		1	0	-1	

Student Name	Condition	Period	Pre 27832 - 36639	Post 27832 - 36639	27832 - 36639 Gain	27832 Histogram	Pre 27830 - 36638	Post 27830 - 36638	27830 - 36638 Gain	27830 Scatterplot	Pre 27833 - 27833	Post 27833 - 27833	27833 - 27833 Gain	27833 Box and Whisker
Student 79	Control	7	0	1	1		0	1	1		0	0	0	
Student 80	Control	7	0	0	0		1	1	0		1	1	0	
Student 81	Control	4	1	0	-1		1	1	0		1	1	0	
Average (All)					17%				19%				44%	
Average (Mastery)					28%				21%				59%	
Average (Control)					7%				17%				31%	
P-Value					0.1182				0.7575				0.0317	
Standard Deviation (All)					0.6081				0.5503				0.5916	
Standard Deviation (Mastery)					0.5595				0.6147				0.5486	
Standard Deviation (Control)					0.6398				0.4897				0.6044	
EFFECT SIZE					0.3292				0.0785				0.4636	

8.2 Experiment Two Table

8.2.1 Part One

Student Name	Condition	Period	PreTest	PostTest	Gain	Pre 28779-37013	Post 28779-37013	Gain 28779-37013	28779 - Proportions
Student 1	Mastery	6	38%	46%	8%	1	1	0	30%
Student 2	Mastery	5	38%	61%	23%	1	1	0	75%
Student 3	Mastery	5	61%	92%	31%	1	1	0	100%
Student 4	Mastery	6	46%	38%	-8%	1	0	-1	100%
Student 5	Mastery	5	53%	61%	8%	1	1	0	34%
Student 6	Mastery	6	84%	84%	0%	1	1	0	100%
Student 7	Mastery	5	53%	84%	31%	1	1	0	75%
Student 8	Mastery	5	61%	69%	8%	0	1	1	40%
Student 9	Mastery	6	53%	61%	8%	1	1	0	100%
Student 10	Mastery	6	46%	53%	7%	0	1	1	30%
Student 11	Mastery	5	92%	92%	0%	1	1	0	100%
Student 12	Mastery	6	69%	84%	15%	1	1	0	100%
Student 13	Mastery	5	84%	100%	16%	1	1	0	100%
Student 14	Mastery	6	76%	92%	16%	1	1	0	100%
Student 15	Mastery	5	76%	92%	16%	1	1	0	40%

Student Name	Condition	Period	PreTest	PostTest	Gain	Pre 28779-37013	Post 28779-37013	Gain 28779-37013	28779 - Proportions
Student 16	Mastery	5	61%	84%	23%	1	1	0	100%
Student 17	Mastery	5	61%	92%	31%	1	1	0	100%
Student 18	Mastery	6	30%	84%	54%	1	1	0	100%
Student 19	Mastery	6	69%	100%	31%	1	1	0	100%
Student 20	Mastery	5	69%	92%	23%	1	1	0	100%
Student 21	Mastery	6	61%	76%	15%	1	1	0	100%
Student 22	Mastery	6	84%	100%	16%	1	1	0	100%
Student 23	Mastery	6	38%	46%	8%	1	0	-1	
Student 24	Mastery	6	46%	61%	15%	1	1	0	42%
Student 25	Mastery	6	30%	30%	0%	0	0	0	21%
Student 26	Mastery	6	69%	84%	15%	1	1	0	100%
Student 27	Mastery	5	61%	84%	23%	1	1	0	100%
Student 28	Mastery	5	46%	100%	54%	0	1	1	100%
Student 29	Mastery	6	38%	76%	38%	1	1	0	100%
Student 30	Mastery	6	15%	46%	31%	0	1	1	40%
Student 31	Mastery	5	92%	100%	8%	1	1	0	100%
Student 32	Mastery	6	46%	84%	38%	1	1	0	60%
Student 33	Mastery	6	76%	84%	8%	1	1	0	100%
Student 34	Mastery	5	61%	92%	31%	0	1	1	100%
Student 35	Mastery	5	38%	61%	23%	1	1	0	100%
Student 36	Mastery	5	69%	84%	15%	1	1	0	58%
Student 37	Mastery	5	84%	100%	16%	1	1	0	100%
Student 38	Mastery	5	53%	84%	31%	0	1	1	100%
Student 39	Mastery	5	69%	76%	7%	1	1	0	100%
Student 40	Mastery	6	61%	92%	31%	0	1	1	42%
Student 41	Control	4	38%	53%	15%	1	0	-1	
Student 42	Control	4	53%	92%	39%	1	1	0	
Student 43	Control	4	38%	76%	38%	1	1	0	
Student 44	Control	4	76%	84%	8%	1	1	0	
Student 45	Control	4	61%	92%	31%	1	1	0	
Student 46	Control	4	46%	69%	23%	1	1	0	
Student 47	Control	4	15%	46%	31%	0	0	0	
Student 48	Control	4	38%	69%	31%	1	1	0	
Student 49	Control	4	46%	92%	46%	1	1	0	
Student 50	Control	4	84%	76%	-8%	1	1	0	
Student 51	Control	4	61%	92%	31%	1	1	0	
Student 52	Control	4	23%	30%	7%	1	0	-1	
Student 53	Control	4	69%	84%	15%	1	1	0	
Student 54	Control	4	23%	38%	15%	0	1	1	
Student 55	Control	4	92%	100%	8%	1	1	0	

Student Name	Condition	Period	PreTest	PostTest	Gain	Pre 28779-37013	Post 28779-37013	Gain 28779-37013	28779 - Proportions
Student 56	Control	7	84%	100%	16%	0	1	1	
Student 57	Control	7	53%	84%	31%	1	0	-1	
Student 58	Control	7	69%	69%	0%	1	0	-1	
Student 59	Control	7	92%	100%	8%	1	1	0	
Student 60	Control	7	69%	76%	7%	0	1	1	
Student 61	Control	7	76%	100%	24%	1	1	0	
Student 62	Control	7	92%	100%	8%	1	1	0	
Student 63	Control	7	53%	76%	23%	1	1	0	
Student 64	Control	7	46%	69%	23%	1	0	-1	
Student 65	Control	7	61%	100%	39%	1	1	0	
Student 66	Control	7	30%	76%	46%	1	0	-1	
Student 67	Control	7	46%	69%	23%	0	1	1	
Student 68	Control	7	69%	69%	0%	1	1	0	
Student 69	Control	7	76%	84%	8%	1	1	0	
Student 70	Control	7	69%	84%	15%	1	1	0	
Student 71	Control	7	69%	84%	15%	1	1	0	
Student 72	Control	7	84%	69%	-15%	1	1	0	
Student 73	Control	7	76%	76%	0%	1	1	0	
Student 74	Control	7	92%	92%	0%	1	1	0	
Student 75	Control	7	61%	84%	23%	1	1	0	
Student 76	Control	7	76%	84%	8%	1	1	0	
Student 77	Control	7	46%	76%	30%	1	1	0	
Student 78	Control	7	38%	61%	23%	0	1	1	
Averages (All)			0.5958	0.7815	0.1858			0.0513	
Averages (Mastery)			0.5893	0.7803	0.1910			0.1250	
Averages (Control)			0.6026	0.7829	0.1803			-0.0263	
P Value			0.7652	0.9483	0.7409			0.1915	
Standard Deviation (All)			0.1952	0.1788	0.1418			0.5070	
Standard Deviation (Mastery)			0.1825	0.1895	0.1384			0.4634	
Standard Deviation (Control)			0.2100	0.1693	0.1468			0.5446	
EFFECT SIZE					0.0731			0.2778	

8.2.2 Part Two

Student Name	Condition	Period	Pre 28768-36895 MP:1	Pre 28768-36895 MP:2	Post 36895-28768 MP:1	Post 36895-28768 MP:2	Gain 36895-28768 MP:1	Gain 36895-28768 MP:2	28768 - Solve for x - 1	28768 - Solve for x - 2
Student 1	Mastery	6	0	0	0	0	0	0	30%	44%
Student 2	Mastery	5	1	0	0	0	-1	0	100%	50%
Student 3	Mastery	5	0	0	1	1	1	1	100%	37%
Student 4	Mastery	6	1	0	1	0	0	0	100%	4%
Student 5	Mastery	5	1	0	1	0	0	0	41%	0%
Student 6	Mastery	6	1	1	1	1	0	0	100%	50%
Student 7	Mastery	5	0	0	1	0	1	0	33%	50%
Student 8	Mastery	5	1	0	1	0	0	0	66%	0%
Student 9	Mastery	6	1	0	1	0	0	0	100%	100%
Student 10	Mastery	6	0	0	1	0	1	0	25%	75%
Student 11	Mastery	5	1	1	1	1	0	0	60%	75%
Student 12	Mastery	6	1	0	1	1	0	1	100%	60%
Student 13	Mastery	5	1	1	1	1	0	0	100%	100%
Student 14	Mastery	6	1	0	1	1	0	1	100%	41%
Student 15	Mastery	5	1	1	1	1	0	0	100%	100%
Student 16	Mastery	5	1	0	1	0	0	0	60%	60%
Student 17	Mastery	5	0	1	1	1	1	0	50%	100%
Student 18	Mastery	6	0	1	1	1	1	0	75%	100%
Student 19	Mastery	6	1	0	1	1	0	1	44%	44%
Student 20	Mastery	5	1	0	1	1	0	1	100%	40%
Student 21	Mastery	6	1	0	0	1	-1	1	33%	100%
Student 22	Mastery	6	1	1	1	1	0	0	100%	50%
Student 23	Mastery	6	0	1	1	0	1	-1	42%	40%
Student 24	Mastery	6	1	0	1	0	0	0	20%	34%
Student 25	Mastery	6	1	0	0	0	-1	0		7%
Student 26	Mastery	6	1	0	1	0	0	0	100%	33%
Student 27	Mastery	5	1	1	1	1	0	0	100%	50%
Student 28	Mastery	5	1	0	1	1	0	1	75%	42%
Student 29	Mastery	6	0	0	1	1	1	1	100%	11%
Student 30	Mastery	6	0	0	1	0	1	0	28%	16%
Student 31	Mastery	5	1	1	1	1	0	0	100%	60%
Student 32	Mastery	6	1	0	1	0	0	0	60%	50%
Student 33	Mastery	6	1	1	1	1	0	0	100%	100%
Student 34	Mastery	5	1	0	1	1	0	1	100%	100%
Student 35	Mastery	5	1	0	1	0	0	0	28%	60%
Student 36	Mastery	5	1	1	1	1	0	0	66%	37%
Student 37	Mastery	5	1	1	1	1	0	0	75%	100%
Student 38	Mastery	5	1	0	1	0	0	0	44%	100%

Student Name	Condition	Period	Pre 28768-36895 MP:1	Pre 28768-36895 MP:2	Post 36895-28768 MP:1	Post 36895-28768 MP:2	Gain 36895-28768 MP:1	Gain 36895-28768 MP:2	28768 - Solve for x - 1	28768 - Solve for x - 2
Student 39	Mastery	5	1	0	1	0	0	0	20%	100%
Student 40	Mastery	6	1	0	1	1	0	1	75%	25%
Student 41	Control	4	1	0	1	0	0	0		
Student 42	Control	4	1	1	1	1	0	0		
Student 43	Control	4	0	0	1	0	1	0		
Student 44	Control	4	1	0	1	0	0	0		
Student 45	Control	4	1	0	1	0	0	0		
Student 46	Control	4	1	0	1	1	0	1		
Student 47	Control	4	0	0	1	0	1	0		
Student 48	Control	4	0	0	0	0	0	0		
Student 49	Control	4	0	0	1	1	1	1		
Student 50	Control	4	1	1	1	1	0	0		
Student 51	Control	4	1	1	1	1	0	0		
Student 52	Control	4	0	0	0	0	0	0		
Student 53	Control	4	0	1	1	0	1	-1		
Student 54	Control	4	0	0	0	0	0	0		
Student 55	Control	4	1	1	1	1	0	0		
Student 56	Control	7	1	1	1	1	0	0		
Student 57	Control	7	1	0	1	0	0	0		
Student 58	Control	7	1	0	1	0	0	0		
Student 59	Control	7	1	1	1	1	0	0		
Student 60	Control	7	1	0	1	0	0	0		
Student 61	Control	7	1	1	1	1	0	0		
Student 62	Control	7	1	1	1	1	0	0		
Student 63	Control	7	1	0	1	1	0	1		
Student 64	Control	7	1	0	1	1	0	1		
Student 65	Control	7	1	0	1	1	0	1		
Student 66	Control	7	0	0	0	1	0	1		
Student 67	Control	7	1	0	1	1	0	1		
Student 68	Control	7	1	0	1	0	0	0		
Student 69	Control	7	1	1	1	1	0	0		
Student 70	Control	7	0	0	1	0	1	0		
Student 71	Control	7	1	0	1	0	0	0		
Student 72	Control	7	1	1	1	0	0	-1		
Student 73	Control	7	1	1	1	0	0	-1		
Student 74	Control	7	1	1	1	0	0	-1		
Student 75	Control	7	1	1	1	0	0	-1		
Student 76	Control	7	1	1	1	0	0	-1		
Student 77	Control	7	1	1	1	1	0	0		
Student 78	Control	7	1	0	1	0	0	0		

Student Name	Condition	Period	Pre 28768-36895 MP:1	Pre 28768-36895 MP:2	Post 36895-28768 MP:1	Post 36895-28768 MP:2	Gain 36895-28768 MP:1	Gain 36895-28768 MP:2	28768 - Solve for x - 1	28768 - Solve for x - 2
Averages (All)							0.1282	0.1282		
Averages (Mastery)							0.1250	0.2250		
Averages (Control)							0.1316	0.0263		
P Value							0.9470	0.1089		
Standard Deviation (All)							0.4372	0.5432		
Standard Deviation (Mastery)							0.5158	0.4797		
Standard Deviation (Control)							0.3426	0.5921		
EFFECT SIZE							-0.0192	0.3355		

8.2.3 Part Three

Student Name	Condition	Period	Pre 28774-34886 MP:1	Pre 28774-34886 MP:2	Post 28774-34886 MP:1	Post 28774-34886 MP:2	Gain 28774-34886 MP:1	Gain 28774-34886 MP:2	28774 - Substitution and Manipulation - 1	28774 - Substitution and Manipulation - 2	Pre 28769-36941	Post 28769-36941	Gain 28769-36941	28769 - Solve for x
Student 1	Mastery	6	0	1	1	0	1	-1	33%	50%	0	0	0	100%
Student 2	Mastery	5	0	0	1	1	1	1	75%	40%	0	0	0	31%
Student 3	Mastery	5	1	0	1	1	0	1	100%	60%	0	0	0	66%
Student 4	Mastery	6	0	0	0	0	0	0	100%	0%	0	0	0	16%
Student 5	Mastery	5	1	0	1	1	0	1	100%	100%	0	1	1	0%
Student 6	Mastery	6	1	1	1	1	0	0	100%	100%	1	1	0	60%
Student 7	Mastery	5	0	1	1	1	1	0	100%	100%	0	1	1	100%
Student 8	Mastery	5	1	0	0	1	-1	1	100%	33%	1	1	0	33%
Student 9	Mastery	6	0	0	0	0	0	0	75%	100%	0	0	0	100%
Student 10	Mastery	6	1	0	0	1	-1	1	100%	30%	0	0	0	8%
Student 11	Mastery	5	1	1	1	1	0	0	100%	100%	0	1	1	100%
Student 12	Mastery	6	1	1	1	1	0	0	100%	100%	0	1	1	75%
Student 13	Mastery	5	1	1	1	1	0	0	100%	75%	0	1	1	75%
Student 14	Mastery	6	1	1	1	1	0	0	100%	40%	1	1	0	60%
Student 15	Mastery	5	0	1	1	1	1	0	100%	27%	0	1	1	27%
Student 16	Mastery	5	1	0	1	1	0	1	100%	26%	0	0	0	75%
Student 17	Mastery	5	0	0	1	1	1	1	100%	100%	1	1	0	100%
Student 18	Mastery	6	0	0	1	1	1	1	100%	100%	0	1	1	100%
Student 19	Mastery	6	1	1	1	1	0	0	100%	62%	0	1	1	41%
Student 20	Mastery	5	1	1	1	1	0	0	100%	50%	0	0	0	100%

Student Name	Condition	Period	Pre 28774-34886 MP:1	Pre 28774-34886 MP:2	Post 28774-34886 MP:1	Post 28774-34886 MP:2	Gain 28774-34886 MP:1	Gain 28774-34886 MP:2	28774 - Substitution and Manipulation - 1	28774 - Substitution and Manipulation - 2	Pre 28769-36941	Post 28769-36941	Gain 28769-36941	28769 - Solve for x
Student 21	Mastery	6	1	0	1	0	0	0	100%	100%	0	1	1	100%
Student 22	Mastery	6	0	1	1	1	1	0	100%	75%	0	1	1	100%
Student 23	Mastery	6	0	1	1	1	1	0	100%	60%	0	0	0	75%
Student 24	Mastery	6	1	0	1	0	0	0	100%	100%	0	0	0	43%
Student 25	Mastery	6	0	0	1	0	1	0			0	0	0	
Student 26	Mastery	6	1	1	1	1	0	0	100%	100%	1	0	-1	100%
Student 27	Mastery	5	1	0	1	1	0	1	100%	100%	0	0	0	50%
Student 28	Mastery	5	1	1	1	1	0	0	100%	100%	0	1	1	100%
Student 29	Mastery	6	1	1	1	1	0	0	75%	40%	0	0	0	60%
Student 30	Mastery	6	0	0	1	0	1	0	33%	30%	0	0	0	0%
Student 31	Mastery	5	1	1	1	1	0	0	100%	100%	1	1	0	75%
Student 32	Mastery	6	0	0	1	1	1	1	100%	100%	0	1	1	60%
Student 33	Mastery	6	1	0	1	0	0	0	100%	100%	1	1	0	100%
Student 34	Mastery	5	1	1	0	1	-1	0	100%	75%	0	1	1	100%
Student 35	Mastery	5	0	0	1	0	1	0	100%	50%	0	0	0	55%
Student 36	Mastery	5	0	1	1	1	1	0	100%	100%	0	0	0	57%
Student 37	Mastery	5	1	1	1	1	0	0	60%	100%	1	1	0	75%
Student 38	Mastery	5	0	1	1	1	1	0	100%	100%	0	1	1	40%
Student 39	Mastery	5	1	0	1	0	0	0	100%	40%	0	0	0	50%
Student 40	Mastery	6	1	1	1	1	0	0	100%	46%	0	1	1	100%
Student 41	Control	4	0	0	1	1	1	1			0	0	0	
Student 42	Control	4	0	1	0	1	0	0			1	1	0	
Student 43	Control	4	1	0	1	1	0	1			0	0	0	
Student 44	Control	4	1	1	1	1	0	0			0	1	1	
Student 45	Control	4	0	1	1	1	1	0			0	1	1	
Student 46	Control	4	1	0	1	1	0	1			1	1	0	
Student 47	Control	4	0	0	1	1	1	1			0	0	0	
Student 48	Control	4	0	0	1	1	1	1			0	0	0	
Student 49	Control	4	1	0	1	0	0	0			0	1	1	
Student 50	Control	4	1	1	1	1	0	0			0	0	0	
Student 51	Control	4	1	1	0	1	-1	0			0	1	1	
Student 52	Control	4	0	0	0	0	0	0			0	0	0	
Student 53	Control	4	1	0	1	1	0	1			0	1	1	
Student 54	Control	4	0	0	0	0	0	0			0	0	0	
Student 55	Control	4	1	1	1	1	0	0			1	1	0	
Student 56	Control	7	1	1	1	1	0	0			1	1	0	
Student 57	Control	7	1	1	1	1	0	0			0	1	1	
Student 58	Control	7	1	1	1	0	0	-1			0	1	1	
Student 59	Control	7	1	1	1	1	0	0			1	1	0	

Student Name	Condition	Period	Pre 28774-34886 MP:1	Pre 28774-34886 MP:2	Post 28774-34886 MP:1	Post 28774-34886 MP:2	Gain 28774-34886 MP:1	Gain 28774-34886 MP:2	28774 - Substitution and Manipulation - 1	28774 - Substitution and Manipulation - 2	Pre 28769-36941	Post 28769-36941	Gain 28769-36941	28769 - Solve for x
Student 60	Control	7	1	1	1	1	0	0			0	1	1	
Student 61	Control	7	1	1	1	1	0	0			0	1	1	
Student 62	Control	7	1	1	1	1	0	0			0	1	1	
Student 63	Control	7	1	1	1	1	0	0			0	1	1	
Student 64	Control	7	0	0	1	1	1	1			0	1	1	
Student 65	Control	7	0	0	1	1	1	1			0	1	1	
Student 66	Control	7	0	0	1	0	1	0			1	1	0	
Student 67	Control	7	1	0	0	1	-1	1			0	0	0	
Student 68	Control	7	1	1	1	1	0	0			0	0	0	
Student 69	Control	7	1	1	0	1	-1	0			0	1	1	
Student 70	Control	7	1	0	1	1	0	1			1	0	-1	
Student 71	Control	7	1	1	1	1	0	0			1	0	-1	
Student 72	Control	7	1	1	1	1	0	0			0	0	0	
Student 73	Control	7	0	1	1	1	1	0			1	0	-1	
Student 74	Control	7	1	1	1	1	0	0			1	1	0	
Student 75	Control	7	1	0	1	1	0	1			0	1	1	
Student 76	Control	7	1	1	1	1	0	0			0	0	0	
Student 77	Control	7	0	0	1	1	1	1			0	0	0	
Student 78	Control	7	1	0	1	0	0	0			0	1	1	
Averages (All)							0.2179	0.2564					0.3462	
Averages (Mastery)							0.2750	0.2250					0.3500	
Averages (Control)							0.1579	0.2895					0.3421	
P Value							0.3694	0.5695					0.9525	
Standard Deviation (All)							0.5732	0.4951					0.5772	
Standard Deviation (Mastery)							0.5986	0.4797					0.5335	
Standard Deviation (Control)							0.5466	0.5151					0.6271	
EFFECT SIZE							0.2143	-0.1252					0.0126	

8.2.4 Part Four

Student Name	Condition	Period	Pre 28770-36973	Post 28770-36973	Gain 28770-36973	28770 - Write equation from table	Pre 28778-37003	Post 28778-37003	Gain 28778-37003	28778 - Inequality solving - 1	28778 - Inequality solving - 2	28778 - Inequality solving - 3
Student 1	Mastery	6	0	1	1	42%	0	0	0	20%	15%	33%
Student 2	Mastery	5	0	1	1	100%	0	0	0	100%	100%	33%
Student 3	Mastery	5	1	1	0	75%	0	1	1	33%	40%	20%
Student 4	Mastery	6	0	0	0	0%	1	1	0	26%	100%	31%
Student 5	Mastery	5	0	0	0	0%	1	0	-1	27%	35%	40%
Student 6	Mastery	6	1	1	0	100%	1	0	-1	100%	100%	60%
Student 7	Mastery	5	1	1	0	100%	0	1	1	60%	100%	35%
Student 8	Mastery	5	1	1	0	100%	1	0	-1	22%	8%	28%
Student 9	Mastery	6	0	1	1	100%	1	0	-1	100%	66%	50%
Student 10	Mastery	6	1	0	-1	42%	1	1	0	14%	100%	100%
Student 11	Mastery	5	1	0	-1	75%	1	1	0	50%	60%	36%
Student 12	Mastery	6	1	1	0	62%	0	0	0	75%	100%	75%
Student 13	Mastery	5	1	1	0	100%	0	1	1	100%	66%	60%
Student 14	Mastery	6	0	1	1	75%	1	0	-1	40%	25%	26%
Student 15	Mastery	5	1	1	0	75%	1	1	0	50%	27%	20%
Student 16	Mastery	5	0	1	1	40%	1	1	0	12%	50%	100%
Student 17	Mastery	5	0	1	1	100%	1	0	-1	57%	100%	100%
Student 18	Mastery	6	0	1	1	50%	0	0	0	100%	40%	40%
Student 19	Mastery	6	0	1	1	66%	0	1	1	100%	100%	75%
Student 20	Mastery	5	1	1	0	60%	0	1	1	60%	100%	0%
Student 21	Mastery	6	0	1	1	40%	1	1	0	100%	100%	7%
Student 22	Mastery	6	1	1	0	100%	1	1	0	44%	100%	75%
Student 23	Mastery	6	0	0	0	100%	0	0	0	100%	0%	
Student 24	Mastery	6	0	0	0	60%	0	0	0	60%	20%	40%
Student 25	Mastery	6	0	0	0		0	0	0		20%	14%
Student 26	Mastery	6	0	1	1	100%	1	1	0	36%	100%	60%
Student 27	Mastery	5	0	0	0	100%	0	1	1	42%	24%	11%
Student 28	Mastery	5	0	1	1	60%	0	1	1	100%	100%	60%
Student 29	Mastery	6	0	1	1	36%	0	0	0	20%	100%	23%
Student 30	Mastery	6	0	0	0	0%	0	0	0	19%	25%	25%
Student 31	Mastery	5	1	1	0	75%	1	1	0	100%	100%	100%
Student 32	Mastery	6	1	1	0	50%	0	1	1	36%	40%	30%
Student 33	Mastery	6	1	1	0	75%	0	0	0	100%	100%	100%
Student 34	Mastery	5	1	1	0	100%	0	1	1	66%	100%	75%
Student 35	Mastery	5	0	1	1	45%	0	0	0	71%	30%	41%

Student Name	Condition	Period	Pre 28770-36973	Post 28770-36973	Gain 28770-36973	28770 - Write equation from table	Pre 28778-37003	Post 28778-37003	Gain 28778-37003	28778 - Inequality solving - 1	28778 - Inequality solving - 2	28778 - Inequality solving - 3
Student 36	Mastery	5	0	1	1	100%	1	0	-1	100%	60%	100%
Student 37	Mastery	5	1	1	0	100%	1	1	0	100%	100%	100%
Student 38	Mastery	5	0	0	0	100%	0	1	1	38%	35%	42%
Student 39	Mastery	5	1	1	0	100%	0	1	1	100%	100%	33%
Student 40	Mastery	6	0	1	1	100%	0	0	0	40%	100%	42%
Student 41	Control	4	0	0	0		0	1	1			
Student 42	Control	4	0	1	1		0	1	1			
Student 43	Control	4	0	1	1		0	1	1			
Student 44	Control	4	1	1	0		0	1	1			
Student 45	Control	4	0	1	1		0	1	1			
Student 46	Control	4	0	0	0		0	0	0			
Student 47	Control	4	0	0	0		0	0	0			
Student 48	Control	4	0	1	1		0	0	0			
Student 49	Control	4	1	1	0		0	1	1			
Student 50	Control	4	0	1	1		1	1	0			
Student 51	Control	4	0	1	1		0	1	1			
Student 52	Control	4	0	0	0		0	1	1			
Student 53	Control	4	1	1	0		0	1	1			
Student 54	Control	4	1	0	-1		0	1	1			
Student 55	Control	4	1	1	0		1	1	0			
Student 56	Control	7	0	1	1		1	1	0			
Student 57	Control	7	0	1	1		0	1	1			
Student 58	Control	7	0	1	1		1	1	0			
Student 59	Control	7	1	1	0		1	1	0			
Student 60	Control	7	1	0	-1		0	1	1			
Student 61	Control	7	0	1	1		1	1	0			
Student 62	Control	7	1	1	0		1	1	0			
Student 63	Control	7	1	1	0		0	0	0			
Student 64	Control	7	0	1	1		1	0	-1			
Student 65	Control	7	0	1	1		1	1	0			
Student 66	Control	7	0	1	1		0	1	1			
Student 67	Control	7	0	0	0		1	0	-1			
Student 68	Control	7	1	0	-1		0	0	0			
Student 69	Control	7	0	1	1		0	1	1			
Student 70	Control	7	1	1	0		1	1	0			
Student 71	Control	7	1	1	0		0	1	1			
Student 72	Control	7	0	0	0		1	0	-1			
Student 73	Control	7	1	1	0		0	1	1			
Student 74	Control	7	1	1	0		0	1	1			

Student Name	Condition	Period	Pre 28770-36973	Post 28770-36973	Gain 28770-36973	28770 - Write equation from table	Pre 28778-37003	Post 28778-37003	Gain 28778-37003	28778 - Inequality solving - 1	28778 - Inequality solving - 2	28778 - Inequality solving - 3
Student 75	Control	7	0	1	1		1	0	-1			
Student 76	Control	7	1	1	0		0	1	1			
Student 77	Control	7	0	1	1		0	1	1			
Student 78	Control	7	0	0	0		0	0	0			
Averages (All)					0.3333				0.2436			
Averages (Mastery)					0.3250				0.1000			
Averages (Control)					0.3421				0.3947			
P Value					0.9004				0.0579			
Standard Deviation (All)					0.5958				0.6873			
Standard Deviation (Mastery)					0.5723				0.6718			
Standard Deviation (Control)					0.6271				0.6794			
EFFECT SIZE					-0.0273				-0.4338			

8.2.5 Part Five

Student Name	Condition	Period	Pre 28776-36993	Post 28776-36993	Gain 28776-36993	28776 - Tables and rates	Pre 28775-37023 MP:1	Pre 28775-37023 MP:2	Post 28775-37023 MP:1	Post 28775-37023 MP:2	Gain 28775-37023 MP:1	Gain 28775-37023 MP:2	28775 - Write equation from graph
Student 1	Mastery	6	1	1	0	100%	0	0	0	0	0	0	0%
Student 2	Mastery	5	0	1	1	100%	1	0	0	1	-1	1	33%
Student 3	Mastery	5	1	1	0	100%	1	1	1	1	0	0	62%
Student 4	Mastery	6	1	1	0	40%	0	0	0	0	0	0	0%
Student 5	Mastery	5	0	1	1	100%	1	0	0	0	-1	0	0%
Student 6	Mastery	6	0	1	1	60%	0	1	1	0	1	-1	50%
Student 7	Mastery	5	1	1	0	100%	0	1	0	1	0	0	100%
Student 8	Mastery	5	1	1	0	100%	0	0	0	1	0	1	0%
Student 9	Mastery	6	1	1	0	100%	1	0	1	1	0	1	52%
Student 10	Mastery	6	1	1	0	100%	0	0	0	0	0	0	21%
Student 11	Mastery	5	1	1	0	100%	1	1	1	1	0	0	60%
Student 12	Mastery	6	1	1	0	100%	1	0	0	1	-1	1	100%
Student 13	Mastery	5	1	1	0	100%	1	1	1	1	0	0	100%
Student 14	Mastery	6	1	1	0	100%	0	1	1	1	1	0	100%
Student 15	Mastery	5	1	1	0	100%	1	0	1	0	0	0	60%

Student Name	Condition	Period	Pre 28776-36993	Post 28776-36993	Gain 28776-36993	28776 - Tables and rates	Pre 28775-37023 MP:1	Pre 28775-37023 MP:2	Post 28775-37023 MP:1	Post 28775-37023 MP:2	Gain 28775-37023 MP:1	Gain 28775-37023 MP:2	28775 - Write equation from graph
Student 16	Mastery	5	1	1	0	100%	0	1	1	1	1	0	50%
Student 17	Mastery	5	1	1	0	75%	0	1	1	1	1	0	60%
Student 18	Mastery	6	0	0	0	75%	0	0	1	1	1	1	55%
Student 19	Mastery	6	1	1	0	100%	1	1	1	1	0	0	54%
Student 20	Mastery	5	1	1	0	100%	0	1	1	1	1	0	60%
Student 21	Mastery	6	1	1	0	100%	1	0	0	1	-1	1	0%
Student 22	Mastery	6	1	1	0	100%	1	1	1	1	0	0	50%
Student 23	Mastery	6	0	1	1	100%	0	0	0	0	0	0	40%
Student 24	Mastery	6	1	1	0	100%	0	0	1	1	1	1	50%
Student 25	Mastery	6	1	1	0		0	0	0	0	0	0	
Student 26	Mastery	6	1	1	0	100%	0	0	1	1	1	1	66%
Student 27	Mastery	5	1	1	0	100%	0	1	1	1	1	0	50%
Student 28	Mastery	5	1	1	0	100%	0	0	1	1	1	1	75%
Student 29	Mastery	6	0	1	1	100%	0	0	0	1	0	1	0%
Student 30	Mastery	6	0	1	1	100%	0	0	0	0	0	0	0%
Student 31	Mastery	5	1	1	0	100%	1	0	1	1	0	1	60%
Student 32	Mastery	6	0	1	1	100%	1	0	0	1	-1	1	40%
Student 33	Mastery	6	1	1	0	100%	1	0	1	1	0	1	100%
Student 34	Mastery	5	1	1	0	100%	1	0	1	1	0	1	33%
Student 35	Mastery	5	1	1	0	100%	0	0	0	1	0	1	10%
Student 36	Mastery	5	1	1	0	100%	1	0	1	1	0	1	60%
Student 37	Mastery	5	1	1	0	100%	0	0	1	1	1	1	100%
Student 38	Mastery	5	1	1	0	100%	1	1	1	1	0	0	60%
Student 39	Mastery	5	1	1	0	100%	1	1	1	1	0	0	100%
Student 40	Mastery	6	1	1	0	100%	1	1	1	1	0	0	50%
Student 41	Control	4	1	1	0		0	0	0	0	0	0	
Student 42	Control	4	0	1	1		0	0	1	1	1	1	
Student 43	Control	4	1	1	0		0	0	0	1	0	1	
Student 44	Control	4	1	1	0		1	1	0	1	-1	0	
Student 45	Control	4	1	1	0		1	1	1	1	0	0	
Student 46	Control	4	0	1	1		0	0	0	0	0	0	
Student 47	Control	4	0	1	1		0	0	0	0	0	0	
Student 48	Control	4	1	1	0		1	0	1	1	0	1	
Student 49	Control	4	0	1	1		0	1	1	1	1	0	
Student 50	Control	4	1	1	0		1	1	0	0	-1	-1	
Student 51	Control	4	1	1	0		0	0	1	1	1	1	
Student 52	Control	4	0	1	1		0	0	0	0	0	0	
Student 53	Control	4	1	1	0		1	1	0	1	-1	0	
Student 54	Control	4	0	1	1		0	0	0	0	0	0	

Student Name	Condition	Period	Pre 28776-36993	Post 28776-36993	Gain 28776-36993	28776 - Tables and rates	Pre 28775-37023 MP:1	Pre 28775-37023 MP:2	Post 28775-37023 MP:1	Post 28775-37023 MP:2	Gain 28775-37023 MP:1	Gain 28775-37023 MP:2	28775 - Write equation from graph
Student 55	Control	4	1	1	0		0	1	1	1	1	0	
Student 56	Control	7	1	1	0		1	1	1	1	0	0	
Student 57	Control	7	1	1	0		0	0	1	1	1	1	
Student 58	Control	7	1	0	-1		0	1	1	1	1	0	
Student 59	Control	7	1	1	0		1	0	1	1	0	1	
Student 60	Control	7	1	1	0		1	1	0	1	-1	0	
Student 61	Control	7	1	1	0		1	0	1	1	0	1	
Student 62	Control	7	1	1	0		1	1	1	1	0	0	
Student 63	Control	7	0	1	1		0	0	0	0	0	0	
Student 64	Control	7	1	1	0		0	0	0	0	0	0	
Student 65	Control	7	1	1	0		1	1	1	1	0	0	
Student 66	Control	7	0	1	1		0	0	1	1	1	1	
Student 67	Control	7	1	1	0		0	0	1	1	1	1	
Student 68	Control	7	1	1	0		1	0	1	1	0	1	
Student 69	Control	7	1	1	0		1	1	0	1	-1	0	
Student 70	Control	7	1	1	0		1	0	1	1	0	1	
Student 71	Control	7	1	1	0		0	0	1	1	1	1	
Student 72	Control	7	1	1	0		1	1	1	1	0	0	
Student 73	Control	7	1	1	0		0	1	1	0	1	-1	
Student 74	Control	7	1	1	0		1	1	1	1	0	0	
Student 75	Control	7	0	1	1		1	0	1	1	0	1	
Student 76	Control	7	1	1	0		1	0	1	1	0	1	
Student 77	Control	7	1	1	0		0	0	0	0	0	0	
Student 78	Control	7	1	1	0		0	0	1	0	1	0	
Averages (All)					0.1923						0.1538	0.3590	
Averages (Mastery)					0.1750						0.1500	0.4000	
Averages (Control)					0.2105						0.1579	0.3158	
P Value					0.7182						0.9561	0.5092	
Standard Deviation (All)					0.4282						0.6258	0.5577	
Standard Deviation (Mastery)					0.3848						0.6222	0.5454	
Standard Deviation (Control)					0.4741						0.6378	0.5745	
EFFECT SIZE					-0.0749						-0.0124	0.1466	

89

8.3 Experiment Three Table

8.3.1 Part One

Student Name	Period	Condition	Data PreTest	Data PostTest	Gain	Pre 27833	Post 27833	27833 Gain	27833 Box and Whisker	Pre 27828-27904	Post 27828-27904	27828-27904 Gain	27828 Stem and Leaf
Student 1	5	Mastery	81%	54%	-27%	0	0	0	100%	1	0	-1	100%
Student 2	7(A-H)	Mastery	100%	90%	-10%	1	1	0	100%	1	1	0	80%
Student 3	5	Mastery	18%	63%	45%	0	0	0	75%	0	1	1	100%
Student 4	5	Mastery	72%	72%	0%	1	1	0	100%	0	0	0	100%
Student 5	7(A-H)	Mastery	54%	90%	36%	0	1	1	100%	0	1	1	75%
Student 6	5	Mastery	36%	54%	18%	1	1	0		0	1	1	100%
Student 7	5	Mastery	9%	72%	63%	0	1	1	54%	0	1	1	100%
Student 8	5	Mastery	72%	81%	9%	1	1	0	100%	1	1	0	100%
Student 9	5	Mastery	54%	100%	46%	1	1	0	60%	0	1	1	100%
Student 10	5	Mastery	72%	100%	28%	1	1	0	75%	1	1	0	100%
Student 11	5	Mastery	63%	90%	27%	1	1	0	100%	0	1	1	100%
Student 12	7(A-H)	Mastery	72%	90%	18%	1	1	0	100%	0	1	1	100%
Student 13	5	Mastery	18%	81%	63%	0	0	0	46%	0	1	1	100%
Student 14	5	Mastery	54%	72%	18%	0	1	1	75%	0	1	1	0%
Student 15	7(A-H)	Mastery	63%	72%	9%	1	1	0	60%	1	1	0	100%
Student 16	7(A-H)	Mastery	45%	81%	36%	0	1	1	100%	1	1	0	80%
Student 17	7(A-H)	Mastery	100%	81%	-19%	1	1	0	100%	1	1	0	100%
Student 18	5	Mastery	81%	90%	9%	1	1	0	100%	0	1	1	100%
Student 19	7(A-H)	Mastery	36%	63%	27%	1	1	0	100%	0	1	1	63%
Student 20	5	Mastery	27%	90%	63%	0	1	1	62%	0	0	0	100%
Student 21	5	Mastery	72%	90%	18%	0	1	1	100%	0	1	1	100%
Student 22	7(A-H)	Mastery	54%	81%	27%	1	1	0	100%	1	1	0	75%
Student 23	5	Mastery	63%	90%	27%	1	0	-1	100%	1	1	0	100%
Student 24	5	Mastery	81%	90%	9%	1	1	0	100%	1	1	0	100%
Student 25	5	Mastery	36%	100%	64%	0	1	1	60%	1	1	0	75%
Student 26	5	Mastery	100%	90%	-10%	1	1	0	100%	1	1	0	100%
Student 27	5	Mastery	81%	81%	0%	0	1	1	75%	1	1	0	100%
Student 28	5	Mastery	18%	36%	18%	0	0	0		0	1	1	50%
Student 29	5	Mastery	63%	100%	37%	1	1	0	100%	1	1	0	75%
Student 30	5	Mastery	54%	36%	-18%	0	0	0		0	0	0	
Student 31	7(A-H)	Mastery	81%	90%	9%	0	1	1	60%	1	1	0	75%
Student 32	5	Mastery	81%	90%	9%	1	1	0	100%	1	1	0	100%
Student 33	5	Mastery	36%	54%	18%	1	0	-1	0%	0	1	1	0%
Student 34	5	Mastery	90%	81%	-9%	1	1	0	75%	1	1	0	75%
Student 35	5	Mastery	81%	81%	0%	1	1	0	60%	1	1	0	75%

Student Name	Period	Condition	Data PreTest	Data PostTest	Gain	Pre 27833	Post 27833	27833 Gain	27833 Box and Whisker	Pre 27828-27904	Post 27828-27904	27828-27904 Gain	27828 Stem and Leaf
Student 36	5	Mastery	90%	100%	10%	1	1	0	100%	1	1	0	100%
Student 37	5	Mastery	100%	90%	-10%	1	1	0	75%	1	1	0	100%
Student 38	7(A-H)	Mastery	54%	90%	36%	1	1	0	75%	0	1	1	100%
Student 39	5	Mastery	72%	81%	9%	1	1	0	100%	1	1	0	100%
Student 40	5	Mastery	18%	0%	-18%	0	0	0		0	0	0	
Student 41	5	Mastery	72%	90%	18%	1	1	0	75%	1	0	-1	75%
Student 42	5	Mastery	81%	81%	0%	1	1	0	100%	1	1	0	88%
Student 43	5	Mastery	18%	36%	18%	0	0	0		0	0	0	75%
Student 44	6	Control	36%	54%	18%	0	0	0		1	0	-1	
Student 45	7(I-Z)	Control	45%	63%	18%	0	0	0		0	1	1	
Student 46	6	Control	72%	72%	0%	1	1	0		0	1	1	
Student 47	6	Control	63%	72%	9%	1	1	0		1	1	0	
Student 48	6	Control	27%	54%	27%	0	0	0		0	1	1	
Student 49	6	Control	63%	90%	27%	0	1	1		0	0	0	
Student 50	6	Control	36%	81%	45%	1	1	0		1	1	0	
Student 51	6	Control	81%	63%	-18%	1	1	0		1	1	0	
Student 52	7(I-Z)	Control	36%	90%	54%	0	1	1		1	1	0	
Student 53	6	Control	45%	72%	27%	1	1	0		1	0	-1	
Student 54	5	Control	36%	36%	0%	1	1	0		0	0	0	
Student 55	6	Control	36%	63%	27%	1	1	0		0	0	0	
Student 56	7(I-Z)	Control	72%	90%	18%	1	1	0		1	1	0	
Student 57	7(I-Z)	Control	36%	100%	64%	0	1	1		0	1	1	
Student 58	6	Control	18%	54%	36%	0	0	0		0	0	0	
Student 59	6	Control	54%	81%	27%	1	1	0		0	0	0	
Student 60	7(I-Z)	Control	45%	27%	-18%	0	0	0		0	0	0	
Student 61	6	Control	45%	63%	18%	1	0	-1		1	0	-1	
Student 62	5	Control	54%	81%	27%	0	1	1		0	0	0	
Student 63	6	Control	63%	81%	18%	1	1	0		0	0	0	
Student 64	6	Control	54%	81%	27%	0	0	0		0	1	1	
Student 65	7(I-Z)	Control	54%	90%	36%	0	1	1		0	1	1	
Student 66	6	Control	54%	72%	18%	0	0	0		1	1	0	
Student 67	6	Control	9%	27%	18%	0	0	0		0	1	1	
Student 68	5	Control	45%	100%	55%	0	1	1		0	1	1	
Student 69	6	Control	18%	18%	0%	1	1	0		0	0	0	
Student 70	7(I-Z)	Control	63%	90%	27%	0	1	1		1	1	0	
Student 71	6	Control	54%	72%	18%	0	0	0		0	1	1	
Student 72	6	Control	36%	54%	18%	1	1	0		0	1	1	
Student 73	7(I-Z)	Control	72%	90%	18%	1	1	0		1	0	-1	
Student 74	6	Control	72%	63%	-9%	1	0	-1		1	0	-1	
Student 75	7(I-Z)	Control	36%	81%	45%	0	1	1		1	1	0	

Student Name	Period	Condition	Data PreTest	Data PostTest	Gain	Pre 27833	Post 27833	27833 Gain	27833 Box and Whisker	Pre 27828-27904	Post 27828-27904	27828-27904 Gain	27828 Stem and Leaf
Student 76	6	Control	90%	63%	-27%	1	0	-1		1	1	0	
Average(All)			56%	74%	18%			16%				24%	
Average(Mastery)			61%	78%	17%			16%				30%	
Average(Control)			49%	69%	20%			15%				15%	
P-Value			0.0225	0.0847	0.4930			0.9273				0.2989	
Standard Deviation(All)			0.2361	0.2113	0.2203			0.5178				0.6081	
Standard Deviation(Mastery)			0.2581	0.2091	0.2309			0.4845				0.5578	
Standard Deviation(Control)			0.1870	0.2077	0.2074			0.5658				0.6671	
Effect Size					-0.1675			0.0199				0.2261	

8.3.2 Part Two

Student Name	Period	Condition	Pre 27831-27906	Post 27831-27906	27831-27906 Gain	27931 Table1	Pre 27827-27903	Post 27827-27903	27827-27903 Gain	27827 Circle Graph	Pre 27832-36639	Pre 27832-36639	27832-36639 Gain	27832 Histogram
Student 1	5	Mastery	1	1	0	100%	1	1	0	100%	0	0	0	62%
Student 2	7(A-H)	Mastery	1	1	0		1	1	0	100%	1	1	0	100%
Student 3	5	Mastery	0	1	1	66%	0	1	1	50%	0	1	1	33%
Student 4	5	Mastery	1	1	0	100%	1	0	-1	100%	0	1	1	75%
Student 5	7(A-H)	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	80%
Student 6	5	Mastery	0	0	0	100%	0	0	0	30%	0	0	0	0%
Student 7	5	Mastery	0	1	1	75%	0	1	1	100%	0	1	1	50%
Student 8	5	Mastery	1	1	0	100%	1	1	0	75%	0	0	0	42%
Student 9	5	Mastery	1	1	0	100%	0	1	1	100%	1	1	0	100%
Student 10	5	Mastery	1	1	0	100%	1	1	0	80%	0	1	1	66%
Student 11	5	Mastery	1	1	0	66%	1	1	0	60%	0	1	1	40%
Student 12	7(A-H)	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 13	5	Mastery	0	1	1	100%	1	1	0	60%	0	1	1	60%
Student 14	5	Mastery	0	0	0	100%	1	1	0	100%	1	1	0	80%
Student 15	7(A-H)	Mastery	1	1	0	100%	0	0	0	80%	0	0	0	75%
Student 16	7(A-H)	Mastery	0	1	1	100%	1	1	0	100%	1	0	-1	80%
Student 17	7(A-H)	Mastery	1	1	0		1	1	0	100%	1	1	0	100%
Student 18	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	60%
Student 19	7(A-H)	Mastery	0	1	1	66%	0	1	1	80%	0	0	0	100%

Student Name	Period	Condition	Pre 27831-27906	Post 27831-27906	27831-27906 Gain	27931 Table1	Pre 27827-27903	Post 27827-27903	27827-27903 Gain	27827 Circle Graph	Pre 27832-36639	Pre 27832-36639	27832-36639 Gain	27832 Histogram
Student 20	5	Mastery	0	1	1	66%	0	1	1	100%	1	1	0	66%
Student 21	5	Mastery	1	1	0	80%	0	1	1	100%	1	0	-1	100%
Student 22	7(A-H)	Mastery	0	0	0	100%	1	1	0	75%	0	1	1	75%
Student 23	5	Mastery	1	1	0	100%	0	1	1	100%	1	1	0	80%
Student 24	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	75%
Student 25	5	Mastery	0	1	1	80%	0	1	1	80%	0	1	1	66%
Student 26	5	Mastery	1	1	0	100%	1	1	0	100%	1	0	-1	100%
Student 27	5	Mastery	1	1	0	100%	1	0	-1	50%	1	1	0	100%
Student 28	5	Mastery	0	0	0	100%	0	0	0	53%	0	0	0	
Student 29	5	Mastery	1	1	0	100%	0	1	1	100%	1	1	0	100%
Student 30	5	Mastery	1	1	0		1	0	-1		1	0	-1	
Student 31	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 32	5	Mastery	1	1	0	100%	1	1	0	100%	1	0	-1	80%
Student 33	5	Mastery	0	0	0	75%	0	0	0	100%	0	0	0	66%
Student 34	5	Mastery	1	1	0	80%	1	1	0	66%	0	0	0	75%
Student 35	5	Mastery	1	1	0	100%	1	0	-1	100%	0	1	1	75%
Student 36	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	75%
Student 37	5	Mastery	1	1	0	100%	1	1	0	100%	1	0	-1	75%
Student 38	7(A-H)	Mastery	1	1	0	58%	0	1	1	100%	1	1	0	100%
Student 39	5	Mastery	0	1	1	66%	0	1	1	66%	1	1	0	100%
Student 40	5	Mastery	0	0	0		0	0	0	0%	0	0	0	
Student 41	5	Mastery	1	1	0	100%	0	1	1	100%	0	1	1	80%
Student 42	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	80%
Student 43	5	Mastery	0	1	1	100%	0	0	0	60%	0	1	1	
Student 44	6	Control	0	1	1		0	0	0		0	0	0	
Student 45	7(I-Z)	Control	1	0	-1		0	1	1		1	0	-1	
Student 46	6	Control	0	0	0		1	1	0		1	0	-1	
Student 47	6	Control	1	1	0		0	0	0		0	0	0	
Student 48	6	Control	0	1	1		0	0	0		0	1	1	
Student 49	6	Control	1	1	0		1	1	0		0	1	1	
Student 50	6	Control	0	1	1		0	1	1		1	0	-1	
Student 51	6	Control	1	1	0		0	1	1		1	0	-1	
Student 52	7(I-Z)	Control	1	1	0		0	0	0		0	1	1	
Student 53	6	Control	1	1	0		0	1	1		1	0	-1	
Student 54	5	Control	0	0	0		0	0	0		0	0	0	
Student 55	6	Control	0	1	1		0	1	1		0	0	0	
Student 56	7(I-Z)	Control	0	1	1		0	1	1		1	0	-1	
Student 57	7(I-Z)	Control	1	1	0		0	1	1		1	1	0	
Student 58	6	Control	0	1	1		0	0	0		0	0	0	

Student Name	Period	Condition	Pre 27831-27906	Post 27831-27906	27831-27906 Gain	27931 Table1	Pre 27827-27903	Post 27827-27903	27827-27903 Gain	27827 Circle Graph	Pre 27832-36639	Pre 27832-36639	27832-36639 Gain	27832 Histogram
Student 59	6	Control	0	1	1		1	1	0		0	1	1	
Student 60	7(I-Z)	Control	1	0	-1		1	0	-1		0	0	0	
Student 61	6	Control	1	1	0		0	1	1		0	0	0	
Student 62	5	Control	1	1	0		0	0	0		1	1	0	
Student 63	6	Control	1	1	0		1	1	0		1	1	0	
Student 64	6	Control	1	0	-1		0	1	1		0	1	1	
Student 65	7(I-Z)	Control	1	1	0		1	0	-1		1	1	0	
Student 66	6	Control	1	1	0		0	1	1		1	1	0	
Student 67	6	Control	0	0	0		0	0	0		0	0	0	
Student 68	5	Control	1	1	0		0	1	1		1	1	0	
Student 69	6	Control	0	0	0		0	0	0		0	0	0	
Student 70	7(I-Z)	Control	1	1	0		0	1	1		1	0	-1	
Student 71	6	Control	1	1	0		0	0	0		1	0	-1	
Student 72	6	Control	0	0	0		0	1	1		1	0	-1	
Student 73	7(I-Z)	Control	1	1	0		0	1	1		1	1	0	
Student 74	6	Control	1	1	0		0	1	1		1	1	0	
Student 75	7(I-Z)	Control	0	1	1		0	0	0		0	0	0	
Student 76	6	Control	1	1	0		1	1	0		1	1	0	
Average(All)					21%				28%				1%	76%
Average(Mastery)					26%				19%				12%	
Average(Control)					15%				39%				-12%	
P-Value					0.3855				0.1390				0.1131	
Standard Deviation(All)					0.4984				0.6022				0.6428	
Standard Deviation(Mastery)					0.4415				0.5878				0.6252	
Standard Deviation(Control)					0.5658				0.6093				0.6499	
Effect Size					0.1844				-0.3412				0.3654	

8.3.3 Part Three

Student Name	Period	Condition	Pre 27842-27909	Post 27842-27909	27842-27909 Gain	27842 Table 4	Pre 27830-36638	Pre 27830-36638	27830-36638 Gain	27830 Scatterplot	Pre 27829-27905	Post 27829-27905	27829-27905 Gain	27829 Chart
Student 1	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 2	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	75%

Student Name	Period	Condition	Pre 27842-27909	Post 27842-27909	27842-27909 Gain	27842 Table 4	Pre 27830-36638	Pre 27830-36638	27830-36638 Gain	27830 Scatterplot	Pre 27829-27905	Post 27829-27905	27829-27905 Gain	27829 Chart
Student 3	5	Mastery	0	1	1	100%	0	1	1	100%	1	1	0	100%
Student 4	5	Mastery	1	0	-1	100%	1	1	0	75%	1	1	0	100%
Student 5	7(A-H)	Mastery	1	1	0	100%	1	1	0	75%	1	1	0	80%
Student 6	5	Mastery	1	1	0	100%	0	1	1	100%	1	1	0	100%
Student 7	5	Mastery	0	1	1	100%	1	0	-1	100%	0	1	1	100%
Student 8	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 9	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 10	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 11	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 12	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 13	5	Mastery	0	1	1	100%	0	1	1	75%	1	1	0	100%
Student 14	5	Mastery	1	1	0	100%	1	0	-1	75%	1	1	0	80%
Student 15	7(A-H)	Mastery	0	1	1	100%	1	1	0	100%	1	0	-1	100%
Student 16	7(A-H)	Mastery	1	1	0	100%	0	1	1	75%	1	1	0	100%
Student 17	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 18	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 19	7(A-H)	Mastery	1	1	0	100%	1	0	-1	75%	1	0	-1	100%
Student 20	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 21	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 22	7(A-H)	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 23	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 24	5	Mastery	0	1	1	100%	1	0	-1	100%	1	1	0	100%
Student 25	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 26	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 27	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	75%
Student 28	5	Mastery	0	1	1		0	1	1	75%	1	1	0	75%
Student 29	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%
Student 30	5	Mastery	0	0	0		1	1	0		1	1	0	
Student 31	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 32	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 33	5	Mastery	0	0	0	100%	1	1	0	100%	1	1	0	100%
Student 34	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 35	5	Mastery	1	1	0	100%	1	1	0	66%	1	1	0	100%
Student 36	5	Mastery	1	1	0	100%	1	1	0	75%	1	1	0	100%
Student 37	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 38	7(A-H)	Mastery	0	1	1	100%	0	1	1	100%	1	1	0	100%
Student 39	5	Mastery	1	0	-1	100%	1	1	0	100%	1	1	0	75%
Student 40	5	Mastery	1	0	-1		0	0	0		0	0	0	
Student 41	5	Mastery	0	1	1	100%	1	1	0	100%	1	1	0	100%

Student Name	Period	Condition	Pre 27842-27909	Post 27842-27909	27842-27909 Gain	27842 Table 4	Pre 27830-36638	Pre 27830-36638	27830-36638 Gain	27830 Scatterplot	Pre 27829-27905	Post 27829-27905	27829-27905 Gain	27829 Chart
Student 42	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%
Student 43	5	Mastery	0	0	0		0	1	1	75%	1	0	-1	100%
Student 44	6	Control	1	1	0		0	1	1		1	1	0	
Student 45	7(I-Z)	Control	0	1	1		1	1	0		1	1	0	
Student 46	6	Control	1	1	0		1	1	0		1	1	0	
Student 47	6	Control	1	1	0		1	1	0		1	1	0	
Student 48	6	Control	0	0	0		1	1	0		1	1	0	
Student 49	6	Control	1	1	0		1	1	0		1	1	0	
Student 50	6	Control	1	1	0		0	0	0		0	1	1	
Student 51	6	Control	1	0	-1		1	1	0		1	1	0	
Student 52	7(I-Z)	Control	0	1	1		1	1	0		1	1	0	
Student 53	6	Control	1	1	0		0	1	1		0	1	1	
Student 54	5	Control	0	1	1		1	0	-1		1	1	0	
Student 55	6	Control	1	1	0		1	1	0		1	1	0	
Student 56	7(I-Z)	Control	1	1	0		1	1	0		1	1	0	
Student 57	7(I-Z)	Control	0	1	1		1	1	0		1	1	0	
Student 58	6	Control	1	1	0		0	1	1		1	1	0	
Student 59	6	Control	1	1	0		1	1	0		1	1	0	
Student 60	7(I-Z)	Control	0	0	0		0	0	0		1	1	0	
Student 61	6	Control	1	0	-1		0	1	1		1	1	0	
Student 62	5	Control	0	1	1		1	1	0		1	1	0	
Student 63	6	Control	0	0	0		1	1	0		1	1	0	
Student 64	6	Control	1	1	0		1	1	0		1	1	0	
Student 65	7(I-Z)	Control	1	1	0		1	1	0		1	1	0	
Student 66	6	Control	0	1	1		1	1	0		1	1	0	
Student 67	6	Control	0	0	0		0	0	0		0	1	1	
Student 68	5	Control	0	1	1		1	1	0		1	1	0	
Student 69	6	Control	0	0	0		1	0	-1		0	0	0	
Student 70	7(I-Z)	Control	1	1	0		1	1	0		0	1	1	
Student 71	6	Control	0	1	1		1	1	0		1	1	0	
Student 72	6	Control	0	1	1		1	1	0		1	1	0	
Student 73	7(I-Z)	Control	1	1	0		1	1	0		1	1	0	
Student 74	6	Control	1	1	0		1	1	0		1	1	0	
Student 75	7(I-Z)	Control	1	1	0		1	1	0		1	1	0	
Student 76	6	Control	1	0	-1		1	0	-1		1	0	-1	
Average(All)					22%				5%				1%	
Average(Mastery)					26%				7%				-5%	
Average(Control)					18%				3%				9%	

Student Name	Period	Condition	Pre 27842-27909	Post 27842-27909	27842-27909 Gain	27842 Table 4	Pre 27830-36638	Pre 27830-36638	27830-36638 Gain	27830 Scatterplot	Pre 27829-27905	Post 27829-27905	27829-27905 Gain	27829 Chart
P-Value					0.5850				0.7259				0.0969	
Standard Deviation(All)					0.5796				0.4870				0.3462	
Standard Deviation(Mastery)					0.5812				0.5069				0.3050	
Standard Deviation(Control)					0.5839				0.4667				0.3844	
Effect Size					0.1267				0.0846				-0.3575	

8.3.4 Part Four

Student Name	Period	Condition	Pre 27840-27907	Post 27840-27907	27840-27907 Gain	27840 Table 2	Pre 27841-27908	Post 27841-27908	27841-27908 Gain	27841 Table 3	Pre 27826-27902	Post 27826-27902	27826-27902 Gain	27826 Data Venn Diagram 1	27826 Data Venn Diagram 2
Student 1	5	Mastery	1	0	-1	100%	1	0	-1	75%	1	1	0	75%	100%
Student 2	7(A-H)	Mastery	1	1	0		1	1	0	100%	1	0	-1	100%	100%
Student 3	5	Mastery	0	0	0	75%	1	0	-1	100%	0	0	0	80%	60%
Student 4	5	Mastery	1	1	0	100%	1	1	0	100%	0	1	1	100%	100%
Student 5	7(A-H)	Mastery	1	1	0	75%	0	0	0	100%	0	1	1	100%	100%
Student 6	5	Mastery	0	0	0	0%	1	1	0	75%	0	0	0	100%	100%
Student 7	5	Mastery	0	0	0	100%	0	0	0	100%	0	1	1	100%	75%
Student 8	5	Mastery	0	1	1	80%	1	0	-1	100%	0	1	1	100%	100%
Student 9	5	Mastery	0	1	1	100%	1	1	0	100%	0	1	1	100%	66%
Student 10	5	Mastery	1	1	0	100%	1	1	0	80%	0	1	1	100%	100%
Student 11	5	Mastery	0	0	0	100%	1	1	0	100%	0	1	1	75%	100%
Student 12	7(A-H)	Mastery	0	0	0	100%	1	1	0	100%	1	1	0	100%	100%
Student 13	5	Mastery	0	1	1	75%	0	0	0	80%	0	1	1	60%	60%
Student 14	5	Mastery	0	1	1	66%	1	0	-1	100%	0	1	1	100%	0%
Student 15	7(A-H)	Mastery	1	1	0	100%	1	1	0	100%	0	1	1	100%	100%
Student 16	7(A-H)	Mastery	0	0	0	63%	0	1	1	60%	0	1	1	75%	66%
Student 17	7(A-H)	Mastery	1	0	-1		1	0	-1	100%	1	1	0	100%	75%
Student 18	5	Mastery	1	1	0	100%	1	0	-1	100%	0	1	1	100%	100%
Student 19	7(A-H)	Mastery	0	0	0	46%	0	1	1	100%	0	1	1	100%	100%
Student 20	5	Mastery	0	1	1	100%	0	1	1	75%	0	1	1	100%	75%
Student 21	5	Mastery	1	1	0	80%	1	1	0	100%	1	1	0	80%	100%
Student 22	7(A-H)	Mastery	0	1	1	100%	0	1	1	80%	1	0	-1	100%	100%
Student 23	5	Mastery	0	1	1	100%	0	1	1	100%	0	1	1	75%	75%
Student 24	5	Mastery	1	1	0	100%	1	1	0	100%	0	1	1	100%	100%

Student Name	Period	Condition	Pre 27840-27907	Post 27840-27907	27840-27907 Gain	27840 Table 2	Pre 27841-27908	Post 27841-27908	27841-27908 Gain	27841 Table 3	Pre 27826-27902	Post 27826-27902	27826-27902 Gain	27826 Data Venn Diagram 1	27826 Data Venn Diagram 2
Student 25	5	Mastery	0	1	1	75%	1	1	0	75%	0	1	1	100%	75%
Student 26	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	80%	100%
Student 27	5	Mastery	0	1	1	100%	1	0	-1	100%	1	1	0	100%	75%
Student 28	5	Mastery	0	0	0	0%	0	0	0		1	0	-1	80%	55%
Student 29	5	Mastery	0	1	1	100%	1	1	0	100%	0	1	1	100%	100%
Student 30	5	Mastery	0	0	0		1	0	-1		0	1	1		
Student 31	7(A-H)	Mastery	1	0	-1	100%	1	1	0	100%	0	1	1	100%	100%
Student 32	5	Mastery	1	1	0	100%	0	1	1	100%	0	1	1	100%	100%
Student 33	5	Mastery	0	1	1	50%	0	1	1	100%	1	1	0	80%	75%
Student 34	5	Mastery	1	1	0	60%	1	0	-1	80%	1	1	0	100%	100%
Student 35	5	Mastery	0	0	0	50%	1	1	0	100%	1	1	0	100%	100%
Student 36	5	Mastery	1	1	0	80%	1	1	0	100%	0	1	1	100%	100%
Student 37	5	Mastery	1	1	0	100%	1	1	0	100%	1	1	0	100%	100%
Student 38	7(A-H)	Mastery	1	1	0	100%	1	0	-1	100%	0	1	1	66%	100%
Student 39	5	Mastery	1	1	0	75%	0	0	0	100%	1	1	0	60%	100%
Student 40	5	Mastery	0	0	0		1	0	-1		0	0	0		0%
Student 41	5	Mastery	1	1	0	75%	1	1	0	100%	1	1	0	100%	100%
Student 42	5	Mastery	1	0	-1	71%	0	0	0	60%	0	1	1	100%	66%
Student 43	5	Mastery	0	0	0	50%	1	0	-1		0	1	1	75%	100%
Student 44	6	Control	0	1	1		1	0	-1		0	1	1		
Student 45	7(I-Z)	Control	0	1	1		1	1	0		0	0	0		
Student 46	6	Control	1	0	-1		1	1	0		0	1	1		
Student 47	6	Control	0	0	0		1	1	0		0	1	1		
Student 48	6	Control	1	0	-1		0	0	0		0	1	1		
Student 49	6	Control	1	1	0		1	1	0		0	1	1		
Student 50	6	Control	0	1	1		0	1	1		0	1	1		
Student 51	6	Control	1	0	-1		1	0	-1		0	1	1		
Student 52	7(I-Z)	Control	0	1	1		0	1	1		0	1	1		
Student 53	6	Control	0	0	0		0	1	1		0	1	1		
Student 54	5	Control	0	0	0		1	0	-1		0	1	1		
Student 55	6	Control	0	0	0		0	0	0		0	1	1		
Student 56	7(I-Z)	Control	1	1	0		1	1	0		0	1	1		
Student 57	7(I-Z)	Control	0	1	1		0	1	1		0	1	1		
Student 58	6	Control	0	0	0		0	1	1		0	1	1		
Student 59	6	Control	0	0	0		1	1	0		0	1	1		
Student 60	7(I-Z)	Control	1	1	0		1	0	-1		0	1	1		
Student 61	6	Control	0	1	1		0	1	1		0	1	1		
Student 62	5	Control	1	1	0		1	1	0		0	1	1		
Student 63	6	Control	0	1	1		1	1	0		0	1	1		

Student Name	Period	Condition	Pre 27840-27907	Post 27840-27907	27840-27907 Gain	27840 Table 2	Pre 27841-27908	Post 27841-27908	27841-27908 Gain	27841 Table 3	Pre 27826-27902	Post 27826-27902	27826-27902 Gain	27826 Data Venn Diagram 1	27826 Data Venn Diagram 2
Student 64	6	Control	1	1	0		1	1	0		0	1	1		
Student 65	7(I-Z)	Control	0	1	1		0	1	1		0	1	1		
Student 66	6	Control	1	0	-1		0	0	0		0	1	1		
Student 67	6	Control	0	1	1		1	0	-1		0	0	0		
Student 68	5	Control	1	1	0		0	1	1		0	1	1		
Student 69	6	Control	0	0	0		0	1	1		0	0	0		
Student 70	7(I-Z)	Control	1	1	0		1	1	0		0	1	1		
Student 71	6	Control	0	1	1		1	1	0		1	1	0		
Student 72	6	Control	0	0	0		0	0	0		0	0	0		
Student 73	7(I-Z)	Control	0	1	1		1	1	0		0	1	1		
Student 74	6	Control	1	0	-1		0	0	0		0	1	1		
Student 75	7(I-Z)	Control	0	1	1		0	1	1		0	1	1		
Student 76	6	Control	1	1	0		1	1	0		0	1	1		
Average(All)					18%				0%				66%		
Average(Mastery)					16%				-12%				51%		
Average(Control)					21%				15%				85%		
P-Value					0.7426				0.0863				0.0047		
Standard Deviation(All)					0.6263				0.6733				0.5550		
Standard Deviation(Mastery)					0.5745				0.6622				0.6314		
Standard Deviation(Control)					0.6963				0.6671				0.3641		
Effect Size					-0.0708				-0.4014				-0.9252		

8.4 Experiment Three Table

8.4.1 Part One

Student Name	Period	Condition	MSA Pre Test	MSA Post Test	Gain	Pre 28776	Post 36993	28776-36993 Gain	28776 Mastery Learning	Pre 28771 MP:1	Pre 28771 MP:2	Post 28771 MP:1	Post 28771 MP:2	28771-28771 MP:1 Gain	28771-28771 MP:2 Gain
Student 1	6	Mastery	53%	61%	8%	1	1	0		1	1	1	1	0	0
Student 2	6	Mastery	69%	84%	15%	1	1	0	100%	1	1	1	1	0	0

Student Name	Period	Condition	MSA Pre Test	MSA Post Test	Gain	Pre 28776	Post 36993	28776 - 36993 Gain	28776 Mastery Learning	Pre 28771 MP:1	Pre 28771 MP:2	Post 28771 MP:1	Post 28771 MP:2	28771 - 28771 MP:1 Gain	28771 - 28771 MP:2 Gain
Student 3	7(I-Z)	Mastery	53%	100%	47%	0	1	1	100%	1	1	1	1	0	0
Student 4	6	Mastery	61%	76%	15%	1	1	0	75%	1	1	1	1	0	0
Student 5	7(I-Z)	Mastery	30%	61%	31%	1	1	0	100%	1	1	1	1	0	0
Student 6	6	Mastery	38%	69%	31%	1	1	0	100%	1	1	1	1	0	0
Student 7	6	Mastery	84%	92%	8%	1	1	0	100%	1	1	1	1	0	0
Student 8	6	Mastery	38%	76%	38%	1	1	0	100%	1	1	1	1	0	0
Student 9	7(I-Z)	Mastery	46%	84%	38%	1	1	0	100%	1	1	1	1	0	0
Student 10	7(I-Z)	Mastery	76%	92%	16%	1	1	0	100%	1	1	1	1	0	0
Student 11	6	Mastery	69%	84%	15%	1	1	0	100%	1	1	1	1	0	0
Student 12	7(I-Z)	Mastery	69%	61%	-8%	0	1	1	75%	1	1	1	1	0	0
Student 13	7(I-Z)	Mastery	69%	92%	23%	1	1	0	100%	1	1	1	1	0	0
Student 14	6	Mastery	23%	38%	15%	0	1	1		1	1	1	1	0	0
Student 15	6	Mastery	69%	69%	0%	1	1	0	100%	1	1	1	1	0	0
Student 16	6	Mastery	76%	100%	24%	1	1	0	100%	1	1	1	1	0	0
Student 17	6	Mastery	76%	84%	8%	1	1	0	100%	1	1	1	1	0	0
Student 18	6	Mastery	69%	76%	7%	1	1	0	100%	1	1	1	1	0	0
Student 19	7(I-Z)	Mastery	69%	84%	15%	1	1	0	100%	1	1	1	1	0	0
Student 20	7(I-Z)	Mastery	69%	92%	23%	1	1	0	100%	1	1	1	1	0	0
Student 21	6	Mastery	61%	69%	8%	1	1	0	100%	1	1	1	1	0	0
Student 22	6	Mastery	53%	100%	47%	0	1	1	100%	1	1	1	1	0	0
Student 23	7(I-Z)	Mastery	69%	84%	15%	1	1	0	100%	1	1	1	1	0	0
Student 24	6	Mastery	61%	92%	31%	1	1	0	100%	1	1	1	1	0	0
Student 25	6	Mastery	61%	61%	0%	1	1	0	100%	1	1	1	1	0	0
Student 26	6	Mastery	84%	92%	8%	1	1	0	100%	1	1	1	1	0	0
Student 27	6	Mastery	84%	100%	16%	1	1	0	100%	1	1	1	1	0	0
Student 28	7(I-Z)	Mastery	84%	92%	8%	1	1	0	100%	1	1	1	1	0	0
Student 29	6	Mastery	46%	76%	30%	1	1	0	100%	1	1	1	1	0	0
Student 30	6	Mastery	69%	92%	23%	1	1	0	100%	1	1	1	1	0	0
Student 31	6	Mastery	69%	69%	0%	1	1	0	100%	1	1	1	1	0	0
Student 32	5	Control	69%	76%	7%	1	1	0		1	1	1	1	0	0
Student 33	5	Control	38%	38%	0%	1	1	0		1	1	1	1	0	0
Student 34	5	Control	61%	84%	23%	1	1	0		1	1	1	1	0	0
Student 35	5	Control	46%	84%	38%	1	1	0		1	1	1	1	0	0
Student 36	7(A-H)	Control	69%	76%	7%	1	1	0		1	1	1	1	0	0
Student 37	5	Control	100%	84%	-16%	1	1	0		1	1	1	1	0	0
Student 38	5	Control	100%	100%	0%	1	1	0		1	1	1	1	0	0
Student 39	5	Control	69%	92%	23%	1	1	0		1	1	1	1	0	0
Student 40	5	Control	100%	100%	0%	1	1	0		1	1	1	1	0	0
Student 41	7(A-H)	Control	92%	100%	8%	1	1	0		1	1	1	1	0	0

Student Name	Period	Condition	MSA Pre Test	MSA Post Test	Gain	Pre 28776	Post 36993	28776 - 36993 Gain	28776 Mastery Learning	Pre 28771 MP:1	Pre 28771 MP:2	Post 28771 MP:1	Post 28771 MP:2	28771 - 28771 MP:1 Gain	28771 - 28771 MP:2 Gain
Student 42	5	Control	76%	100%	24%	1	1	0		1	1	1	1	0	0
Student 43	5	Control	76%	69%	-7%	1	1	0		1	1	1	1	0	0
Student 44	5	Control	30%	15%	-15%	0	0	0		1	1	1	1	0	0
Student 45	7(A-H)	Control	92%	100%	8%	1	1	0		1	1	1	1	0	0
Student 46	5	Control	61%	61%	0%	1	1	0		1	1	1	1	0	0
Student 47	7(A-H)	Control	84%	84%	0%	0	1	1		1	1	1	1	0	0
Student 48	7(A-H)	Control	53%	46%	-7%	1	1	0		1	1	1	1	0	0
Student 49	5	Control	46%	61%	15%	1	1	0		1	1	1	1	0	0
Student 50	7(A-H)	Control	76%	76%	0%	1	1	0		1	1	1	1	0	0
Student 51	7(A-H)	Control	100%	84%	-16%	1	1	0		1	1	1	1	0	0
Student 52	5	Control	46%	61%	15%	1	1	0		1	1	1	1	0	0
Student 53	7(A-H)	Control	53%	76%	23%	0	1	1		1	1	1	1	0	0
Student 54	5	Control	69%	69%	0%	1	1	0		1	1	1	1	0	0
Student 55	5	Control	76%	92%	16%	1	1	0		1	1	1	1	0	0
Student 56	5	Control	23%	23%	0%	0	0	0		1	1	1	1	0	0
Student 57	5	Control	61%	61%	0%	1	1	0		1	1	1	1	0	0
Student 58	5	Control	53%	61%	8%	1	1	0		1	1	1	1	0	0
Student 59	7(A-H)	Control	100%	92%	-8%	1	1	0		1	1	1	1	0	0
Student 60	5	Control	69%	92%	23%	1	1	0		1	1	1	1	0	0
Student 61	5	Control	69%	61%	-8%	0	1	1		1	1	1	1	0	0
Student 62	5	Control	76%	61%	-15%	1	1	0		1	1	1	1	0	0
Student 63	5	Control	84%	100%	16%	1	1	0		1	1	1	1	0	0
Student 64	5	Control	38%	53%	15%	1	1	0		1	1	1	1	0	0
Student 65	5	Control	100%	84%	-16%	1	1	0		1	1	1	1	0	0
Student 66	5	Control	84%	92%	8%	1	1	0		1	1	1	1	0	0
Student 67	5	Control	61%	76%	15%	1	1	0		1	1	1	1	0	0
Student 68	5	Control	76%	53%	-23%	0	1	1		1	1	1	1	0	0
Student 69	5	Control	38%	46%	8%	0	1	1		1	1	1	1	0	0
Student 70	5	Control	84%	100%	16%	1	1	0		1	1	1	1	0	0
Student 71	5	Control	69%	69%	0%	1	1	0		1	1	1	1	0	0
Average (All)			66%	77%	10%			13%		100%	100%	100%	100%	0%	0%
Average (Mastery)			63%	81%	18%			13%		100%	100%	100%	100%	0%	0%
Average (Control)			69%	74%	5%			13%		100%	100%	100%	100%	0%	0%
P-Value			0.1491	0.1143	0.0001			0.9604							
Standard Deviatio			0.1903	0.1908	0.1516			0.3351							

Student Name	Period	Condition	MSA Pre Test	MSA Post Test	Gain	Pre 28776	Post 36993	28776-36993 Gain	28776 Mastery Learning	Pre 28771 MP:1	Pre 28771 MP:2	Post 28771 MP:1	Post 28771 MP:2	28771-28771 MP:1 Gain	28771-28771 MP:2 Gain
n(All)															
Standard Deviation(Mastery)			0.1581	0.1482	**0.1375**			0.3408							
Standard Deviation(Control)			0.2097	0.2152	**0.1372**			0.3349							
Effect Size					**0.9679**			0.0120							

8.4.2 Part Two

Student Name	Period	Condition	Pre 28775 MP:1	Pre 28775 MP:2	Post 37023 MP:1	Post 37023 MP:2	28775-37023 MP:1 Gain	28775-37023 MP:2 Gain	28775 Mastery Learning	Pre 28768 MP:1	Pre 28768 MP:2	Post 36895 MP:1	Post 36895 MP:2	28768-36895 MP:1 Gain	28768-36895 MP:2 Gain	28768 (1) Percent Correct	28768 (2) Percent Correct
Student 1	6	Mastery	1	0	0	1	-1	1		1	0	1	0	0	0	30%	23%
Student 2	6	Mastery	0	1	1	1	1	0	41%	1	0	0	1	-1	1	60%	50%
Student 3	7(I-Z)	Mastery	1	0	1	1	0	1	55%	1	0	1	1	0	1	43%	30%
Student 4	6	Mastery	0	0	1	1	1	1	35%	1	0	1	0	0	0	37%	41%
Student 5	7(I-Z)	Mastery	0	0	0	0	0	0	21%	0	0	0	0	1	0	16%	41%
Student 6	6	Mastery	0	0	0	1	0	1	0%	0	0	1	0	1	0	60%	100%
Student 7	6	Mastery	1	0	1	1	0	1	60%	1	0	1	0	0	0	100%	44%
Student 8	6	Mastery	0	0	1	1	1	1	38%	0	0	1	0	1	0	37%	30%
Student 9	7(I-Z)	Mastery	0	0	1	1	1	1	75%	1	0	1	1	0	1	100%	44%
Student 10	7(I-Z)	Mastery	1	0	1	1	0	1	62%	1	0	1	1	0	1	100%	100%
Student 11	6	Mastery	0	0	0	1	0	1	100%	1	0	1	0	0	0	50%	60%
Student 12	7(I-Z)	Mastery	1	0	1	1	0	1	0%	0	1	0	0	0	-1	100%	0%
Student 13	7(I-Z)	Mastery	1	0	1	1	0	1	60%	1	0	1	1	0	1	100%	100%
Student 14	6	Mastery	0	0	0	0	0	0		0	0	0	0	0	0	21%	25%
Student 15	6	Mastery	0	0	0	0	0	0	44%	1	0	1	0	0	0	60%	100%
Student 16	6	Mastery	0	0	1	1	1	1	100%	1	1	1	1	0	0	75%	55%
Student 17	6	Mastery	1	1	1	1	0	0	100%	1	0	1	0	0	0	75%	100%
Student 18	6	Mastery	0	0	1	1	1	1	42%	1	0	1	0	0	0	100%	31%
Student 19	7(I-Z)	Mastery	1	0	0	1	-1	1	75%	0	0	1	0	1	0	100%	75%
Student 20	7(I-Z)	Mastery	1	0	1	1	0	1	75%	1	0	1	1	0	1	53%	75%
Student 21	6	Mastery	1	1	1	1	0	0	52%	1	0	0	0	-1	0	42%	25%
Student 22	6	Mastery	1	0	1	1	0	1	100%	1	0	1	1	0	1	100%	25%
Student 23	7(I-Z)	Mastery	1	0	1	1	0	1	60%	1	0	1	0	0	0	50%	100%
Student 24	6	Mastery	0	0	0	1	0	1	50%	1	0	1	1	0	1	28%	50%

Student Name	Period	Condition	Pre 28775 MP:1	Pre 28775 MP:2	Post 37023 MP:1	Post 37023 MP:2	28775 - 37023 MP:1 Gain	28775 - 37023 MP:2 Gain	28775 Mastery Learning	Pre 28768 MP:1	Pre 28768 MP:2	Post 36895 MP:1	Post 36895 MP:2	28768 - 36895 MP:1 Gain	28768 - 36895 MP:2 Gain	28768 (1) Percent Correct	28768 (2) Percent Correct
Student 25	6	Mastery	1	0	0	1	-1	1	44%	1	0	1	1	0	1	40%	60%
Student 26	6	Mastery	1	0	1	1	0	1	100%	1	1	1	1	0	0	100%	53%
Student 27	6	Mastery	1	1	1	1	0	0	100%	1	1	1	1	0	0	100%	50%
Student 28	7(I-Z)	Mastery	1	1	1	1	0	0	100%	1	1	1	0	0	-1	75%	100%
Student 29	6	Mastery	1	0	0	1	-1	1	0%	1	0	1	0	0	0	100%	47%
Student 30	6	Mastery	1	1	1	1	0	0	30%	0	0	1	1	1	1	50%	31%
Student 31	6	Mastery	1	0	1	1	0	1	100%	1	0	0	0	-1	0	50%	27%
Student 32	5	Control	1	1	1	1	0	0		1	0	1	0	0	0		
Student 33	5	Control	0	0	0	0	0	0		1	0	1	0	0	0		
Student 34	5	Control	1	0	1	1	0	1		1	0	1	0	0	0		
Student 35	5	Control	0	0	1	1	1	1		1	0	1	1	0	1		
Student 36	7(A-H)	Control	1	0	1	1	0	1		1	0	1	0	0	0		
Student 37	5	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 38	5	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 39	5	Control	1	1	1	1	0	0		1	0	1	1	0	1		
Student 40	5	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 41	7(A-H)	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 42	5	Control	1	1	1	1	0	0		1	0	1	1	0	1		
Student 43	5	Control	1	1	1	1	0	0		0	0	1	0	1	0		
Student 44	5	Control	0	0	0	0	0	0		1	0	0	0	-1	0		
Student 45	7(A-H)	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 46	5	Control	0	0	0	0	0	0		1	1	1	0	0	-1		
Student 47	7(A-H)	Control	1	0	0	1	-1	1		1	1	1	0	0	-1		
Student 48	7(A-H)	Control	0	0	0	0	0	0		1	0	1	0	0	0		
Student 49	5	Control	0	0	0	1	0	1		0	0	1	0	1	0		
Student 50	7(A-H)	Control	0	0	1	0	1	0		1	1	1	0	0	-1		
Student 51	7(A-H)	Control	1	1	1	1	0	0		1	1	0	1	-1	0		
Student 52	5	Control	0	0	0	1	0	1		1	0	1	0	0	0		
Student 53	7(A-H)	Control	1	0	1	0	0	0		0	1	1	1	1	0		
Student 54	5	Control	0	0	0	0	0	0		1	0	1	1	0	1		
Student 55	5	Control	0	0	0	1	0	1		1	1	1	1	0	0		
Student 56	5	Control	0	0	0	0	0	0		0	0	0	0	0	0		
Student 57	5	Control	0	0	1	0	1	0		1	0	1	0	0	0		
Student 58	5	Control	0	0	1	1	1	1		1	0	0	0	-1	0		
Student 59	7(A-H)	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 60	5	Control	1	1	1	1	0	0		1	1	1	1	0	0		
Student 61	5	Control	1	0	0	0	-1	0		1	0	1	0	0	0		
Student 62	5	Control	1	0	0	0	-1	0		1	0	1	0	0	0		

Student Name	Period	Condition	Pre 28775 MP:1	Pre 28775 MP:2	Post 37023 MP:1	Post 37023 MP:2	28775 - 37023 MP:1 Gain	28775 - 37023 MP:2 Gain	28775 Mastery Learning	Pre 28768 MP:1	Pre 28768 MP:2	Post 36895 MP:1	Post 36895 MP:2	28768 - 36895 MP:1 Gain	28768 - 36895 MP:2 Gain	28768(1) Percent Correct	28768(2) Percent Correct
Student 63	5	Control	1	1	1	1	0	0		1	0	1	1	0	1		
Student 64	5	Control	0	0	0	0	0	0		0	0	0	0	0	0		
Student 65	5	Control	1	1	1	1	0	0		1	1	1	0	0	-1		
Student 66	5	Control	1	0	1	1	0	1		1	1	1	1	0	0		
Student 67	5	Control	0	0	1	1	1	1		1	0	1	0	0	0		
Student 68	5	Control	1	1	0	0	-1	-1		1	0	1	0	0	0		
Student 69	5	Control	0	0	0	0	0	0		1	0	1	1	0	1		
Student 70	5	Control	1	0	1	1	0	1		1	0	1	1	0	1		
Student 71	5	Control	0	0	1	1	1	1		1	0	1	0	0	0		
Average (All)							6%	46%						3%	15%		
Average (Mastery)							6%	71%						6%	26%		
Average (Control)							5%	28%						0%	8%		
P-Value							0.9116	0.0003						0.5633	0.1725		
Standard Deviation(All)							0.5315	0.5300						0.4463	0.5516		
Standard Deviation(Mastery)							0.5736	0.4614						0.5122	0.5755		
Standard Deviation(Control)							0.5038	0.5057						0.3922	0.5256		
Effect Size							0.0288	0.8595						0.1645	0.3483		

8.4.3 Part Three

Student Name	Period	Condition	Pre 28779	Post 37013	28779 - 37013 Gain	28779 Percent Correct	Pre 28778	Post 37003	28778 - 37003 Gain	28778(1) Percent Correct	28778(2) Percent Correct	28778(3) Percent Correct	Pre 28770	Post 36973	28770 - 36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 1	6	Mastery	1	1	0		0	0	0				0	0	0		23%
Student 2	6	Mastery	1	1	0	75%	1	1	0	60%	55%	100%	1	1	0	66%	50%
Student 3	7(I-Z)	Mastery	0	1	1	19%	0	1	1	27%	28%	26%	1	1	0	100%	30%
Student 4	6	Mastery	1	1	0	100%	0	0	0	29%	100%	100%	1	1	0	66%	41%
Student 5	7(I-Z)	Mastery	1	1	0	45%	0	0	0	100%	27%	100%	0	1	1	100%	41%
Student 6	6	Mastery	1	1	0	60%	0	0	0		36%	100%	0	1	1	50%	100%

Student Name	Period	Condition	Pre 28779	Post 37013	28779-37013 Gain	28779 Percent Correct	Pre 28778	Post 37003	28778-37003 Gain	28778(1) Percent Correct	28778(2) Percent Correct	28778(3) Percent Correct	Pre 28770	Post 36973	28770-36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 7	6	Mastery	1	1	0	100%	1	1	0	55%	100%	100%	1	1	0	75%	44%
Student 8	6	Mastery	1	1	0	100%	1	0	-1	55%	100%	100%	0	1	1	56%	30%
Student 9	7(I-Z)	Mastery	0	1	1	75%	0	1	1	75%	42%	100%	0	0	0	60%	44%
Student 10	7(I-Z)	Mastery	1	1	0	100%	1	1	0	100%	60%	100%	1	1	0	100%	100%
Student 11	6	Mastery	1	1	0	54%	1	1	0	100%	27%	100%	0	1	1	100%	60%
Student 12	7(I-Z)	Mastery	1	1	0	100%	1	0	-1				1	1	0	100%	0%
Student 13	7(I-Z)	Mastery	0	1	1	100%	1	1	0	100%	44%	40%	1	1	0	100%	100%
Student 14	6	Mastery	0	1	1		1	0	-1				0	0	0		25%
Student 15	6	Mastery	1	1	0	70%	1	1	0	40%	100%	100%	1	1	0	100%	100%
Student 16	6	Mastery	1	1	0	75%	0	1	1	100%	100%	75%	1	1	0	75%	55%
Student 17	6	Mastery	1	1	0	100%	1	1	0	100%	100%	100%	1	1	0	100%	100%
Student 18	6	Mastery	1	1	0	75%	1	1	0	100%	63%	100%	1	0	-1	100%	31%
Student 19	7(I-Z)	Mastery	1	1	0	100%	1	1	0	100%	100%	75%	1	1	0	66%	75%
Student 20	7(I-Z)	Mastery	1	1	0	100%	1	1	0	75%	75%	41%	1	1	0	75%	75%
Student 21	6	Mastery	0	1	1	44%	0	1	1	100%	29%	22%	1	0	-1	50%	25%
Student 22	6	Mastery	1	1	0	100%	0	1	1	66%	100%	55%	0	1	1	100%	25%
Student 23	7(I-Z)	Mastery	0	1	1	62%	0	1	1	100%	36%	66%	1	1	0	75%	100%
Student 24	6	Mastery	1	1	0	0%	0	1	1	45%	8%		1	1	0	50%	50%
Student 25	6	Mastery	1	1	0	100%	0	0	0	40%	41%	100%	1	0	-1	100%	60%
Student 26	6	Mastery	1	0	-1	100%	0	1	1	100%	75%	60%	1	1	0	75%	53%
Student 27	6	Mastery	1	1	0	100%	0	1	1	41%	44%	100%	1	1	0	100%	50%
Student 28	7(I-Z)	Mastery	1	1	0	100%	0	1	1	100%	100%	100%	1	1	0	75%	100%
Student 29	6	Mastery	0	1	1	100%	0	1	1	60%	33%	100%	1	1	0	100%	47%
Student 30	6	Mastery	1	1	0	100%	1	1	0	100%	100%	100%	0	1	1	60%	31%
Student 31	6	Mastery	0	0	0	100%	1	0	-1	50%	75%	53%	1	1	0	100%	27%
Student 32	5	Control	1	1	0		0	1	1				1	0	-1		
Student 33	5	Control	1	0	-1		0	0	0				0	0	0		
Student 34	5	Control	1	1	0		0	1	1				1	0	-1		
Student 35	5	Control	0	1	1		1	1	0				0	0	0		
Student 36	7(A-H)	Control	1	1	0		1	0	-1				1	1	0		
Student 37	5	Control	1	1	0		1	1	0				1	0	-1		
Student 38	5	Control	1	1	0		1	1	0				1	1	0		
Student 39	5	Control	0	1	1		1	0	-1				0	1	1		
Student 40	5	Control	1	1	0		1	1	0				1	1	0		
Student 41	7(A-H)	Control	1	1	0		0	1	1				1	1	0		
Student 42	5	Control	1	1	0		0	1	1				1	1	0		
Student 43	5	Control	1	1	0		1	0	-1				1	0	-1		
Student 44	5	Control	0	0	0		0	0	0				0	0	0		
Student 45	7(A-H)	Control	1	1	0		1	1	0				1	1	0		

Student Name	Period	Condition	Pre 28779	Post 37013	28779-37013 Gain	28779 Percent Correct	Pre 28778	Post 37003	28778-37003 Gain	28778(1) Percent Correct	28778(2) Percent Correct	28778(3) Percent Correct	Pre 28770	Post 36973	28770-36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 46	5	Control	1	1	0		1	1	0				0	0	0		
Student 47	7(A-H)	Control	1	1	0		1	1	0				1	1	0		
Student 48	7(A-H)	Control	0	0	0		1	0	-1				0	0	0		
Student 49	5	Control	1	1	0		0	0	0				1	0	-1		
Student 50	7(A-H)	Control	1	1	0		1	1	0				1	1	0		
Student 51	7(A-H)	Control	1	1	0		1	0	-1				1	1	0		
Student 52	5	Control	0	1	1		0	0	0				1	1	0		
Student 53	7(A-H)	Control	1	1	0		0	1	1				1	0	-1		
Student 54	5	Control	0	1	1		1	0	-1				1	1	0		
Student 55	5	Control	1	1	0		1	1	0				0	1	1		
Student 56	5	Control	1	0	-1		0	0	0				0	0	0		
Student 57	5	Control	1	1	0		1	0	-1				0	0	0		
Student 58	5	Control	1	1	0		0	0	0				1	0	-1		
Student 59	7(A-H)	Control	1	1	0		1	0	-1				1	1	0		
Student 60	5	Control	0	1	1		0	0	0				1	1	0		
Student 61	5	Control	1	1	0		1	0	-1				1	1	0		
Student 62	5	Control	1	1	0		1	0	-1				1	1	0		
Student 63	5	Control	1	1	0		1	1	0				1	1	0		
Student 64	5	Control	1	1	0		0	0	0				0	0	0		
Student 65	5	Control	1	1	0		1	0	-1				1	1	0		
Student 66	5	Control	1	1	0		1	1	0				0	1	1		
Student 67	5	Control	0	0	0		1	1	0				1	1	0		
Student 68	5	Control	1	1	0		1	0	-1				1	0	-1		
Student 69	5	Control	0	1	1		1	0	-1				0	0	0		
Student 70	5	Control	1	1	0		1	1	0				1	1	0		
Student 71	5	Control	1	1	0		1	0	-1				1	0	-1		
Average (All)					14%				-3%						-4%		
Average (Mastery)					19%				23%						10%		
Average (Control)					10%				-23%						-15%		
P-Value					0.4008				0.0061						0.0590		
Standard Deviation(All)					0.4566				0.6964						0.5461		
Standard Deviation(Mastery)					0.4774				0.6688						0.5388		

Student Name	Period	Condition	Pre 28779	Post 37013	28779-37013 Gain	28779 Percent Correct	Pre 28778	Post 37003	28778-37003 Gain	28778(1) Percent Correct	28778(2) Percent Correct	28778(3) Percent Correct	Pre 28770	Post 36973	28770-36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Standard Deviation(Control)					0.4414				0.6597						0.5335		
Effect Size					0.2119				0.6833						0.4626		

8.4.4 Part Four

Student Name	Period	Condition	Pre 28774 MP:1	Pre 28774 MP:2	Post 34886 MP:1	Post 34886 MP:2	28774-34886 MP:1 Gain	28774-34886 MP:2 Gain	28774(1) Percent Correct	28774(2) Percent Correct	Pre 28769	Post 36941	28769-36941 Gain	28769 Percent Correct	28770-36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 1	6	Mastery	1	0	1	1	0	1			0	0	0	0%	0		23%
Student 2	6	Mastery	1	0	1	1	0	1	100%	100%	0	0	0	50%	0.5	66%	50%
Student 3	7(I-Z)	Mastery	1	0	1	1	0	1	100%	70%	1	1	0	100%	1	100%	30%
Student 4	6	Mastery	1	1	1	1	0	0	100%	55%	0	0	0	41%	0.41	66%	41%
Student 5	7(I-Z)	Mastery	0	0	1	1	1	1	75%	30%	0	0	0	100%	1	100%	41%
Student 6	6	Mastery	1	0	1	1	0	1	100%	62%	0	0	0	50%	0.5	50%	100%
Student 7	6	Mastery	1	1	1	1	0	0	100%	75%	1	1	0	100%	1	75%	44%
Student 8	6	Mastery	0	0	1	1	1	1	100%	50%	0	0	0	27%	0.27	56%	30%
Student 9	7(I-Z)	Mastery	1	1	1	1	0	0	100%	37%	0	0	0	55%	0.55	60%	44%
Student 10	7(I-Z)	Mastery	1	1	1	1	0	0	100%	100%	0	0	0	53%	0.53	100%	100%
Student 11	6	Mastery	1	1	1	1	0	0	100%	60%	1	1	0	100%	1	100%	60%
Student 12	7(I-Z)	Mastery	1	0	1	0	0	0	75%	100%	1	0	-1		1	100%	0%
Student 13	7(I-Z)	Mastery	1	0	1	1	0	1	75%	33%	1	0	-1	100%	2	100%	100%
Student 14	6	Mastery	0	0	1	0	1	0			0	0	0	0%	0		25%
Student 15	6	Mastery	1	1	1	1	0	0	100%	75%	0	0	0	100%	1	100%	100%
Student 16	6	Mastery	1	1	1	1	0	0	100%	100%	1	1	0	100%	1	75%	55%
Student 17	6	Mastery	1	0	1	1	0	1	100%	100%	0	0	0	100%	1	100%	100%
Student 18	6	Mastery	1	0	1	1	0	1	100%	100%	1	0	-1	58%	1.58	100%	31%
Student 19	7(I-Z)	Mastery	1	0	1	1	0	1	100%	100%	1	1	0	75%	0.75	66%	75%
Student 20	7(I-Z)	Mastery	1	0	1	1	0	1	100%	100%	0	0	0	100%	1	75%	75%
Student 21	6	Mastery	1	0	1	1	0	1	100%	100%	0	0	0	60%	0.6	50%	25%
Student 22	6	Mastery	1	1	1	1	0	0	100%	100%	0	1	1	100%	0	100%	25%
Student 23	7(I-Z)	Mastery	1	1	1	1	0	0	100%	75%	1	0	-1	55%	1.55	75%	100%
Student 24	6	Mastery	1	1	1	1	0	0	100%	55%	0	1	1	42%	-0.58	50%	50%
Student 25	6	Mastery	1	0	0	1	-1	1	100%	100%	0	0	0	42%	0.42	100%	60%
Student 26	6	Mastery	1	1	1	1	0	0	100%	100%	1	1	0	75%	0.75	75%	53%
Student 27	6	Mastery	1	1	1	1	0	0	100%	100%	0	1	1	100%	0	100%	50%
Student 28	7(I-Z)	Mastery	1	1	1	1	0	0	100%	100%	0	1	1	75%	-0.25	75%	100%

Student Name	Period	Condition	Pre 28774 MP:1	Pre 28774 MP:2	Post 34886 MP:1	Post 34886 MP:2	28774 - 34886 MP:1 Gain	28774 - 34886 MP:2 Gain	28774(1) Percent Correct	28774(2) Percent Correct	Pre 28769	Post 36941	28769 - 36941 Gain	28769 Percent Correct	28770 - 36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 29	6	Mastery	0	0	1	1	1	1	100%	57%	0	0	0	60%	0.6	100%	47%
Student 30	6	Mastery	1	1	1	0	0	-1	100%	50%	0	1	1	50%	-0.5	60%	31%
Student 31	6	Mastery	1	0	1	1	0	1	100%	100%	1	1	0	35%	0.35	100%	27%
Student 32	5	Control	0	1	0	1	0	0			0	1	1		-1		
Student 33	5	Control	0	0	1	0	1	0			0	0	0		0		
Student 34	5	Control	1	0	1	1	0	1			0	1	1		-1		
Student 35	5	Control	1	0	1	1	0	1			0	0	0		0		
Student 36	7(A-H)	Control	1	0	1	1	0	1			0	0	0		0		
Student 37	5	Control	1	1	1	1	0	0			1	0	-1		1		
Student 38	5	Control	1	1	1	1	0	0			1	1	0		0		
Student 39	5	Control	1	0	1	1	0	1			1	1	0		0		
Student 40	5	Control	1	1	1	1	0	0			1	1	0		0		
Student 41	7(A-H)	Control	1	1	1	1	0	0			1	1	0		0		
Student 42	5	Control	0	1	1	1	1	0			1	1	0		0		
Student 43	5	Control	1	0	1	1	0	1			1	0	-1		1		
Student 44	5	Control	1	0	0	0	-1	0			0	0	0		0		
Student 45	7(A-H)	Control	1	1	1	1	0	0			0	1	1		-1		
Student 46	5	Control	0	1	1	1	1	0			0	0	0		0		
Student 47	7(A-H)	Control	1	1	1	1	0	0			1	1	0		0		
Student 48	7(A-H)	Control	1	1	1	1	0	0			0	0	0		0		
Student 49	5	Control	0	0	1	1	1	1			1	0	-1		1		
Student 50	7(A-H)	Control	1	0	1	1	0	1			1	0	-1		1		
Student 51	7(A-H)	Control	1	1	1	1	0	0			1	1	0		0		
Student 52	5	Control	0	1	1	0	1	-1			0	0	0		0		
Student 53	7(A-H)	Control	1	0	1	1	0	1			0	0	0		0		
Student 54	5	Control	1	1	0	1	-1	0			1	1	0		0		
Student 55	5	Control	1	1	1	1	0	0			1	1	0		0		
Student 56	5	Control	0	0	1	0	1	0			0	0	0		0		
Student 57	5	Control	0	1	0	1	0	0			1	1	0		0		
Student 58	5	Control	1	0	1	1	0	1			0	0	0		0		
Student 59	7(A-H)	Control	1	1	1	1	0	0			1	1	0		0		
Student 60	5	Control	0	1	1	1	1	0			0	1	1		-1		
Student 61	5	Control	1	1	1	1	0	0			0	0	0		0		
Student 62	5	Control	1	1	1	0	0	-1			0	1	1		-1		
Student 63	5	Control	1	1	1	1	0	0			0	1	1		-1		
Student 64	5	Control	0	1	1	1	1	0			0	1	1		-1		
Student 65	5	Control	1	1	1	1	0	0			1	1	0		0		
Student 66	5	Control	1	1	1	1	0	0			1	0	-1		1		
Student 67	5	Control	1	0	1	1	0	1			1	0	-1		1		

Student Name	Period	Condition	Pre 28774 MP:1	Pre 28774 MP:2	Post 34886 MP:1	Post 34886 MP:2	28774 - 34886 MP:1 Gain	28774 - 34886 MP:2 Gain	28774(1) Percent Correct	28774(2) Percent Correct	Pre 28769	Post 36941	28769 - 36941 Gain	28769 Percent Correct	28770 - 36973 Gain	28770 Percent Correct	28768(2) Percent Correct
Student 68	5	Control	1	0	1	1	0	1			1	0	-1		1		
Student 69	5	Control	1	0	0	0	-1	0			0	0	0		0		
Student 70	5	Control	1	1	1	1	0	0			1	1	0		0		
Student 71	5	Control	1	1	1	1	0	0			0	0	0		0		
Average (All)							11%	32%					1%		27%		
Average (Mastery)							10%	45%					3%		61%		
Average (Control)							13%	23%					0%		0%		
P-Value							0.7950	0.0911					0.8138		0.0001		
Standard Deviation(All)							0.4644	0.5548					0.5730		0.6646		
Standard Deviation(Mastery)							0.3962	0.5680					0.5467		0.5869		
Standard Deviation(Control)							0.5158	0.5305					0.5991		0.5991		
Effect Size							-0.0547	0.4272					0.0538		1.0246		

8.5 Moving Straight Ahead

8.5.1 Moving Straight Ahead Problem sets

Problem Set "8th Grade - Moving Straight Ahead Test v 1.0 With Tutoring (13 items)" id:[5550]

1) Assistment #28768 "28768 - 8th grade: Moving Straight Ahead - Solve for x"

A) Use the properties of equality to solve the equation for **x**.

2x - 40 = 60

What is the value of x?
Algebra:
✓ 50

109

Hints:

- Start by separating the variable expressions from the constants by adding 40 to both sides.
- Adding 40 to both sides gives you:

$$2x - 40 + 40 = 60 + 40$$
$$2x \qquad = 60 + 40$$
$$2x \qquad = \; 100$$

- Dividing both sides by 2 gives you:

$$2x/2 = 100/2$$
$$x \; = 100/2$$
$$x \; = \; 50$$

The value of x is 50! Type in 50.

B) Use the properties of equality to solve the equation for x.
$4(6 + x) = 2x$
What is the value of x?

Algebra:

✓ -12

Hints:

- Start by distributing the 4 into the expression in parenthesis.
- Distributing the 4 into the expression in parenthesis gives you:

$$4(6 + x) \quad = 2x$$
$$4 * 6 + 4 * x = 2x$$
$$24 + 4x \quad = 2x$$

- Subtracting 24 from both sides gives you this:

$$24 + 4x \quad = \quad 2x$$
$$24 + 4x - 24 = 2x - 24$$
$$4x \qquad = 2x - 24$$

- Next, you can subtract 2x from both sides:

$$4x \; = \quad 2x - 24$$
$$4x - 2x = 2x - 24 - 2x$$
$$4x - 2x = \qquad -24$$

110

Simplify 4x - 2x = -24 by combining like terms:

 4x - 2x = -24
  2x = -24

- Dividing both sides by 2 gives you:

 2x = -24
2x/2 = -24/2
 x = -12

The value of x is -12! Type in -12.

---

2) Assistment #28769 "28769 - 8th grade: Moving Straight Ahead - Solve for x"

Solve for x:
12 + (3/5)x = 6

Algebra:

✔ -10

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Subtracting -4 from both sides gives you:

 12 + (3/5)x   = 6
 12 + (3/5)x - 12 = 6 - 12
   (3/5)x   = -6

- Multiplying 2 to both sides gives you:

 (3/5)x   = -6
 (3/5)x * 5 = -6 * 5
   3x   = -30

- Dividing both sides by 3 gives you:

 3x   = -30
 3x/3 = -30/3
  x   = -10

The value of x is -10. Type in -10.

---

3) Assistment #28770 "28770 - 8th grade: Moving Straight Ahead - Write an equation"

Write an equation from the given table that shows the relationship of y and x. Your answer should be

111

in the form y = _____

X	-3	-2	-1	0	1	2
Y	5	7	9	11	13	15

Algebra:

✓ y = 2x + 11

Hints:

• To find the equation, you need to find the slope and the y-intercept. Then you can place them into the y=mx+b form.

• In order to find the slope or rate of change you just need to first check to see if the x's are changing evenly and then see what the constant rate of change is for y.

• As we can see from the table, as x's changes evenly by +1, the constant rate of change for y is 2. This is the slope.

<table>
<tr><td></td><td>+1</td><td>+1</td><td>+1</td><td>+1</td><td>+1</td></tr>
<tr><td>X</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr>
<tr><td>Y</td><td>5</td><td>7</td><td>9</td><td>11</td><td>13</td><td>15</td></tr>
<tr><td></td><td>+2</td><td>+2</td><td>+2</td><td>+2</td><td>+2</td></tr>
</table>

• Next we need the y-intercept. It can be found by looking at the y coordinate when x is 0.

X	-3	-2	-1	0	1	2
Y	5	7	9	11	13	15

As we can see, when x = 0, y is equal to 11.

• Now we have the slope m = 2 and the y-intercept b = 11. Therefore we can write the equation using the form y = mx +b.

• The equation that fits this table and graph is y = 2x + 11. Type in y = 2x + 11.

---

4) Assistment #28771 "28771 - 8th grade: Moving Straight Ahead - Table and graph from equation"

A) This problem is to be done on paper and will be graded by your teacher.

Given the equation y = 3x + 5, make a table for values of x from -3 to 3.

112

Multiple choice:

✔️ I have finished the table on my paper

B) This problem is to be done on paper and will be graded by your teacher.

Sketch a graph of the equation above.
Multiple choice:

✔️ I have finished the graph on my paper

---

5) Assistment #28774 "28774 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #18 "
A) Use the equation $y = 2x + 8$ to find y if x = -3.
Algebra:

✔️ 2

Hints:

- Since x = -3, you can replace all x's with -3.
  $y = 2x + 8$
  $y = 2*-3 + 8$

- Remember the order of operation:

  1. **P**aranthesis
  2. **E**xponents (powers, roots, etc.)
  3. **M**ultiplication and **D**ivision (from left to right)
  4. **A**ddition and **S**ubtraction (from left to right)

  This can be remembered as **PEMDAS**.

- Multiplication and Division:
  $y = 2*-3 + 8$
  $y = -6 + 8$

- Addition and Subtraction:
  $y = -6 + 8$
  $y = 2$

Type in 2.

B) Use the equation $h = 7 + 4g$ to find g if h = 3.

113

Algebra:

✓ -1

Hints:

- Since h = 3, you can replace all h's with 3.

h = 7 + 4g

3 = 7 + 4g

-

Now rearrange the equation so that n is the subject of the formula (which means to make n stand alone on one side of the equation).

- Add 4 to both sides.

3   = 7 + 4g

3 - 7 = 7 + 4g - 7

  -4 =   4g

- Divide both sides by 4.

-4   = 4g

-4/4 = 4g/4

 -1 = g

Therefore, the value of g is -1. Type in -1.

---

6) Assistment #28775 "28775 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #18"

A)
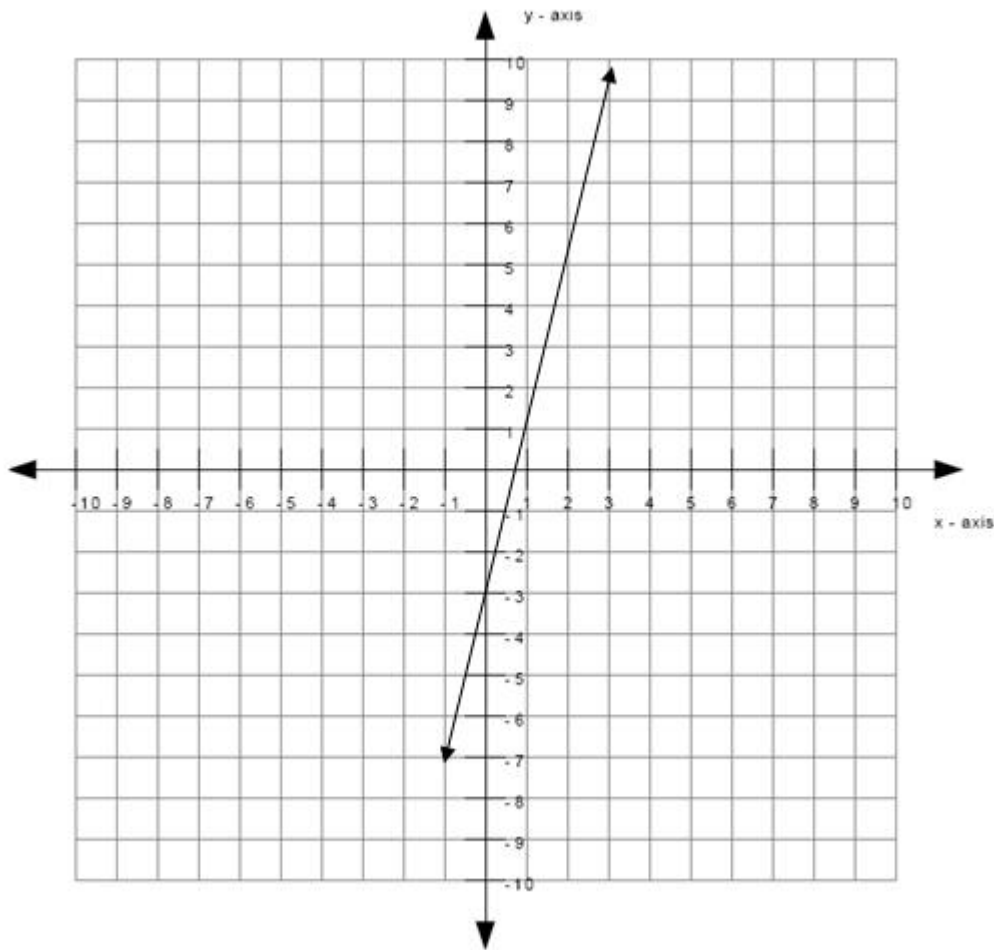
What is the slope of the line graphed above?

Algebra:

✓ 4

Scaffold:

The slope can be calculated by the rise over the run.
The graph below shows one of the ways to get the rise and the run.

115

What is the rise between the two points selected in the image?

Algebra:

✓ 4
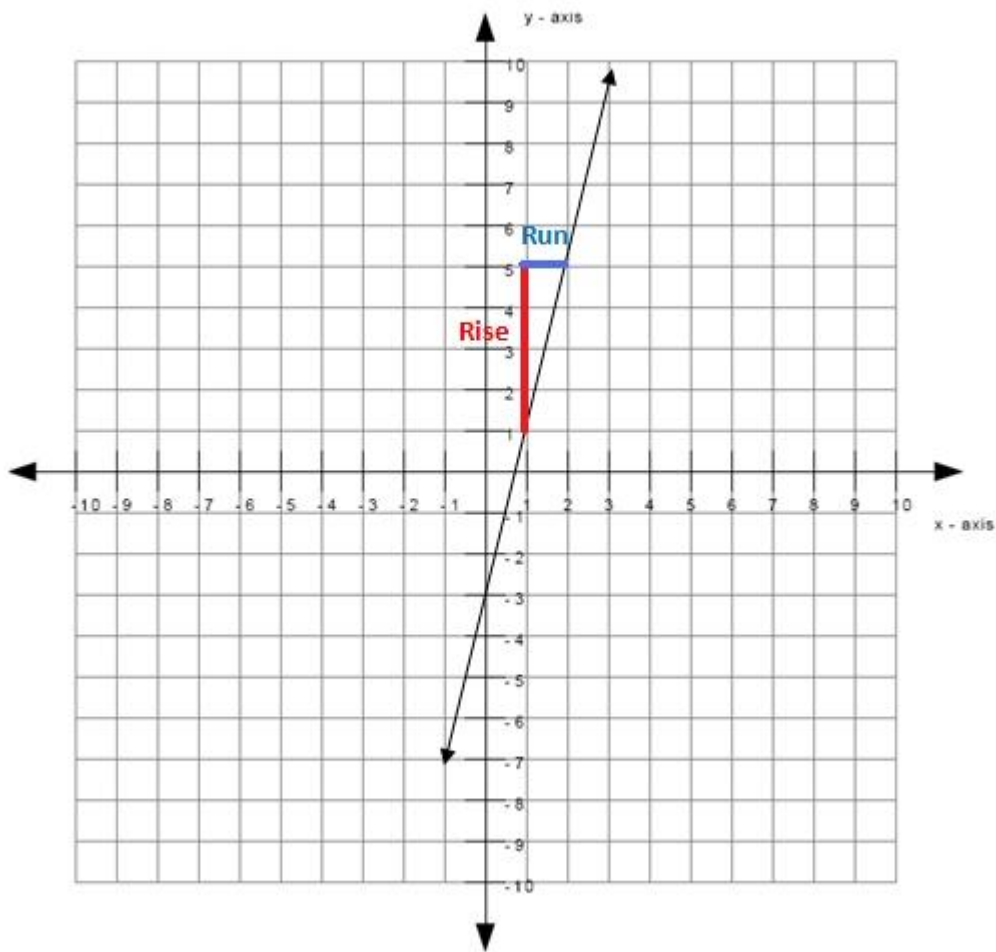
Hints:

- The length of the red line in the graph is the rise.
- The length of the red line is 4 which means that the rise is 4. Type in 4.

Scaffold:

You still need to find the run in order to calculate the slope.
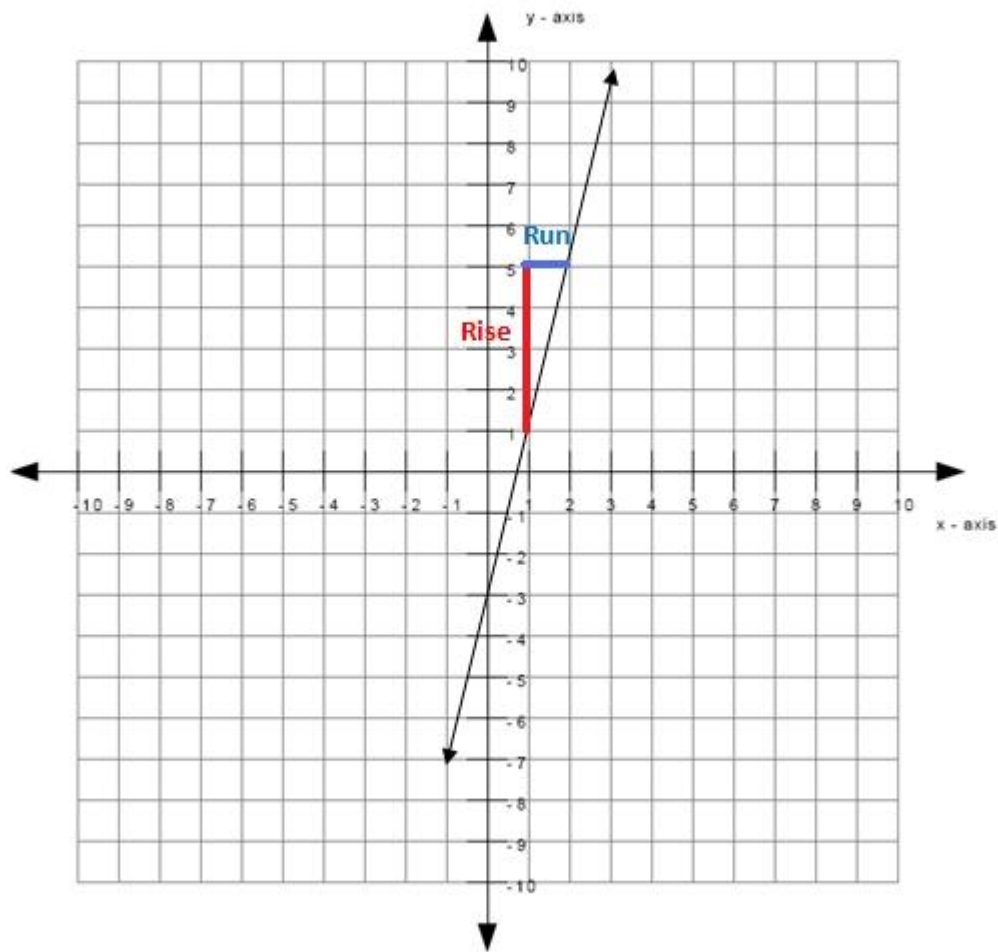
What is the run between the two points selected in the image?

Algebra:

✓ 1

Hints:

- The length of the blue line in the graph is the run.
- The length of the blue line is 1 which means that the run is 1. Type in 1.

Scaffold:

Now that you know the rise and run, you should now be able to calculate the slope.
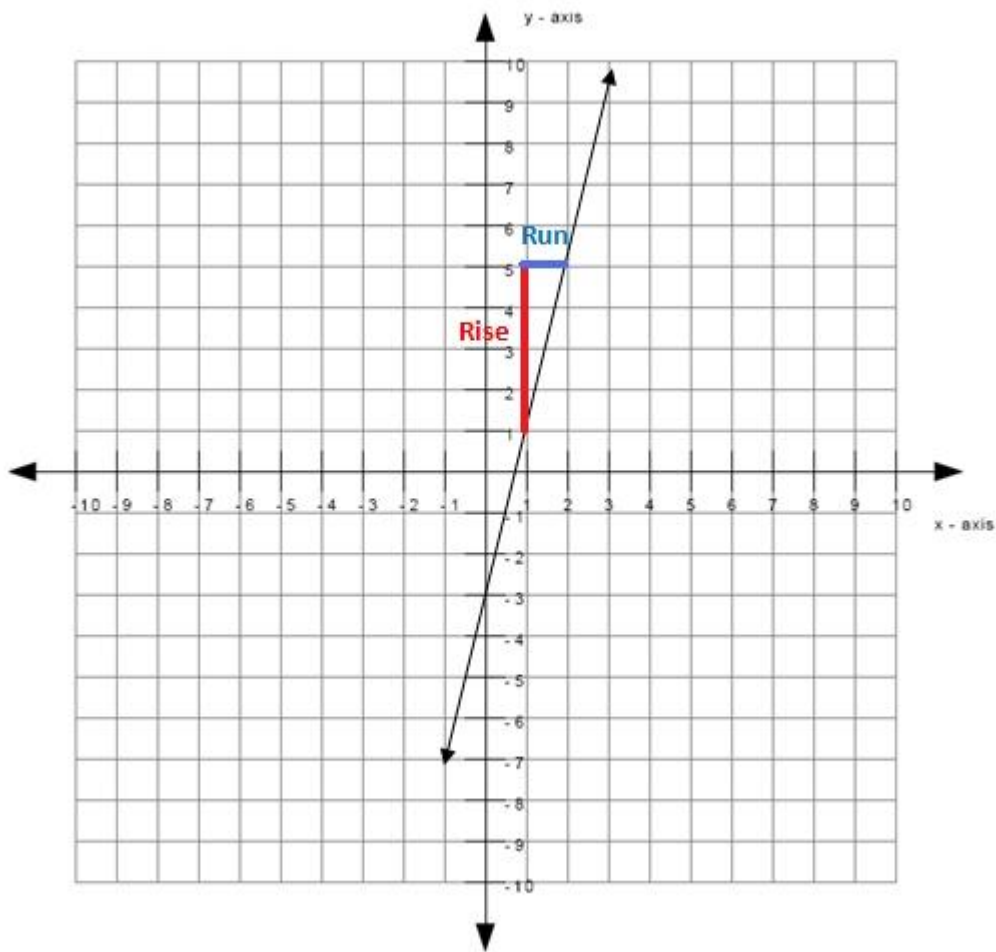
What is the slope?

Algebra:

✓ 4

Hints:

- Recall that you can calculate the slope by the rise over the run.

- In other words:

slope = rise / run

- You previously found that the rise equals to 4 and the run equals to 1. Insert those values into the equation for the slope to get:

slope = rise / run

slope =   4 / 1

- slope = 4 / 1

slope   =   4

The slope equals to 4. Type in 4.

B) In this problem we are going to use the same line.

Write an equation for this line in the form y = _____
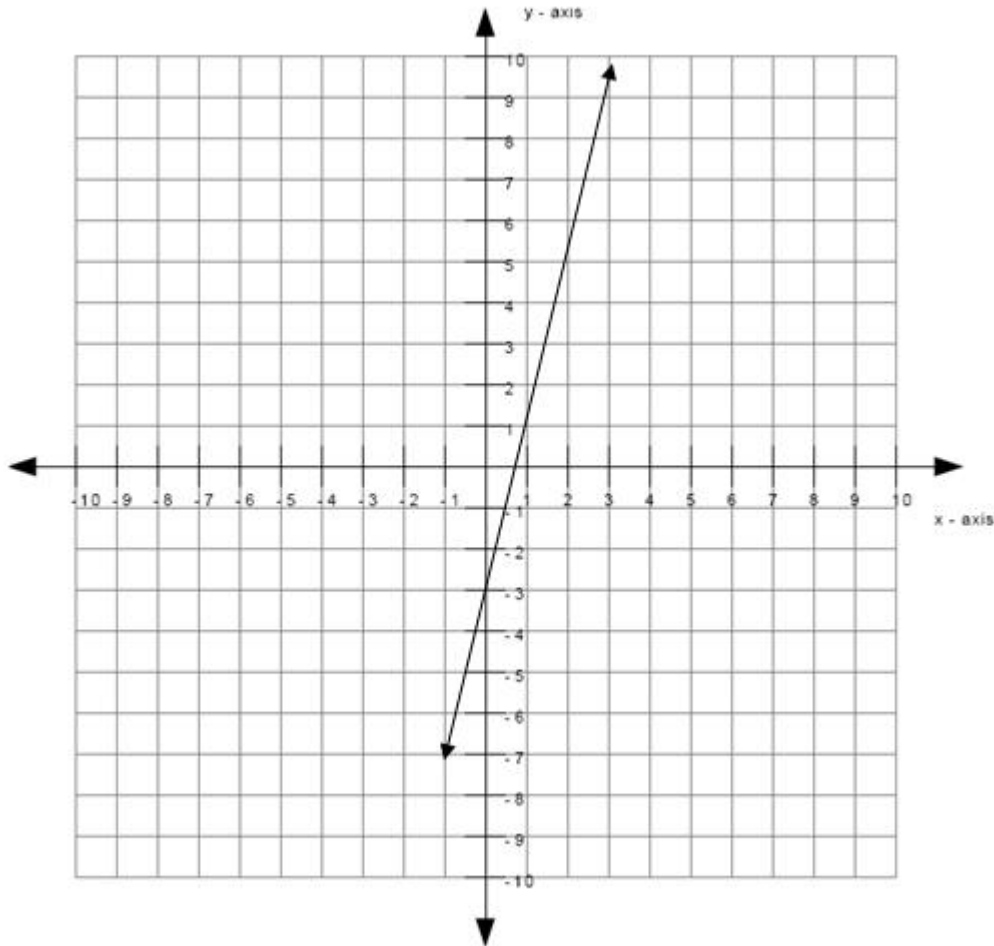
Algebra:

✔ y=4x-3

Scaffold:

The equation for the line is of the form
$y = mx + b$
where m is the slope of the line and b is the y-intercept of the line.
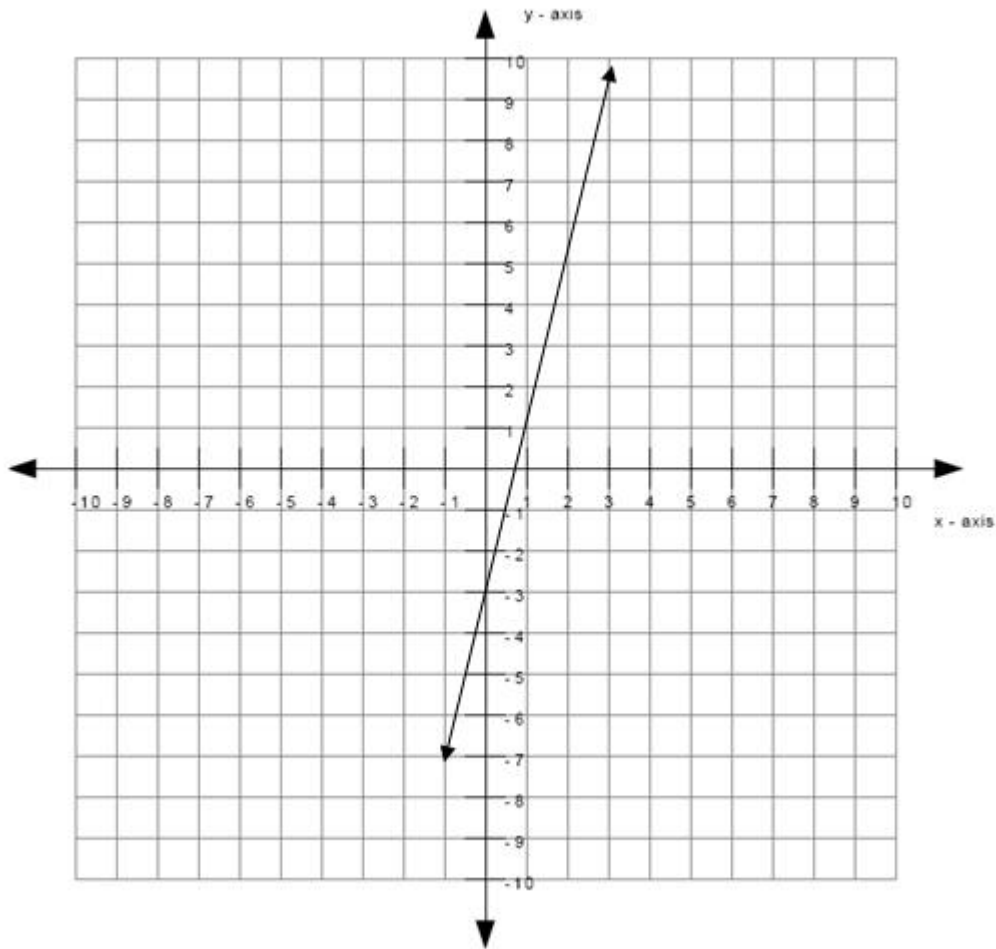
What is the value of m?

Algebra:

✓ 4

Hints:

- Recall that the value of m is the slope of the line.

- You found the slope in the previous problem.

- You found that the value of the slope was 4. This means that the value of m is also 4. Type in 4.

Scaffold:

You still need the value of b before you can find the equation for the line.
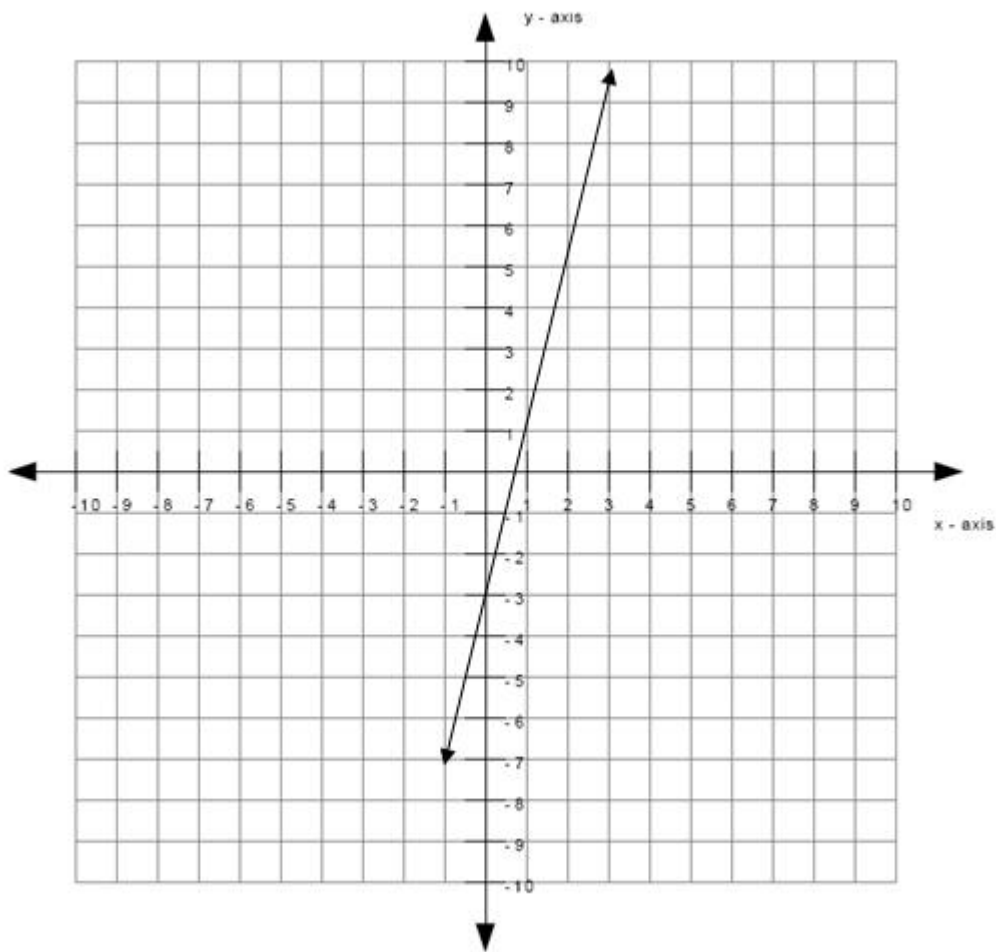
What is the value of b in the equation for the line?

Algebra:

✓ -3

Hints:

- Recall that the value of b is the y-intercept of the line.
- The y-intercept of a line is the value of y at the point where the line touches the y-axis.
- The red dot below indicates the point where the line touches the y-axis.

121
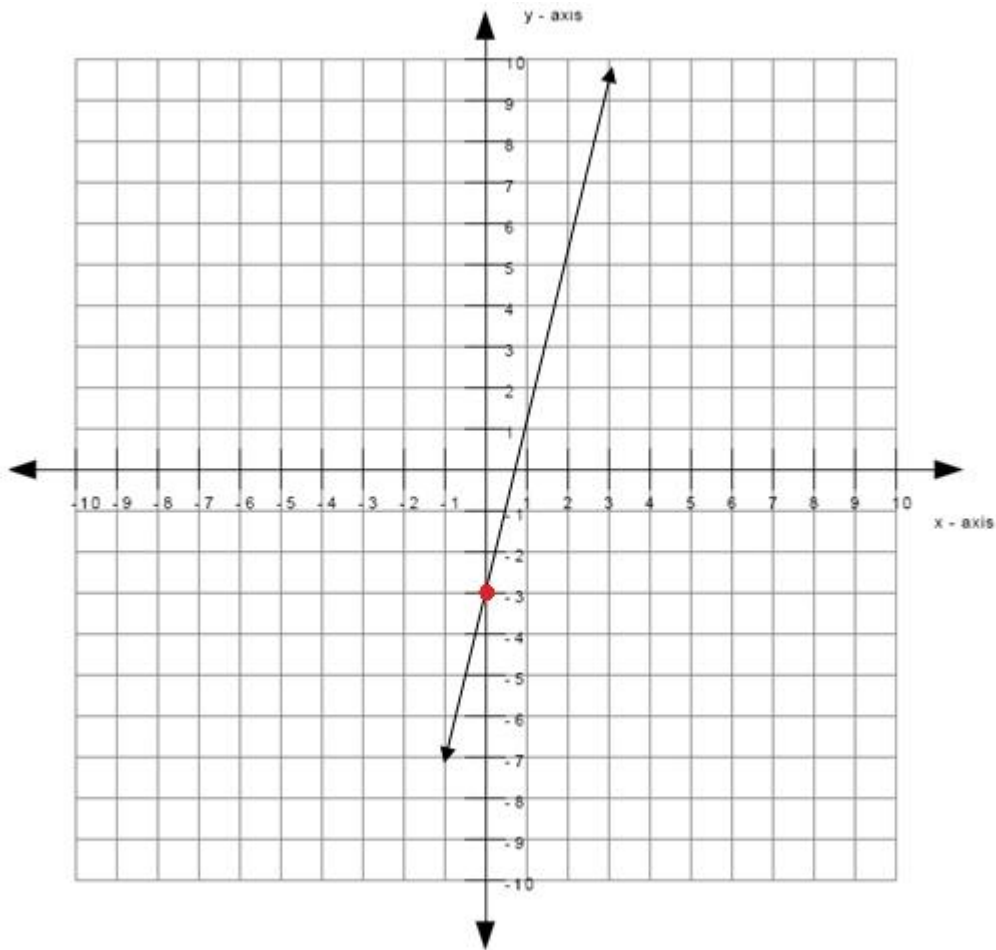
The value of b is equal to the value of y at the point indicated by the red dot.

- The value of y at the point indicated by the red dot is -3. Therefore, the value of b is -3. Type in -3.

Scaffold:

Now try the original question again.
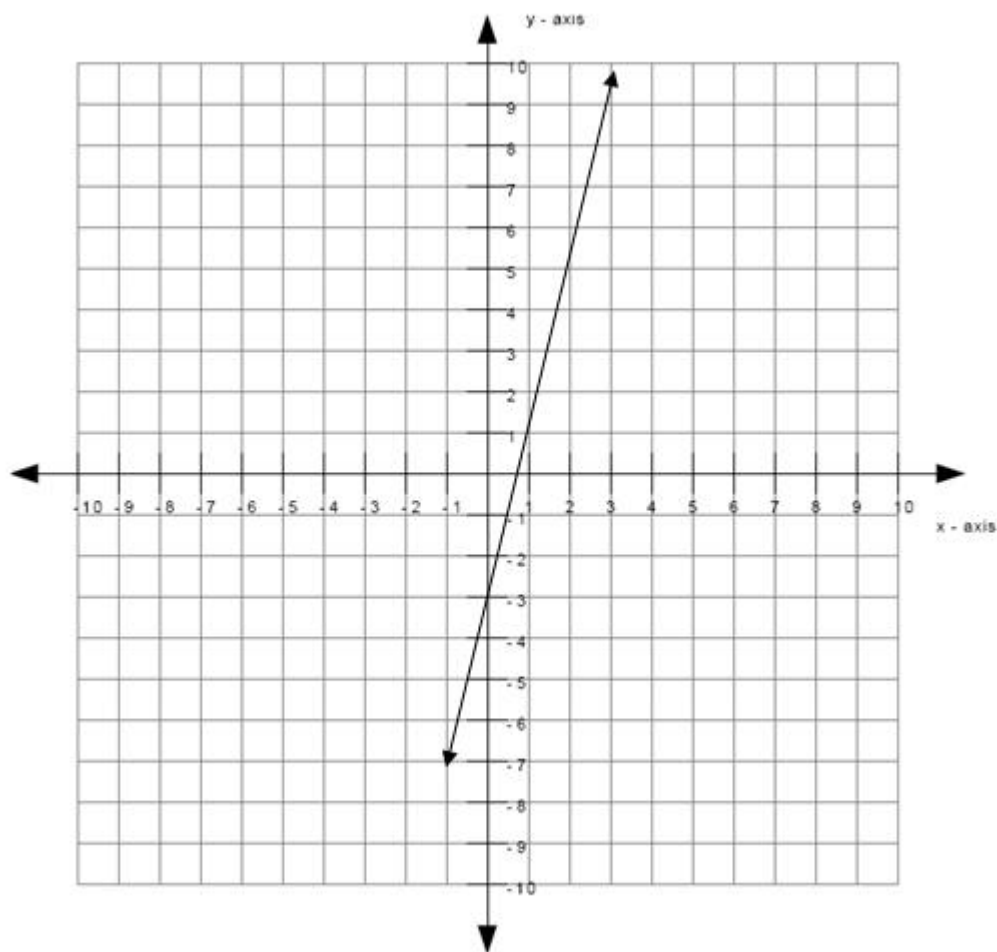
What is the equation for the line?

Algebra:

✓ y=4x-3

✓ y-4x=-3

✓ 4x-3=y

✓ -3=y-4x

Hints:

- Recall that the equation of a line is of the form
y = mx + b

- You previously found that m equals to 4 and b equals to -3.

- To get the equation of the line, insert the values of m and b that you previously found into the equation for a line.

- When inserting the values of m and b that you previously found into the equation for a line, you will get
y = mx + b
y = 4x - 3

123

This means that the equation for the line is y = 4x - 3. Type in y = 4x -3.

---

7) Assistment #28776 "28776 - 8th grade: Moving Straight Ahead - Morph 2004 grade 8 #23"

Orlando and Carol each started an exercise
program that included riding a bike.
The table below shows the weekly miles traveled for 5 weeks of
the program.

Weekly Miles Traveled

Week	Orlando	Carol
1	8	5
2	8.5	6
3	9	7
4	9.5	8
5	10	9
6		
7		
8		

If both Orlando and Carol continue to
increase the weekly miles traveled at the constant rates shown
in the table, what will the weekly miles traveled by Carol be at week 8?

Algebra:

✓ 12

Scaffold:

Carol continues to increase the weekly miles traveled at a constant rate as shown in the table below. This means that Carol increases the weekly miles traveled by the same number every week.
What is that number?

124

Weekly Miles Traveled

Week	Carol
1	5
2	6
3	7
4	8
5	9
6	
7	
8	

?
?
?
?
?
?
?

Algebra:
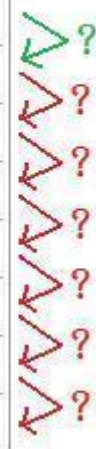
✓ 1

Hints:

- The weekly miles traveled by Carol at week 1 is 5. The weekly miles traveled by Carol in the following week is 6. By how much did the weekly miles traveled increase by?

Weekly Miles Traveled

Week	Carol
1	5
2	6
3	7
4	8
5	9
6	
7	
8	

?
?
?
?
?
?
?

- Carol increases the weekly miles traveled by 1 every week. Type in 1.

125

Weekly Miles Traveled

Week	Carol	
1	5	+1
2	6	+1
3	7	+1
4	8	+1
5	9	+1
6		+1
7		+1
8		+1

Scaffold:

Now try the original problem again.

Orlando and Carol each started an exercise program that included riding a bike. The table below shows the weekly miles traveled for 5 weeks of the program.

Weekly Miles Traveled

Week	Orlando	Carol
1	8	5
2	8.5	6
3	9	7
4	9.5	8
5	10	9
6		
7		
8		

If both Orlando and Carol continue to increase the weekly miles traveled at the constant rates shown in the table, what will the weekly miles traveled by Carol be at week 8?

Algebra:

✓ 12

126

Hints:

- The weekly miles traveled at week 6 is 10.

Weekly Miles Traveled

Week	Carol	
1	5	
2	6	+1
3	7	+1
4	8	+1
5	9	+1
6	10	+1
7		+1
8		+1

- The weekly miles traveled at week 7 is 11.

Weekly Miles Traveled

Week	Carol	
1	5	
2	6	+1
3	7	+1
4	8	+1
5	9	+1
6	10	+1
7	11	+1
8		+1

- The weekly miles traveled at week 8 is 12. Type in 12.

Weekly Miles Traveled
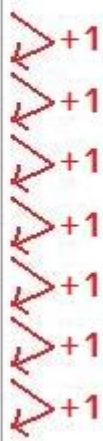
Week	Carol	
1	5	+1
2	6	+1
3	7	+1
4	8	+1
5	9	+1
6	10	+1
7	11	+1
8	12	+1

---

8) Assistment #28778 "28778 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #13"

Which graph below represents the solution to the inequality below?

$2(2x - 3) \geq x + 3$

A.

B.

C.

D.
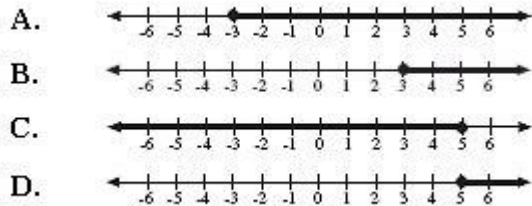
Multiple choice:

✘ A.

✔ B.

✘ C.

✘ D.

Hints:

- First, you have to solve for x in the equation $2(2x - 3) \geq x + 3$.

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- Distribute the 2 to 2x and -3.

    $2(2x - 3) \quad \geq x + 3$

128

$2*2x + 2*-3 \geq x + 3$

$4x + -6 \geq x + 3$

$4x - 6 \geq x + 3$

- **Add 6** to both sides.

$4x - 6 \geq x + 3$

$4x - 6 + 6 \geq x + 3 + 6$

$4x \geq x + 9$

- **Subtract x** to both sides.

$4x \geq x + 9$

$4x - x \geq x + 9 - x$

$3x \geq 9$

- Divide both sides by **3**. (Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

$3x \geq 9$

$3x/3 \geq 9/3$

$x \geq 3$

- $x \geq 3$ means that the x is any value that is equal to or more than 3. This means that the thick black arrow must start at 3 and point in the direction where the values are greater than 3. The graph that represents this is B.

Select B.

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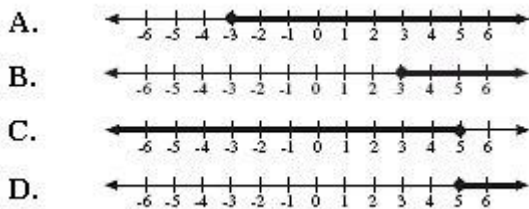
9) Assistment #28779 "28779 - 8th grade: Moving Straight Ahead - Morph 2007 grade 8 #34 "

The directions for using a concentrated cleaning product say to add 2 capfuls of the product for every 3 quarts of water used. Which of the following equations can be used to calculate c, the number of capfuls of the product needed for 7 quarts of water?

A.

$$\frac{2}{3} = \frac{c}{5}$$

B.

$$\frac{2}{3} = \frac{c}{7}$$

C.

$$\frac{3}{2} = \frac{c}{5}$$

D.

$$\frac{3}{2} = \frac{c}{7}$$

Multiple choice:

✖ A.
✔ B.
✖ C.
✖ D.

Hints:

- The problem is about the following ratio

number of capsful of the product : number of quarts of water

- This ratio means that

$$\frac{\text{number of capfuls of the product}}{\text{number of quarts of water used}} = k$$

where k is some constant.

- We know that 2 capfuls of the product is needed for every 3 quarts of water used. This means that

2 : 3

or

$$\frac{2}{3} = k$$

- We also know that c capfuls of the product is needed for every 7 quarts of water used. This means that

    $c : 7$

    or

    $$\frac{c}{7} = k$$

- Notice that the two equations below equal to k.

    $$\frac{2}{3} = k \qquad \frac{c}{7} = k$$

 This means that they are equal to each other. Therefore,

    $$\frac{2}{3} = \frac{c}{7}$$

This is an equation that can be used to find c, the number of capfuls of the product needed for 7 quarts of water. So the answer is B. Select B.

131

Problem Set "8th grade: Moving Straight Ahead - Post Post Test (11 items)" id:[5980]

1) Assistment #36895 "36895 - 8th grade: Moving Straight Ahead - Solve for x"
A) Use the properties of equality to solve the equation for **x**.

3x - 70 = 50

What is the value of x?
Algebra:

✓ 40

Hints:

- Start by separating the variable expressions from the constants by adding 70 to both sides.
- Adding 70 to both sides gives you:

   3x - 70 + 70 = 50 + 70

        3x   = 50 + 70

        3x   =   120

- Dividing both sides by 3 gives you:

   3x/3 = 120/3

     x   = 120/3

     x   =   40

   The value of x is 40! Type in 40.

B) Use the properties of equality to solve the equation for x.
6(4 + x) = 3x
What is the value of x?

Algebra:

✓ -8

Hints:

- Start by distributing the 6 into the expression in parenthesis.
- Distributing the 6 into the expression in parenthesis gives you:

     6(4 + x)   = 3x

   6 * 4 + 6 * x = 3x

     24 + 6x   = 3x

- Subtracting 24 from both sides gives you this:

132

24 + 6x   =   3x

24 + 6x - 24 = 3x - 24

    6x   = 3x - 24

- Next, you can subtract 3x from both sides:

    6x   =   3x - 24

6x - 3x = 3x - 24 - 3x

6x - 3x =   -24

Simplify 6x - 3x = -24 by combining like terms:

6x - 3x = -24

    3x   = -24

- Dividing both sides by 3 gives you:

    3x = -24

3x/3 = -24/3

    x = -8

The value of x is -8! Type in -8.

---

2) Assistment #36941 "36941 - 8th grade: Moving Straight Ahead - Solve for x"

Solve for x:

12 + (3/5)x = 6

Algebra:

✔ -10

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Subtracting -12 from both sides gives you:

12 + (3/5)x   = 6

12 + (3/5)x - 12 = 6 - 12

    (3/5)x   = -6

- Multiplying 5 to both sides gives you:

(3/5)x   = -6

(3/5)x * 5 = -6 * 5

    3x   = -30

133

- Dividing both sides by 3 gives you:

3x   = -30

3x/3 = -30/3

 x   = -10

The value of x is -10. Type in -10.

---

3) Assistment #36973 "36973 - 34885 - 8th grade: Moving Straight Ahead - Write equation from table"

Write an equation from the given table that shows the relationship of y and x. Your answer should be in the form y = _____

X	-2	-1	0	1	2	3
Y	-1	3	7	11	15	19

Algebra:

✓ y=4*x + 7

Hints:

- To find the equation, you need to find the slope and the y-intercept. Then you can place them into the y = mx + b form.

- In order to find the slope or rate of change, you need to first check to see if x is changing evenly and then see what the constant rate of change is for y.

- As you can see from the table, as x changes evenly by +1, the constant rate of change for y is +4. This is the slope.

	+1	+1	+1	+1	+1	
X	-2	-1	0	1	2	3
Y	-1	3	7	11	15	19
	+4	+4	+4	+4	+4	

- Next you need the y-intercept. It can be found by looking at the y coordinate when x is 0.

134

X	-2	-1	0	1	2	3
Y	-1	3	7	11	15	19

As you can see, when x = 0, y is equal to 7.

- Now we have the slope m = 4 and the y-intercept b = 7. Therefore we can write the equation using the form y = mx + b.

- Substituting m = 4 and b = 7 into y = mx + b.

y = mx + b

y = 4x + 7

y = 4x + 7

Therefore the equation that shows the x and y relationship for the given table is y = 4x + 7. Type in y = 4x + 7.

---

4) Assistment #34886 "34886 - 8th grade: Moving Straight Ahead - Substitution and manipulation"

A) Use the equation y = 8 + 5x to find y when x = 7.

Algebra:

✓ 43

Hints:

- Since x = 7, you can replace all x's with 7.

y = 8 + 5x

y = 8 + 5*7

- Remember the order of operations:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction

This can be remembered as **PEMDAS**.

- Multiply first:

y = 8 + 5*7

y = 8 + 35

135

- Add next:

y = $8 + 35$

y = 43

Therefore the value of y is 43. Type in 43.

B) Use the equation 5j - i = 6 to find j when i = 4.

Algebra:

✓ 2

Hints:

- Since i = 4, you can replace all i's with 4's.

5j - i = 6

5j - 4 = 6

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 5j - 4 = 6

5j - 4 + 4 = 6 + 4

5j = 10

- 5j = 10

$$\frac{5j}{5} = \frac{10}{5}$$

$$j = \frac{10}{5}$$

j = 2

Therefore the value of j is 2 or 10/5. Type in which ever one you want since they are both equal.

---

5) Assistment #37023 "37023 - 8th grade: Moving Straight Ahead - Morph 2003 grade 8 #18"

A)

136
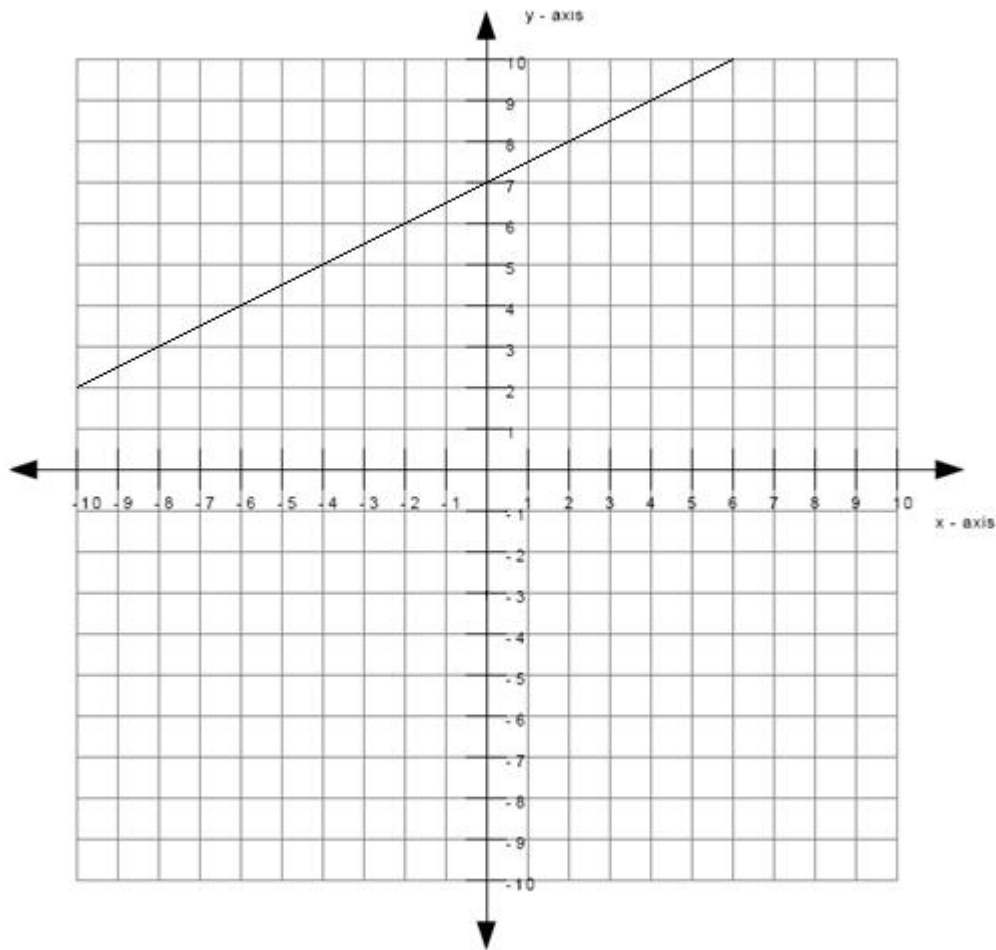
What is the slope of the line graphed above?

Algebra:

✓ 1/2

Scaffold:

The slope can be calculated by the rise over the run.
The graph below shows one of the ways to get the rise and the run.
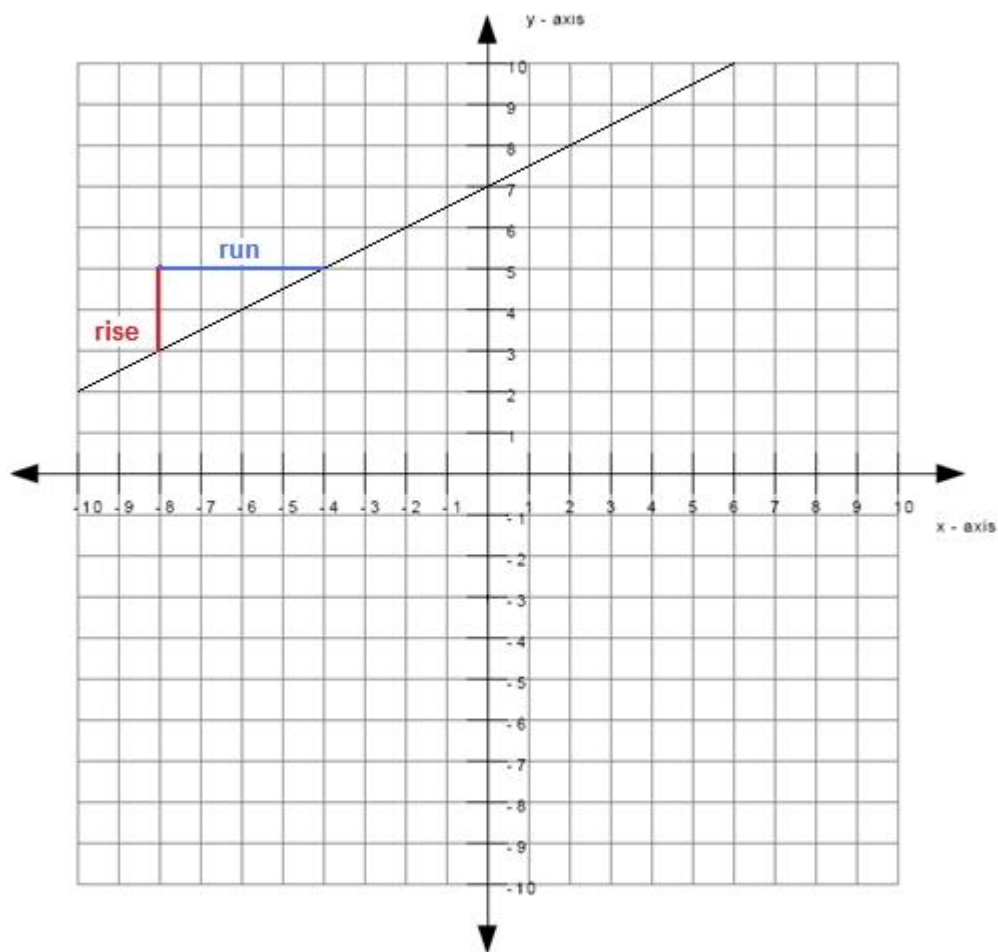
What is the rise between the two points selected in the image?

Algebra:

✓ 2

Hints:

- The length of the red line in the graph is the rise.
- The length of the red line is 2 which means that the rise is 2. Type in 2.

Scaffold:

You still need to find the run in order to calculate the slope.
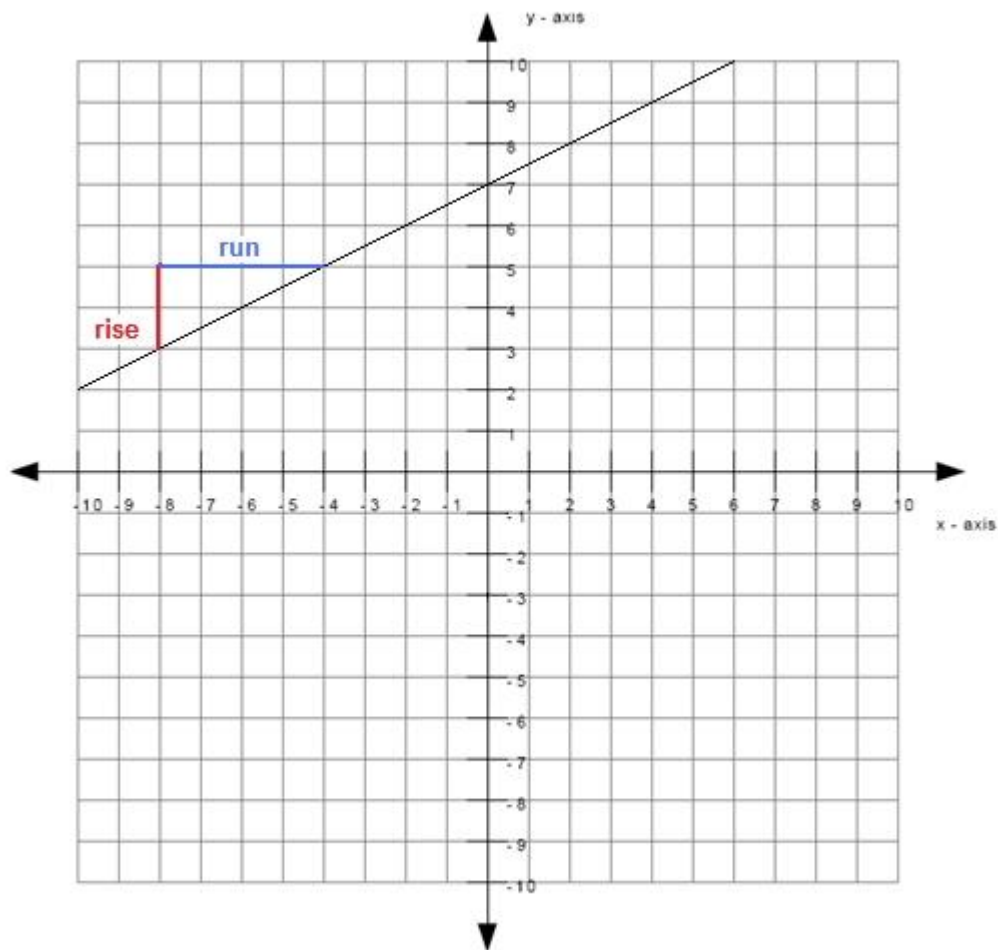
What is the run between the two points selected in the image?

Algebra:

✓ 4

Hints:

- The length of the blue line in the graph is the run.

- The length of the blue line is 4 which means that the run is 4. Type in 4.

Scaffold:

Now that you know the rise and run, you should now be able to calculate the slope.
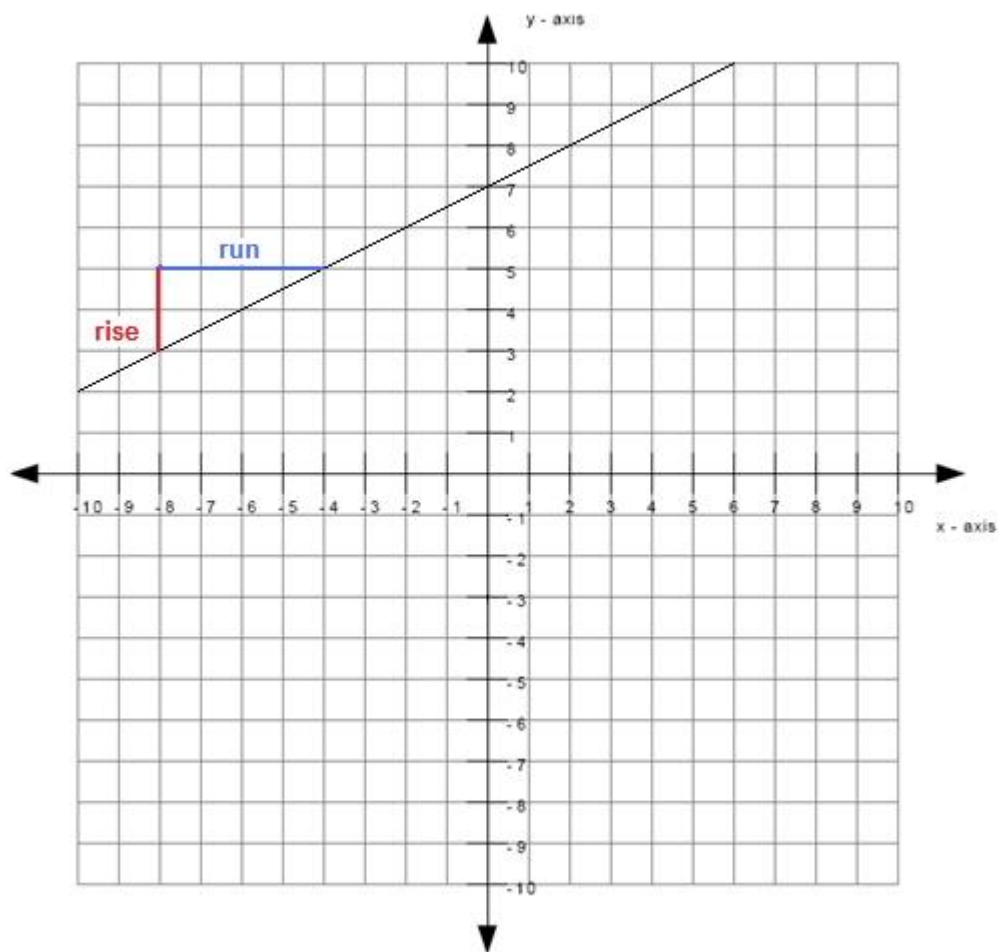
What is the slope?

Algebra:

✓ 1/2

Hints:

- Recall that you can calculate the slope by the rise over the run.

- In other words:

slope = rise / run

- You previously found that the rise equals to 2 and the run equals to 4. Insert those values into the equation for the slope to get:

slope = rise / run

slope =   2 / 4

- slope = 2 / 4

slope   =   .50

The slope equals to .50. Type in .50.

B) In this problem we are going to use the same line.

Write an equation for this line in the form y = _____
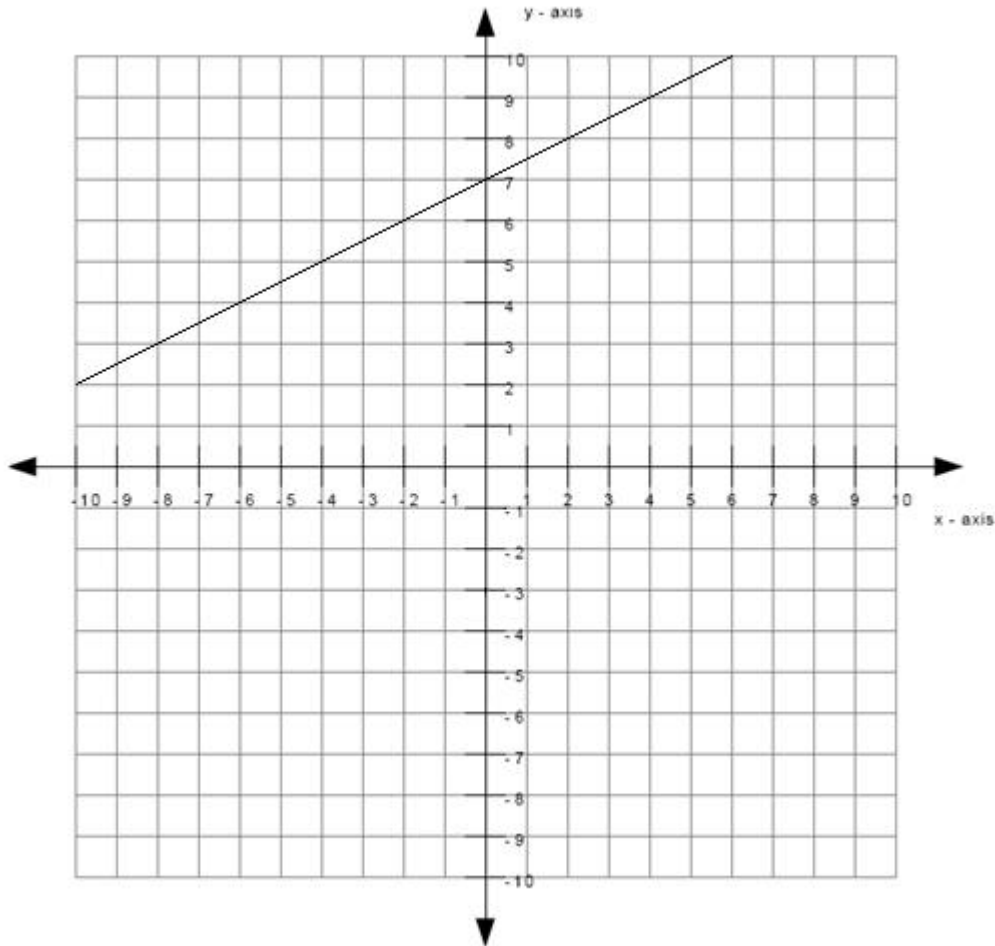
Algebra:

✓ y=.5x+7

✓ $y = 1/2x + 7$

Scaffold:

The equation for the line is of the form
$y = mx + b$
where m is the slope of the line and b is the y-intercept of the line.
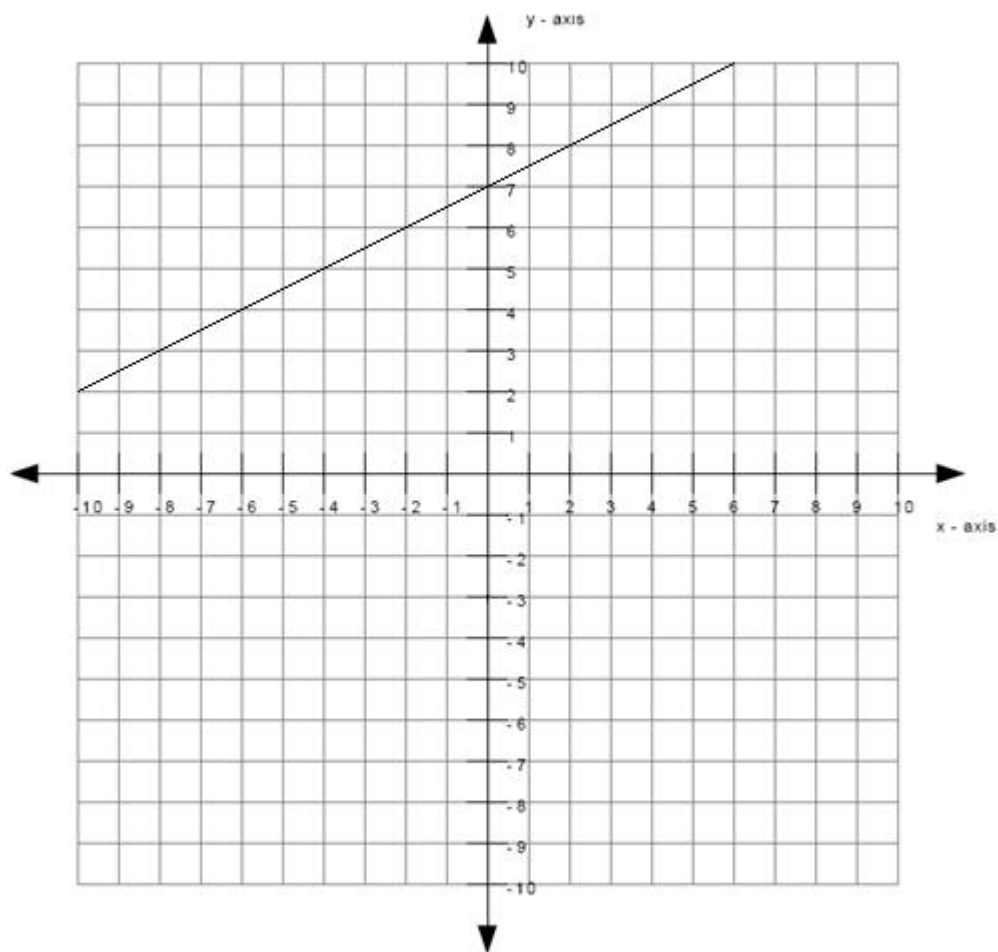
What is the value of m?

Algebra:

✓ 1/2

Hints:

- Recall that the value of m is the slope of the line.

- You found the slope in the previous problem.

- You found that the value of the slope was 0.50. This means that the value of m is also .50. Type in .50.

Scaffold:

You still need the value of b before you can find the equation for the line.

142
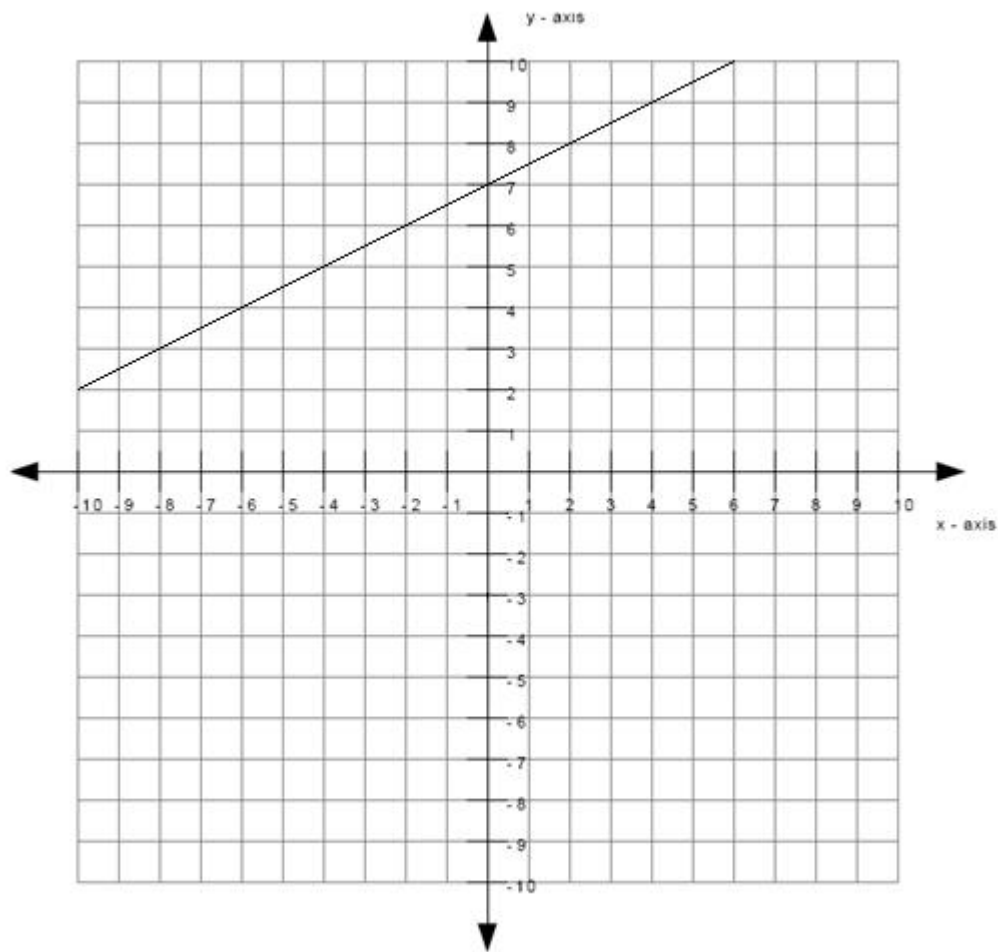
What is the value of b in the equation for the line?

Algebra:

✓ 7

Hints:

- Recall that the value of b is the y-intercept of the line.
- The y-intercept of a line is the value of y at the point where the line touches the y-axis.
- The green dot below indicates the point where the line touches the y-axis.
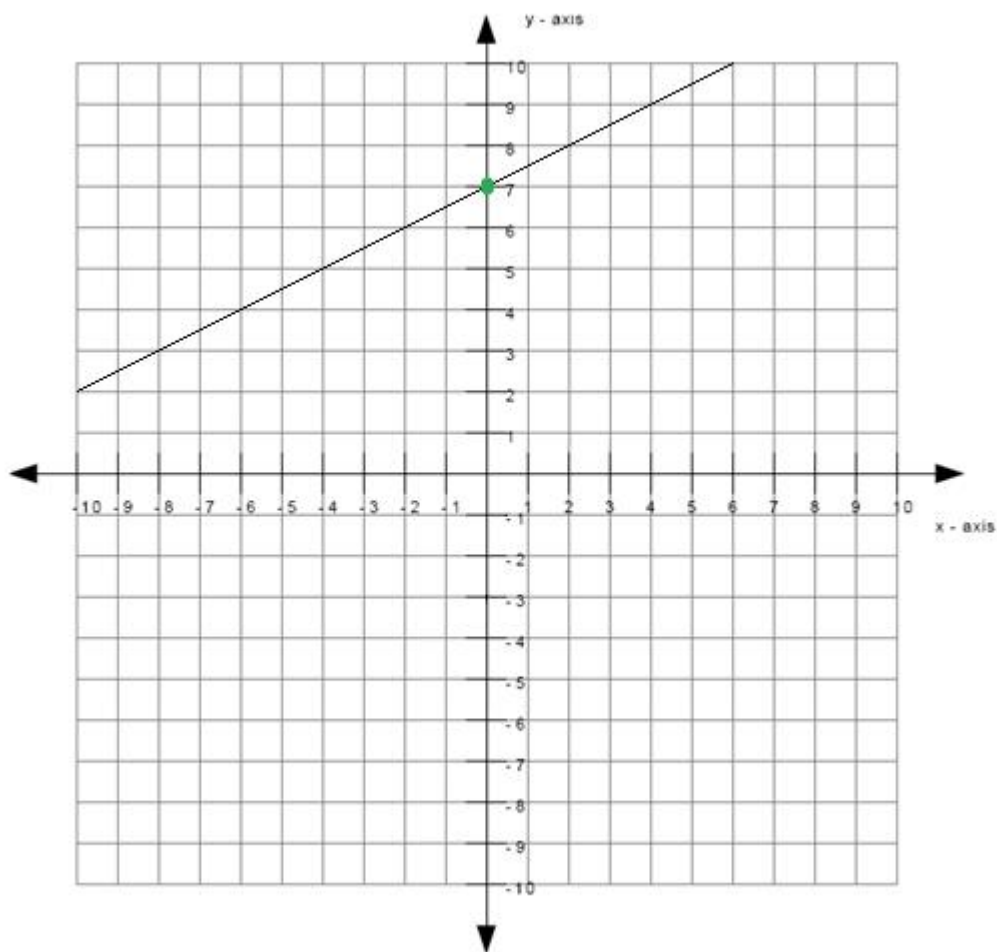
The value of b is equal to the value of y at the point indicated by the green dot.

- The value of y at the point indicated by the green dot is 7. Therefore, the value of b is 7. Type in 7.

Scaffold:

Now try the original question again.
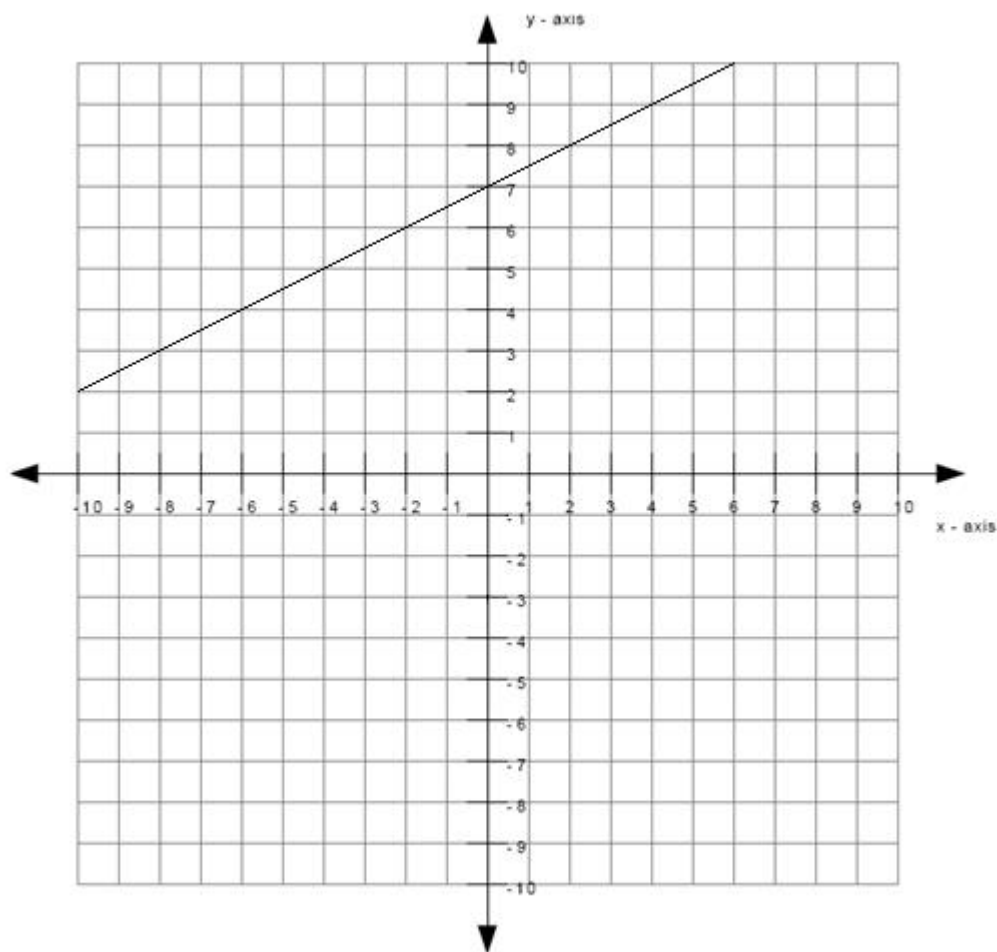
What is the equation for the line?

Algebra:

✓ y=.5x+7

✓ y-.5x=7

✓ .5x+7=y

✓ 7=y-.5x

Hints:

- Recall that the equation of a line is of the form
y = mx + b

- You previously found that m equals to 0.50 and b equals to 7.

- To get the equation of the line, insert the values of m and b that you previously found into the equation for a line.

- When inserting the values of m and b that you previously found into the equation for a line, you will get
y = mx + b
y = 0.50x + 7

145

This means that the equation for the line is y = 0.50x + 7. Type in y = 0.50x + 7.

---

6) Assistment #36993 "36993 - 34889 - 8th grade: Moving Straight Ahead - Tables and rates"

The table below shows the number of hours studied by Carol for 4 months.

monthly hours studied	
month	number of hours studied
1	20
2	25
3	30
4	35
5	
6	
7	
8	

If Carol continues to increase the number of hours studied at a constant rate, what will be the number of hours studied by Carol on month 8?

Algebra:

✓ 55

Scaffold:

Carol continues to increase the number of hours studied at a constant rate. This means that Carol increases the number of hours studied by the same number every month as shown below.

monthly hours studied		
month	number of hours studied	
1	20	
		+ ?
2	25	
		+ ?
3	30	
		+ ?

146

4	35	
		+ ?
5		
		+ ?
6		
		+ ?
7		
		+ ?
8		

Carol increases the number of hours studied every month by what same number?

Algebra:

✔ 5

Hints:

- The number of hours studied by Carol on month 1 is 20. The number of hours studied by Carol in the following month is 25 . By how much did the number of hours studied increased by?

monthly hours studied		
month	number of hours studied	
1	20	
		+ ?
2	25	
		+ ?
3	30	
		+ ?
4	35	

		+ ?
5		
		+ ?
6		
		+ ?
7		
		+ ?
8		

- The answer to the previous question is 5. This means that Carol increases the number of hours studied by 5 every month as shown below. Type in 5.

monthly hours studied		
month	number of hours studied	
1	20	
		+ 5
2	25	
		+ 5
3	30	
		+ 5
4	35	
		+ 5
5		
		+ 5
6		

148

		+ 5
7		
		+ 5
8		

The table below shows the number of hours studied by Carol for 4 months.

monthly hours studied	
month	number of hours studied
1	20
2	25
3	30
4	35
5	
6	
7	
8	

If Carol continues to increase the number of hours studied at a constant rate, what will be the number of hours studied by Carol on month 8?

Algebra:

✓ 55

Hints:

- You know that Carol increases the number of hours studied by 5 every month. Therefore you have the table below.

monthly hours studied	
month	number of hours studied

month	number of hours studied	
1	20	
		+ 5
2	25	
		+ 5
3	30	
		+ 5
4	35	
		+ 5
5		
		+ 5
6		
		+ 5
7		
		+ 5
8		

- Let me fill in month 5 for you.

On month 4, the number of hours studied by Carol was 35. If she increases the number of hours studied by 5 every month, then the number of hours studied at month 5 will be $35 + 5 = 40$ as shown below.

monthly hours studied		
month	number of hours studied	
1	20	
		+ 5
2	25	

		+ 5
3	30	
		+ 5
4	35	
		+ 5
5	40	
		+ 5
6		
		+ 5
7		
		+ 5
8		

Now try filling in the rest of the table.

- A completely filled up table is shown below.

monthly hours studied		
month	number of hours studied	
1	20	
		+ 5
2	25	
		+ 5
3	30	

		+ 5
4	35	
		+ 5
5	40	
		+ 5
6	45	
		+ 5
7	50	
		+ 5
8	55	

As you can see, the number of hours studied by Carol on month 8 is 55. Type in 55.

---

7) Assistment #37003 "37003 - 34892 - 8th grade: Moving Straight Ahead - Inequality solving"

Which graph below represents the solution to the inequality below? (Type in the graph number.)
$7(2x + 4) \geq 294$

13 14 15 16 17 18 19 20 21

13 14 15 16 17 18 19 20 21

13 14 15 16 17 18 19 20 21

13 14 15 16 17 18 19 20 21

Algebra:

✔ 2

Hints:

152

- First, you have to solve for x in the equation $7(2x + 4) \geq 294$.

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- Distribute the 7 to each term inside the paranthesis.

$7(2x + 4) \geq 294$

$7*2x + 7*4 \geq 294$

$14x + 28 \geq 294$

- $14x + 28 \geq 294$

$14x + 28 - 28 \geq 294 - 28$

$14x \qquad \geq 266$

- $14x \geq 266$

$$\frac{14x}{14} \geq \frac{266}{14}$$

$$x \geq \frac{266}{14}$$

$x \geq 19$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- $x \geq 19$ means that the x is any value that is equal to or more than 19. This means that the thick black arrow must start at 19 and point in the direction where the values are greater than 19. The graph that represents this is graph 2.

| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |

153

Type in 2.

---

8) Assistment #37013 "37013 - 34894 - 8th grade: Moving Straight Ahead - Proportions"

When making tea, you use 2 spoons of sugar for every 3 quarts of tea.
Which of the following equations can be used to calculate c,
the number of spoons of sugar needed when using 6 quarts of tea?

A. $\dfrac{3}{2} = \dfrac{c}{6}$

B. $\dfrac{2}{3} = \dfrac{c}{6}$

C. $\dfrac{3}{6} = \dfrac{c}{2}$

D. $\dfrac{6}{2} = \dfrac{c}{3}$

Multiple choice:

✖ A
✔ B
✖ C
✖ D

Hints:

- The problem is about the following ratio

number of spoons of sugar : number of quarts of tea

- This ratio means that

number of spoons of sugar $=$ k

154

_____

number of quarts of tea

where k is some constant.

- We know that 2 spoons of sugar is needed for every 3 quarts of tea used. This means that

$$2 : 3$$

or

$$\frac{2}{3} = k$$

- We also know that c spoons of sugar is needed for every 6 quarts of tea used. This means that

$$c : 6$$

or

$$\frac{c}{6} = k$$

- Notice that the two equations from the previous two hints are equal to k. (The two equations are shown again below.)

$$\frac{2}{3} = k$$

$$\frac{c}{6} = k$$

This means that they are equal to each other. Therefore,

$$\frac{2}{} = \frac{c}{}$$

155

This is an equation that can be used to find c, the number of spoons of sugar needed for 6 quarts of tea. So the answer is B. Select B.

---

9) Assistment #28771 "28771 - 8th grade: Moving Straight Ahead - Table and graph from equation"

A) This problem is to be done on paper and will be graded by your teacher.

Given the equation $y = 3x + 5$, make a table for values of x from -3 to 3.

Multiple choice:
✓ I have finished the table on my paper

B) This problem is to be done on paper and will be graded by your teacher.

Sketch a graph of the equation above.
Multiple choice:
✓ I have finished the graph on my paper

8.5.2 Moving Straight Ahead Mastery Learning

Assistment #34895 "34895 - 30461 - Solve for x (Set 1)"

Using the properties of equality, find the value of **x** in the equation below.

$11x + 5x = 9$

Algebra:

✓ 0.5625

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $11x + 5x = 9$

  $16x \qquad = 9$

- $16x = 9$

  $$\frac{16x}{16} = \frac{9}{16}$$

  $$x = \frac{9}{16}$$

  $x = 0.5625$

  Therefore the value of x is 0.5625 or 9/16. Type in which ever one you want since they are both equal.

Assistment #30461 "30461 - Solve for x (Set 1)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}x + %v{c2}x = %v{c3}

Algebra:

✓ %v{c3/(c2+c1)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1}x + %v{c2}x = %v{c3}

157

$$%v\{c1+c2\}x = %v\{c3\}$$

- $%v\{c1+c2\}x = %v\{c3\}$

$$\frac{%v\{c1+c2\}x}{\textcolor{red}{%v\{c1+c2\}}} = \frac{%v\{c3\}}{\textcolor{red}{%v\{c1+c2\}}}$$

$$x = \frac{%v\{c3\}}{%v\{c1+c2\}}$$

$$x = %v\{final\}$$

Therefore the value of x is %v{final} or %v{c3}/%v{c1+c2}. Type in which ever one you want since they are both equal.

Assistment #34925 "34925 - 30847 - Solve for x (Set 6)"
Using the properties of inequality, find the value of **x** in the equation below.
$5 + 2x = 8$

Algebra:

✔ 1.5

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $5 + 2x = 8$

$5 + 2x \textcolor{red}{- 5} = 8 \textcolor{red}{- 5}$

$2x = 3$

- $2x = 3$

$$\frac{2x}{\textcolor{red}{2}} = \frac{3}{\textcolor{red}{2}}$$

$$3$$

158

x   = __
          2

x   =   1.5

Therefore the value of x is 1.5 or 3/2. Type in which ever one you want since they are both equal.

Using the properties of inequality, find the value of **x** in the equation below.

%v{c1} + %v{c2}x = %v{c3}

Algebra:

✓ %v{(c3-c1)/c2}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1} + %v{c2}x   = %v{c3}

%v{c1} + %v{c2}x - %v{c1} = %v{c3} - %v{c1}

   %v{c2}x   =   %v{c3-c1}

- %v{c2}x = %v{c3-c1}

%v{c2}x   =   %v{c3-c1}

_____   _____

%v{c2}   %v{c2}

                   %v{c3-c1}
x   = _____
                   %v{c2}

x   =   %v{final}

Therefore the value of x is %v{final} or %v{c3-c1}/%v{c2}. Type in which ever one you want since they are both equal.

159

Assistment #34955 "34955 - 30833 - Solve for x (Set 2)"

Using the properties of equality, find the value of **x** in the equation below.

6x + 6 = -7

Algebra:

✓ -2.16666666666667

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 6x + 6   = -7

  6x + 6 - 6 = -7 - 6

  6x   = -13

- 6x = -13

$$\frac{6x}{6} = \frac{-13}{6}$$

$$x = \frac{-13}{6}$$

  x   = -2.16666666666667

Therefore the value of x is -2.16666666666667 or -13/6. Type in which ever one you want since they are both equal.

Assistment #30833 "30833 - Solve for x (Set 2)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}x + %v{c2} = %v{c3}

Algebra:

✓ %v{(c3-c2)/c1}

160

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1}x + %v{c2}   = %v{c3}

%v{c1}x + %v{c2} - %v{c2} = %v{c3} - %v{c2}

%v{c1}x   =   %v{c3-c2}

-   %v{c1}x = %v{c3-c2}

$$\frac{\%v\{c1\}x}{\%v\{c1\}} = \frac{\%v\{c3\text{-}c2\}}{\%v\{c1\}}$$

Assistment #34985 "34985 - 30834 - Solve for x (Set 3)"

Using the properties of equality, find the value of **x** in the equation below.

7x - 2x = -2

Algebra:

✔ -0.4

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 7x - 2x = -2

  5x   = -2

-   5x = -2

$$\frac{5x}{5} = \frac{-2}{5}$$

$$x = \frac{-2}{5}$$

  x = -0.4

Therefore the value of x is -0.4 or -2/5. Type in which ever one you want since they are both equal.

Assistment #30834 "30834 - Solve for x (Set 3)"

161

Using the properties of equality, find the value of **x** in the equation below.
%v{c1}x - %v{c2}x = %v{c3}

Algebra:

✓ %v{c3/(c1-c2)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1}x - %v{c2}x = %v{c3}

  %v{c1-c2}x $\qquad$ = %v{c3}

- $\quad$ %v{c1-c2}x = $\quad$ %v{c3}

  $$\frac{\%v\{c1-c2\}x}{\%v\{c1-c2\}} = \frac{\%v\{c3\}}{\%v\{c1-c2\}}$$

  $$x \qquad = \frac{\%v\{c3\}}{\%v\{c1-c2\}}$$

  $$x \quad = \quad \%v\{final\}$$

  Therefore the value of x is %v{final} or %v{c3}/%v{c1-c2}. Type in which ever one you want since they are both equal.

Assistment #35025 "35025 - 30835 - Solve for x (Set 4)"

Using the properties of equality, find the the value of **x** in the equation below.
4 - 9x = -2

Algebra:

✓ 0.666666666666667

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 4 - 9x $\quad$ = $\quad$ -2

  4 - 9x - 4 $\quad$ = $\quad$ -2 - 4

  $\quad$ -9x $\qquad$ = $\qquad$ -6

- $\quad$ -9x $\quad$ = $\quad$ -6

162

$$\frac{-9x}{-9} = \frac{-6}{-9}$$

$$x = \frac{6}{9}$$

$$x = 0.666666666666667$$

Therefore the value of x is 0.666666666666667 or 6/9. Type in which ever one you want since they are both equal.

Assistment #30835 "30835 - Solve for x (Set 4)"

Using the properties of equality, find the the value of **x** in the equation below.

%v{c1} - %v{c2}x = %v{c3}

Algebra:

✓ %v{(c3-c1)/(-1*c2)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1} - %v{c2}x = %v{c3}
  %v{c1} - %v{c2}x - %v{c1} = %v{c3} - %v{c1}
  -%v{c2}x = %v{c3-c1}

- -%v{c2}x = %v{c3-c1}

$$\frac{-\%v\{c2\}x}{-\%v\{c2\}} = \frac{\%v\{c3-c1\}}{-\%v\{c2\}}$$

$$x = \frac{\%v\{-1*(c3-c1)\}}{\%v\{c2\}}$$

x = %v{final}

163

Therefore the value of x is %v{final} or %v{-1*(c3-c1)}/%v{c2}. Type in which ever one you want since they are both equal.

Assistment #35055 "35055 - 30838 - Solve for x (Set 5)"

Using the properties of equality, find the value of **x** in the equation below.

$7x - 8 = -8$

Algebra:

✔ 0

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $7x - 8 \quad = -8$

$7x - 8 + 8 = -8 + 8$

$7x \qquad = \quad 0$

- $7x = 0$

$$\frac{7x}{7} = \frac{0}{7}$$

$$x = \frac{0}{7}$$

$$x = 0$$

Therefore the value of x is 0 or 0/7. Type in which ever one you want since they are both equal.

Assistment #30838 "30838 - Solve for x (Set 5)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}x - %v{c2} = %v{c3}

Algebra:

✔ %v{(c3+c2)/c1}

Hints:

164

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $\%v\{c1\}x - \%v\{c2\}$ $= \%v\{c3\}$

$\%v\{c1\}x - \%v\{c2\}$ $+ \%v\{c2\}$ $= \%v\{c3\}$ $+ \%v\{c2\}$

$\%v\{c1\}x$ $= \%v\{c3+c2\}$

- $\%v\{c1\}x = \%v\{c3+c2\}$

$$\frac{\%v\{c1\}x}{\color{red}\%v\{c1\}} = \frac{\%v\{c3+c2\}}{\color{red}\%v\{c1\}}$$

$$x = \frac{\%v\{c3+c2\}}{\%v\{c1\}}$$

$$x = \%v\{final\}$$

Therefore the value of x is $\%v\{final\}$ or $\%v\{c3+c2\}/\%v\{c1\}$. Type in which ever one you want since they are both equal.

Assistment #35085 "35085 - 33259 - Solve for x (Set 7)"

Using the properties of equality, find the value of **x** in the equation below.

$4(8x + 2) = 3$

Algebra:

✔ -0.15625

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- Distribute 4 to the terms in the paranthesis.

4$(8x + 2) = 3$

4$*8x +$ 4$*2 = 3$

$32x + 8 = 3$

- $32x + 8 = 3$

$32x + 8$ $- 8$ $= 3$ $- 8$

$32x = -5$

165

- $32x = -5$

$$\frac{32x}{32} = \frac{-5}{32}$$

$$x = \frac{-5}{32}$$

$$x = -0.15625$$

Therefore the value of x is -0.15625 or -5/32. Type in which ever one you want since they are both equal.

Assistment #33259 "33259 - Solve for x (Set 7)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}(%v{c2}x + %v{c3}) = %v{c4}

Algebra:

✓ %v{(c4-c1*c3)/(c1*c2)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Distribute %v{c1} to the terms in the paranthesis.

%v{c1}(%v{c2}x + %v{c3})   = %v{c4}

%v{c1}*%v{c2}x + %v{c1}*%v{c3} = %v{c4}

%v{c1*c2}x + %v{c1*c3}   = %v{c4}

- %v{c1*c2}x + %v{c1*c3}   = %v{c4}

%v{c1*c2}x + %v{c1*c3} - %v{c1*c3} = %v{c4} - %v{c1*c3}

%v{c1*c2}x   = %v{c4-(c1*c3)}

- %v{c1*c2}x = %v{c4-(c1*c3)}

$$\frac{\%v\{c1*c2\}x}{\%v\{c1*c2\}} = \frac{\%v\{c4-(c1*c3)\}}{\%v\{c1*c2\}}$$

$$x = \frac{\%v\{c4\text{-}(c1*c3)\}}{\%v\{c1*c2\}}$$

$$x = \%v\{final\}$$

Therefore the value of x is %v{final} or %v{c4-(c1*c3)}/%v{c1*c2}. Type in which ever one you want since they are both equal.

Assistment #35155 "35155 - 33261 - Solve for x (Set 9)"

Using the properties of equality, find the value of **x** in the equation below.

11(11x + 3x) = 3

Algebra:

✓ 0.0194805194805195

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Add the similar terms inside the paranthesis.

11(11x + 3x) = 3

11(14x) = 3

- 11(14x) = 3

11*14x = 3

154x = 3

- 154x = 3

$$\frac{154x}{154} = \frac{3}{154}$$

$$x = \frac{3}{154}$$

x = 0.0194805194805195

167

Therefore the value of x is 0.0194805194805195 or 3/154. Type in which ever one you want since they are both equal.

Assistment #33260 "33260 - Solve for x (Set 8)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}(%v{c2}x - %v{c3}) = %v{c4}

Algebra:

✓ %v{(c4+(c1*c3))/(c1*c2)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- Distribute %v{c1} to the terms in the paranthesis.

%v{c1}(%v{c2}x - %v{c3})   = %v{c4}

%v{c1}*%v{c2}x - %v{c1}*%v{c3} = %v{c4}

%v{c1*c2}x - %v{c1*c3}   = %v{c4}

- %v{c1*c2}x - %v{c1*c3}   = %v{c4}

%v{c1*c2}x - %v{c1*c3} + %v{c1*c3} = %v{c4} + %v{c1*c3}

%v{c1*c2}x   = %v{c4+(c1*c3)}

- %v{c1*c2}x = %v{c4+(c1*c3)}

$$\frac{\%v\{c1*c2\}x}{\%v\{c1*c2\}} = \frac{\%v\{c4+(c1*c3)\}}{\%v\{c1*c2\}}$$

$$x = \frac{\%v\{c4+(c1*c3)\}}{\%v\{c1*c2\}}$$

x = %v{final}

Therefore the value of x is %v{final} or %v{c4+(c1*c3)}/%v{c1*c2}. Type in which ever one you want since they are both equal.

Assistment #35145 "35145 - 33261 - Solve for x (Set 9)"

Using the properties of equality, find the value of **x** in the equation below.

11(10x + 3x) = -7

Algebra:

✓ -0.048951048951049

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Add the similar terms inside the paranthesis.

11(10x + 3x) = -7

11(13x)   = -7

- 11(13x) = -7

11*13x   = -7

143x   = -7

- 143x = -7

$$\frac{143x}{143} = \frac{-7}{143}$$

$$x = \frac{-7}{143}$$

x = -0.048951048951049

Therefore the value of x is -0.048951048951049 or -7/143. Type in which ever one you want since they are both equal.

Assistment #33261 "33261 - Solve for x (Set 9)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}(%v{c2}x + %v{c3}x) = %v{c4}

Algebra:

✓ %v{c4/(c1*(c2+c3))}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Add the similar terms inside the paranthesis.

%v{c1}(%v{c2}x + %v{c3}x) = %v{c4}

169

%v{c1}(%v{c2+c3}x)   = %v{c4}

- %v{c1}(%v{c2+c3}x) = %v{c4}

%v{c1}*%v{c2+c3}x   = %v{c4}

%v{c1*(c2+c3)}x   = %v{c4}

- %v{c1*(c2+c3)}x = %v{c4}

$$\frac{\%v\{c1*(c2+c3)\}x}{\%v\{c1*(c2+c3)\}} = \frac{\%v\{c4\}}{\%v\{c1*(c2+c3)\}}$$

$$x = \frac{\%v\{c4\}}{\%v\{c1*(c2+c3)\}}$$

x = %v{final}

Therefore the value of x is %v{final} or %v{c4}/%v{c1*(c2+c3)}. Type in which ever one you want since they are both equal.

Assistment #35175 "35175 - 33264 - Solve for x (Set 10)"

Using the properties of equality, find the value of **x** in the equation below.

8x(9 + 10) = 0

Algebra:

✓ 0

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Add the numbers inside the paranthesis.

8x(9 + 10) = 0

8x(19)   = 0

- 8x(19) = 0

8x*19   = 0

152x   = 0

- 152x = 0

170

$$\frac{152x}{152} = \frac{0}{152}$$

$$x = \frac{0}{152}$$

$$x = 0$$

Therefore the value of x is 0 or 0/152. Type in which ever one you want since they are both equal.

Assistment #33264 "33264 - Solve for x (Set 10)"

Using the properties of equality, find the value of **x** in the equation below.

%v{c1}x(%v{c2} + %v{c3}) = %v{c4}

Algebra:

✓ %v{c4/(c1*(c2+c3))}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Add the numbers inside the paranthesis.

%v{c1}x(%v{c2} + %v{c3}) = %v{c4}

%v{c1}x(%v{c2+c3})   = %v{c4}

- %v{c1}x(%v{c2+c3}) = %v{c4}

%v{c1}x*%v{c2+c3}   = %v{c4}

%v{c1*(c2+c3)}x   = %v{c4}

- %v{c1*(c2+c3)}x = %v{c4}

$$\frac{\%v\{c1*(c2+c3)\}x}{\%v\{c1*(c2+c3)\}} = \frac{\%v\{c4\}}{\%v\{c1*(c2+c3)\}}$$

$$x = \frac{\%v\{c4\}}{\%v\{c1*(c2+c3)\}}$$

171

x = %v{final}

Therefore the value of x is %v{final} or %v{c4}/%v{c1*(c2+c3)}. Type in which ever one you want since they are both equal.

Assistment #35205 "35205 - 33267 - Solve for x (Set 12)"
Using the properties of equality, find the value of **x** in the equation below.

$$\frac{6x}{4} + 9 = 5$$

Algebra:
✓ -2.66666666666667

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Distribute 6 to the terms in the paranthesis.

$$\frac{6x}{4} + 9 \quad = 5$$

$$\frac{6x}{4} + 9 - 9 = 5 - 9$$

$$\frac{6x}{4} = -4$$

- $$\frac{6x}{4} = -4$$

$$\frac{6x*4}{4} = -4*4$$

172

4

$$6x = -16$$

- $6x = -16$

$$\frac{6x}{6} = \frac{-16}{6}$$

$$x = \frac{-16}{6}$$

$$x = -2.66666666666667$$

Therefore the value of x is -2.66666666666667 or -16/6. Type in which ever one you want since they are both equal.

Assistment #33267 "33267 - Solve for x (Set 12)"

Using the properties of equality, find the value of **x** in the equation below.

$$\frac{\%v\{c1\}x}{\%v\{c2\}} + \%v\{c3\} = \%v\{c4\}$$

Algebra:

✓ %v{(c4-c3)*(c2/c1)}

Hints:

- Use the properties of equality to get the variable terms on one side and the constants on the other.
- Distribute %v{c1} to the terms in the paranthesis.

$$\frac{\%v\{c1\}x}{\%v\{c2\}} + \%v\{c3\} = \%v\{c4\}$$

$$\frac{\%v\{c1\}x}{\%v\{c2\}} + \%v\{c3\} \text{ - } \%v\{c3\} = \%v\{c4\} \text{ - } \%v\{c3\}$$

173

%v{c2}

$$\frac{\text{\%v\{c1\}x}}{\text{\%v\{c2\}}} \quad = \quad \text{\%v\{c4-c3\}}$$

- $$\frac{\text{\%v\{c1\}x}}{\text{\%v\{c2\}}} = \text{\%v\{c4-c3\}}$$

$$\frac{\text{\%v\{c1\}x*\%v\{c2\}}}{\text{\%v\{c2\}}} = \text{\%v\{c4-c3\}*\%v\{c2\}}$$

$$\text{\%v\{c1\}x} \quad = \quad \text{\%v\{(c4-c3)*c2\}}$$

- %v{c1}x = %v{(c4-c3)*c2}

$$\frac{\text{\%v\{c1\}x}}{\text{\%v\{c1\}}} = \frac{\text{\%v\{(c4-c3)*c2\}}}{\text{\%v\{c1\}}}$$

$$x \quad = \frac{\text{\%v\{(c4-c3)*c2\}}}{\text{\%v\{c1\}}}$$

x = %v{final}

Therefore the value of x is %v{final} or %v{(c4-c3)*c2}/%v{c1}. Type in which ever one you want since they are both equal.

Assistment #35235 "35235 - 34858 - Write equation from table (Set 1)"
Write an equation from the given table that shows the relationship of y and x. Your answer should be in the form y = _____

x	-6	-5	-4	-3	-2	-1	0
y	-27	-22	-17	-12	-7	-2	3

174

Algebra:

✓ y=5*x + 3

Hints:

- To find the equation, you need to find the slope and the y-intercept. Then you can place them into the y = mx + b form.

- In order to find the slope or rate of change, you need to first check to see if x is changing evenly and then see what the constant rate of change is for y.

- As you can see from the table, as x changes evenly by +1, the constant rate of change for y is +5. This is the slope.

	+1	+1	+1	+1	+1	+1	
x	-6	-5	-4	-3	-2	-1	0
y	-27	-22	-17	-12	-7	-2	3
	+5	+5	+5	+5	+5	+5	

- Next you need the y-intercept. It can be found by looking at the y coordinate when x is 0.

x	-6	-5	-4	-3	-2	-1	0
y	-27	-22	-17	-12	-7	-2	3

As you can see, when x = 0, y is equal to 3.

- Now we have the slope m = 5 and the y-intercept b = 3. Therefore we can write the equation using the form y = mx + b.

- Substituting m = 5 and b = 3 into y = mx + b.

y = mx + b

y = 5x + 3

y = 5x + 3

Therefore the equation that shows the x and y relationship for the given table is y = 5x + 3. Type in y = 5x + 3.

Assitment #34858 "34858 - Write equation from table (Set 1)"

Write an equation from the given table that shows the relationship of y and x. Your answer should be in the form y = _____

x	%v{x}	%v{x+1}	%v{x+2}	%v{x+3}	%v{x+4}	%v{x+5}	%v{x+6}
y	%v{m*x +b}	%v{m*(x+1) +b}	%v{m*(x+2) +b}	%v{m*(x+3) +b}	%v{m*(x+4) +b}	%v{m*(x+5) +b}	%v{m*(x+6) +b}

Algebra:

✓ y=%v{m}*x + %v{b}

Hints:

- To find the equation, you need to find the slope and the y-intercept. Then you can place them into the y = mx + b form.

- In order to find the slope or rate of change, you need to first check to see if x is changing evenly and then see what the constant rate of change is for y.

- As you can see from the table, as x changes evenly by +1, the constant rate of change for y is %v{sg}%v{m}. This is the slope.

	+1		+1		+1		+1		+1		+1	
x	%v{x}	%v{x+1}	%v{x+2}	%v{x+3}	%v{x+4}	%v{x+5}	%v{x+6}
y	%v{m*x +b}	%v{m*(x+1) +b}	%v{m*(x+2) +b}	%v{m*(x+3) +b}	%v{m*(x+4) +b}	%v{m*(x+5)+b}	%v{m*(x+ 6)+b}
	%v{sg}% v{m}	%v{sg}% v{m}	%v{sg}% v{m}	%v{sg}% v{m}	%v{sg}% v{m}	%v{sg}% v{m}	

- Next you need the y-intercept. It can be found by looking at the y coordinate when x is 0.

x	%v{x}	%v{x+1}	%v{x+2}	%v{x+3}	%v{x+4}	%v{x+5}	%v{x+6}
y	%v{m*x +b}	%v{m*(x+1) +b}	%v{m*(x+2) +b}	%v{m*(x+3) +b}	%v{m*(x+4) +b}	%v{m*(x+5) +b}	%v{m*(x+6) +b}

As you can see, when x = 0, y is equal to %v{b}.

- Now we have the slope m = %v{m} and the y-intercept b = %v{b}. Therefore we can write the equation using the form y = mx + b.

- Substituting m = %v{m} and b = %v{b} into y = mx + b.

y = mx + b

y = %v{m}x + %v{b}

y = %v{m}x %v{sh} %v{bb}

Therefore the equation that shows the x and y relationship for the given table is y = %v{m}x %v{sh} %v{bb}. Type in y = %v{m}x %v{sh} %v{bb}.

Assistment #35265 "35265 - 30841 - Substitution and manipulation (Set 1)"

Use the equation y = 8 + 7x to find y when x = 4.

Algebra:

✓ 36

Hints:

- Since x = 4, you can replace all x's with 4.

$y = 8 + 7x$

$y = 8 + 7*4$

- Remember the order of operations:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction

This can be remembered as **PEMDAS**.

- Multiply first:

$y = 8 + 7*4$

$y = 8 + 28$

- Add next:

$y = 8 + 28$

$y = 36$

Therefore the value of y is 36. Type in 36.

Assistment #30841 "30841 - Substitution and manipulation (Set 1)"

Use the equation %v{find} = %v{c1} + %v{c2}%v{var} to find %v{find} when %v{var} = %v{val}.

Algebra:

✓ %v{c1+c2*val}

Hints:

- Since %v{var} = %v{val}, you can replace all %v{var}'s with %v{val}.

%v{find} = %v{c1} + %v{c2}%v{var}

%v{find} = %v{c1} + %v{c2}*%v{val}

- Remember the order of operations:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction

This can be remembered as **PEMDAS**.

- Multiply first:

%v{find} = %v{c1} + %v{c2}*%v{val}

177

%v{find} = %v{c1} + %v{c2*val}

- Add next:

%v{find} = %v{c1} + %v{c2*val}

%v{find} = %v{c1+c2*val}

Therefore the value of %v{find} is %v{c1+c2*val}. Type in %v{c1+c2*val}.

Assistment #35295 "35295 - 30843 - Substitution and manipulation (Set 2)"

Use the equation y = 8 - 6x to find y when x = 8.

Algebra:

✓ -40

Hints:

- Since x = 8, you can replace all x's with 8.

y = 8 - 6x

y = 8 - 6*8

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

- Multiply first:

y = 8 - 6*8

y = 8 - 48

- Subtract next:

y = 8 - 48

y = -40

Therefore the value of y is -40. Type in -40.

Assistment #30843 "30843 - Substitution and manipulation (Set 2)"

Use the equation %v{find} = %v{c1} - %v{c2}%v{var} to find %v{find} when %v{var} = %v{val}.

Algebra:

178

✓ %v{c1-c2*val}

Hints:

- Since %v{var} = %v{val}, you can replace all %v{var}'s with %v{val}.

%v{find} = %v{c1} - %v{c2}%v{var}

%v{find} = %v{c1} - %v{c2}*%v{val}

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

- Multiply first:

%v{find} = %v{c1} - %v{c2}*%v{val}

%v{find} = %v{c1} - %v{c2*val}

- Subtract next:

%v{find} = %v{c1} - %v{c2*val}

%v{find} = %v{c1-c2*val}

Therefore the value of %v{find} is %v{c1-c2*val}. Type in %v{c1-c2*val}.

Assistment #35325 "35325 - 30844 - Substitution and manipulation (Set 3)"

Use the equation y = 10x - 9 to find y when x = 2.

Algebra:

✓ 11

Hints:

- Since x = 2, you can replace all x's with 2.

y = 10x - 9

y = 10*2 - 9

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

179

- Multiply first:

y = 10*2 - 9

y = 20 - 9

- Subtract next:

y = 20 - 9

y = 11

Therefore the value of y is 11. Type in 11.

Use the equation %v{find} = %v{c1}%v{var} - %v{c2} to find %v{find} when %v{var} = %v{val}.

Algebra:

✓ %v{c1*val-c2}

Hints:

- Since %v{var} = %v{val}, you can replace all %v{var}'s with %v{val}.

%v{find} = %v{c1}%v{var} - %v{c2}

%v{find} = %v{c1}*%v{val} - %v{c2}

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

- Multiply first:

%v{find} = %v{c1}*%v{val} - %v{c2}

%v{find} = %v{c1*val} - %v{c2}

- Subtract next:

%v{find} = %v{c1*val} - %v{c2}

%v{find} = %v{c1*val-c2}

Therefore the value of %v{find} is %v{c1*val-c2}. Type in %v{c1*val-c2}.

Assistment #35355 "35355 - 30845 - Substitution and manipulation (Set 4)"

180

Use the equation y = 5x + 10 to find y when x = 4.
Algebra:

✔ 30

Hints:

- Since x = 4, you can replace all x's with 4.

y = 5x + 10

y = 5*4 + 10

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)
4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

- Multiply first:

y = 5*4 + 10

y = 20 + 10

- Add next:

y = 20 + 10

y = 30

Therefore the value of y is 30. Type in 30.

Assistment #30845 "30845 - Substitution and manipulation (Set 4)"
Use the equation %v{find} = %v{c1}%v{var} + %v{c2} to find %v{find} when %v{var} = %v{val}.
Algebra:

✔ %v{c1*val+c2}

Hints:

- Since %v{var} = %v{val}, you can replace all %v{var}'s with %v{val}.

%v{find} = %v{c1}%v{var} + %v{c2}

%v{find} = %v{c1}*%v{val} + %v{c2}

- Remember the order of operation:

1. **P**aranthesis
2. **E**xponents (powers, roots, etc.)
3. **M**ultiplication and **D**ivision (from left to right)

181

4. **A**ddition and **S**ubtraction (from left to right)

This can be remembered as **PEMDAS**.

- Multiply first:

%v{find} = %v{c1}*%v{val} + %v{c2}

%v{find} = %v{c1*val} + %v{c2}

- Add next:

%v{find} = %v{c1*val} + %v{c2}

%v{find} = %v{c1*val+c2}

Therefore the value of %v{find} is %v{c1*val+c2}. Type in %v{c1*val+c2}.

Assistment #35385 "35385 - 30848 - Substitution and manipulation (Set 5)"

Use the equation $4x + y = 8$ to find x when $y = 3$.

Algebra:

✓ 1.25

Hints:

- Since $y = 8$, you can replace all y's with 3's.

$4x + y = 8$

$4x + 3 = 8$

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $4x + 3 \ = 8$

$4x + 3 - 3 = 8 - 3$

$4x \qquad = 5$

- $4x = \ 5$

$$\frac{4x}{4} = \frac{5}{4}$$

$$x \ = \frac{5}{4}$$

x = 1.25

Therefore the value of x is 1.25 or 5/4. Type in which ever one you want since they are both equal.

Assistment #30848 "30848 - Substitution and manipulation (Set 5)"
Use the equation %v{c1}%v{find} + %v{var} = %v{c3} to find %v{find} when %v{var} = %v{c2}.

Algebra:
✓ %v{(c3-c2)/c1}

Hints:

- Since %v{var} = %v{c3}, you can replace all %v{var}'s with %v{c2}'s.
  %v{c1}%v{find} + %v{var} = %v{c3}
  %v{c1}%v{find} + %v{c2} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1}%v{find} + %v{c2}   = %v{c3}
  %v{c1}%v{find} + %v{c2} - %v{c2} = %v{c3} - %v{c2}
  %v{c1}%v{find}   = %v{c3-c2}

- %v{c1}%v{find} = %v{c3-c2}

$$\frac{\%v\{c1\}\%v\{find\}}{\%v\{c1\}} = \frac{\%v\{c3\text{-}c2\}}{\%v\{c1\}}$$

$$\%v\{find\} = \frac{\%v\{c3\text{-}c2\}}{\%v\{c1\}}$$

%v{find} = %v{final}

Therefore the value of %v{find} is %v{final} or %v{c3-c2}/%v{c1}. Type in which ever one you want since they are both equal.

Assistment #35415 "35415 - 30849 - Substitution and manipulation (Set 6)"
Use the equation 10x - 4x = y to find x when y = -8.

183

Algebra:

✓ -1.33333333333333

Hints:

- Since y = -8, you can replace all y's with -8's.

  10x - 4x = y

  10x - 4x = -8

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 10x - 4x = -8

  6x   = -8

- 6x = -8

$$\frac{6x}{6} = \frac{-8}{6}$$

$$x = \frac{-8}{6}$$

x = -1.33333333333333

Therefore the value of x is -1.33333333333333 or -8/6. Type in which ever one you want since they are both equal.

Assistment #30849 "30849 - Substitution and manipulation (Set 6)"

Use the equation %v{c1}%v{find} - %v{c2}%v{find} = %v{var} to find %v{find} when %v{var} = %v{c3}.

Algebra:

✓ %v{c3/(c1-c2)}

Hints:

- Since %v{var} = %v{c3}, you can replace all %v{var}'s with %v{c3}'s.

  %v{c1}%v{find} - %v{c2}%v{find} = %v{var}

  %v{c1}%v{find} - %v{c2}%v{find} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

184

- $\%v\{c1\}\%v\{find\} - \%v\{c2\}\%v\{find\} = \%v\{c3\}$

  $\%v\{c1\text{-}c2\}\%v\{find\} \qquad\qquad = \%v\{c3\}$

- $\%v\{c1\text{-}c2\}\%v\{find\} = \%v\{c3\}$

$$\frac{\%v\{c1\text{-}c2\}\%v\{find\}}{\%v\{c1\text{-}c2\}} = \frac{\%v\{c3\}}{\%v\{c1\text{-}c2\}}$$

$$\%v\{find\} = \frac{\%v\{c3\}}{\%v\{c1\text{-}c2\}}$$

$$\%v\{find\} = \%v\{final\}$$

Therefore the value of $\%v\{find\}$ is $\%v\{final\}$ or $\%v\{c3\}/\%v\{c1\text{-}c2\}$. Type in which ever one you want since they are both equal.

Assistment #35473 "35473 - 30850 - Substitution and manipulation (Set 7)"

Use the equation 4 - yx = 8 to find x when y = 6.

Algebra:

✓ -0.666666666666667

Hints:

- Since y = 6, you can replace all y's with 6's.

  4 - yx = 8

  4 - 6x = 8

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- 4 - 6x = 8

  4 - 6x - 4 = 8 - 4

    -6x   = 4

- -6x = 4

$$\frac{-6x}{-6} = \frac{4}{-6}$$

185

$$x = \frac{-4}{6}$$

x = -0.666666666666667

Therefore the value of x is -0.666666666666667 or -4/6. Type in which ever one you want.

Use the equation %v{c1} - %v{var}%v{find} = %v{c3} to find %v{find} when %v{var} = %v{c2}.

Algebra:

✓ %v{(c3-c1)/(-1*c2)}

Hints:

- Since %v{var} = %v{c2}, you can replace all %v{var}'s with %v{c2}'s.

%v{c1} - %v{var}%v{find} = %v{c3}

%v{c1} - %v{c2}%v{find} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1} - %v{c2}%v{find}   = %v{c3}

%v{c1} - %v{c2}%v{find} - %v{c1} = %v{c3} - %v{c1}

   -%v{c2}%v{find}   =   %v{c3-c1}

- -%v{c2}%v{find} =   %v{c3-c1}

$$\frac{-\%v\{c2\}\%v\{find\}}{-\%v\{c2\}} = \frac{\%v\{c3\text{-}c1\}}{-\%v\{c2\}}$$

$$\%v\{find\} = \frac{-\%v\{c3\text{-}c1\}}{\%v\{c2\}}$$

%v{find} = %v{final}

186

Therefore the value of %v{find} is %v{final} or -%v{c3-c1}/%v{c2}. Type in which ever one you want.

Assistment #35503 "35503 - 30851 - Substitution and manipulation (Set 8)"

Use the equation $5x - y = 5$ to find x when $y = 2$.

Algebra:

✔ 1.4

Hints:

- Since $y = 2$, you can replace all y's with 2's.

$5x - y = 5$

$5x - 2 = 5$

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $5x - 2 \quad = 5$

$5x - 2 + 2 = 5 + 2$

$5x \qquad = \quad 7$

- $5x = \quad 7$

$$\frac{5x}{5} = \frac{7}{5}$$

$$x = \frac{7}{5}$$

$x = 1.4$

Therefore the value of x is 1.4 or 7/5. Type in which ever one you want.

Assistment #30851 "30851 - Substitution and manipulation (Set 8)"

Use the equation %v{c1}%v{find} - %v{var} = %v{c3} to find %v{find} when %v{var} = %v{c2}.

Algebra:

✔ %v{(c3+c2)/c1}

Hints:

- Since %v{var} = %v{c2}, you can replace all %v{var}'s with %v{c2}'s.

%v{c1}%v{find} - %v{var} = %v{c3}

%v{c1}%v{find} - %v{c2} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1}%v{find} - %v{c2}   = %v{c3}

%v{c1}%v{find} - %v{c2} + %v{c2} = %v{c3} + %v{c2}

%v{c1}%v{find}   =   %v{c3+c2}

- %v{c1}%v{find} =   %v{c3+c2}

$$\frac{\%v\{c1\}\%v\{find\}}{\%v\{c1\}} = \frac{\%v\{c3+c2\}}{\%v\{c1\}}$$

$$\%v\{find\} = \frac{\%v\{c3+c2\}}{\%v\{c1\}}$$

%v{find} = %v{final}

Therefore the value of %v{find} is %v{final} or %v{c3+c2}/%v{c1}. Type in which ever one you want.

Assistment #35533 "35533 - 30852 - Substitution and manipulation (Set 9)"

Use the equation y + 3x = 5 to find x when y = 9.

Algebra:

✓ -1.33333333333333

Hints:

- Since y = 5, you can replace all y's with 9's.

y + 3x = 5

9 + 3x = 5

- Use the properties of equality to get the variable terms on one side and the constants on the other.

188

- $9 + 3x = 5$

$9 + 3x - 9 = 5 - 9$

$3x \quad = \quad -4$

- $3x = -4$

$$\frac{3x}{3} = \frac{-4}{3}$$

$$x = \frac{-4}{3}$$

$x = -1.33333333333333$

Therefore the value of x is -1.33333333333333 or -4/3. Type in which ever one you want.

Assistment #30852 "30852 - Substitution and manipulation (Set 9)"

Use the equation %v{var} + %v{c2}%v{find} = %v{c3} to find %v{find} when %v{var} = %v{c1}.

Algebra:

✓ %v{(c3-c1)/c2}

Hints:

- Since %v{var} = %v{c3}, you can replace all %v{var}'s with %v{c1}'s.

%v{var} + %v{c2}%v{find} = %v{c3}

%v{c1} + %v{c2}%v{find} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1} + %v{c2}%v{find} = %v{c3}

%v{c1} + %v{c2}%v{find} - %v{c1} = %v{c3} - %v{c1}

%v{c2}%v{find} = %v{c3-c1}

- %v{c2}%v{find} = %v{c3-c1}

$$\frac{\%v\{c2\}\%v\{find\}}{\%v\{c2\}} = \frac{\%v\{c3-c1\}}{\%v\{c2\}}$$

189

$$\%v\{find\} = \frac{\%v\{c3\text{-}c1\}}{\%v\{c2\}}$$

$\%v\{find\} = \%v\{final\}$

Therefore the value of $\%v\{find\}$ is $\%v\{final\}$ or $\%v\{c3\text{-}c1\}/\%v\{c2\}$. Type in which ever one you want.

Assistment #36655 "36655 - 30464 - Substitution and manipulation (Set 10)"
Use the equation $3 + 10x = y$ to find x when y = -10.

Type in your answer as a fraction.

Algebra:

✓ -1.3

Hints:

- Since y = -10, you can replace all y's with -10's.
$3 + 10x = y$
$3 + 10x = -10$

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- $\quad 3 + 10x = \quad -10$
$3 + 10x - 3 = -10 - 3$
$\quad 10x \quad = \quad -13$

- $10x = -13$

$$\frac{10x}{10} = \frac{-13}{10}$$

$$x = \frac{-13}{10}$$

190

Therefore the value of x is -13/10.

Assistment #30464 "30464 - Substitution and manipulation (Set 10)"
Use the equation %v{c1} + %v{c2}%v{find} = %v{var} to find %v{find} when %v{var} = %v{c3}.

Type in your answer as a fraction.

Algebra:
✓ %v{(c3-c1)/c2}

Hints:
- Since %v{var} = %v{c3}, you can replace all %v{var}'s with %v{c3}'s.

%v{c1} + %v{c2}%v{find} = %v{var}

%v{c1} + %v{c2}%v{find} = %v{c3}

- Use the properties of equality to get the variable terms on one side and the constants on the other.

- %v{c1} + %v{c2}%v{find}   =   %v{c3}

%v{c1} + %v{c2}%v{find} - %v{c1} = %v{c3} - %v{c1}

  %v{c2}%v{find}   =   %v{c3-c1}

- %v{c2}%v{find} = %v{c3-c1}

$$\frac{\%v\{c2\}\%v\{find\}}{\%v\{c2\}} = \frac{\%v\{c3\text{-}c1\}}{\%v\{c2\}}$$

$$\%v\{find\} = \frac{\%v\{c3\text{-}c1\}}{\%v\{c2\}}$$

Therefore the value of %v{find} is %v{c3-c1}/%v{c2}.
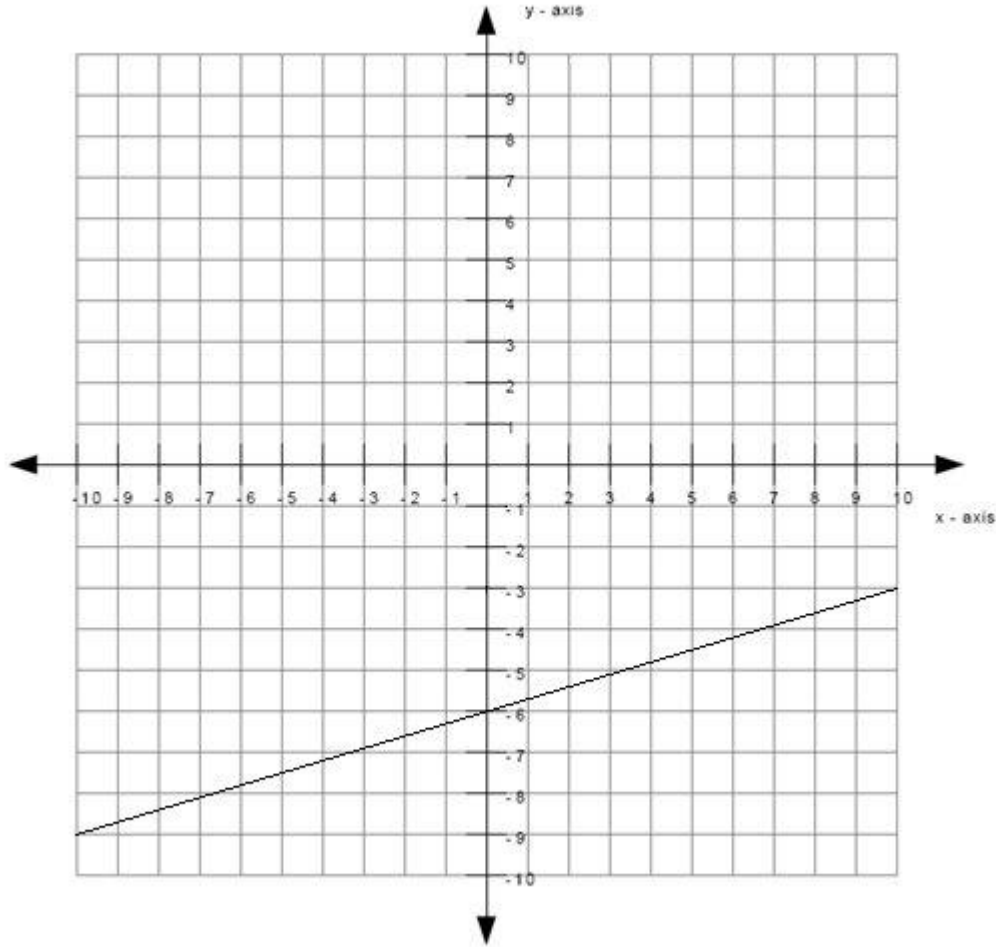
What is the equation of the line graphed above?

Write your answer in the form y = _____

Algebra:

✓ y = 0.3*x + -6

✓ y = 3/10*x + -6

✓ y=3/10x + -6

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
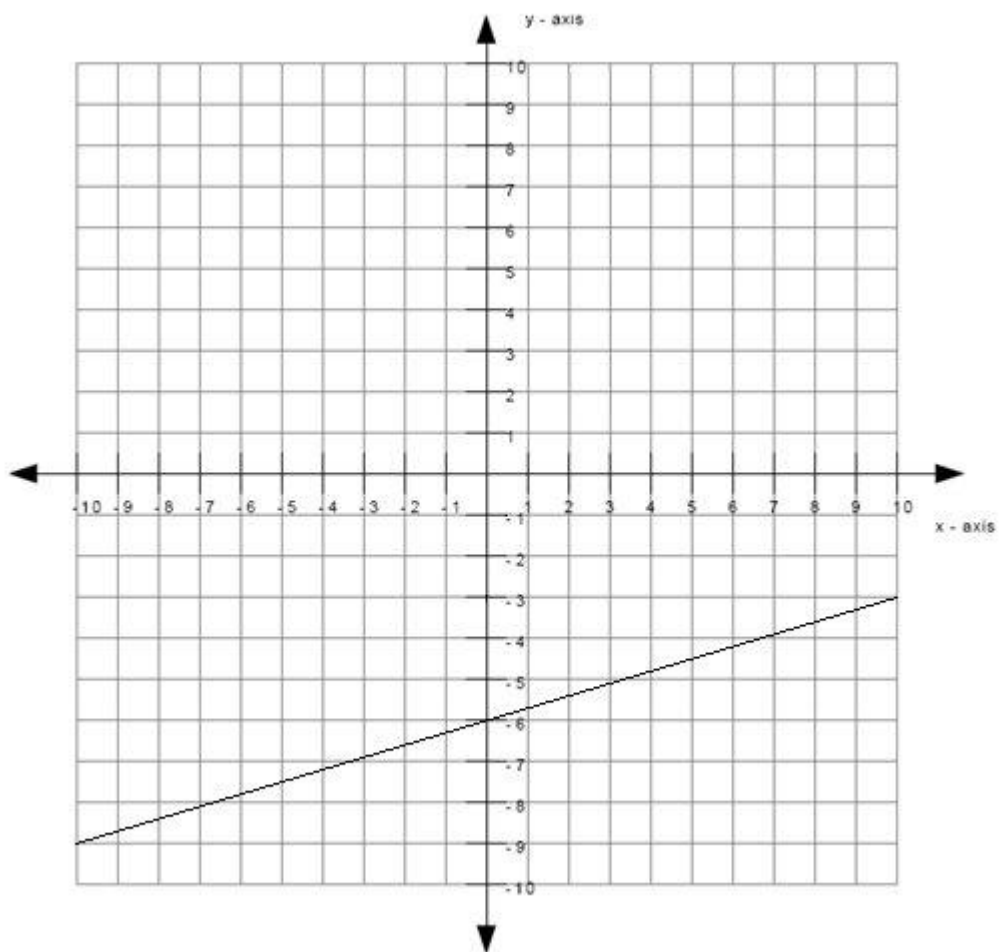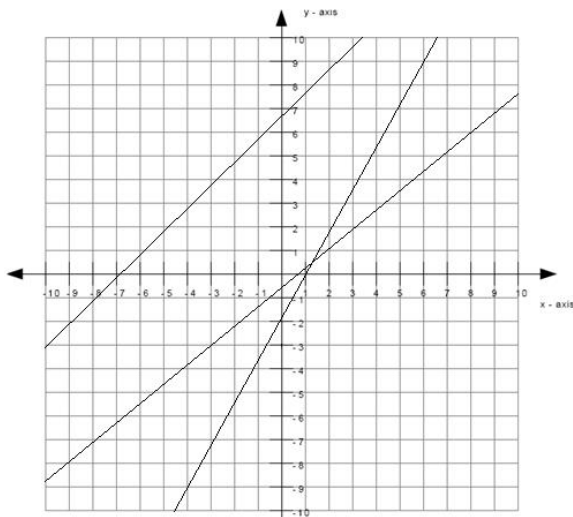
What is the slope of the line?

Algebra:

✓ 0.3

Hints:

- The line matches the first graph below, therefore the slope is positive.
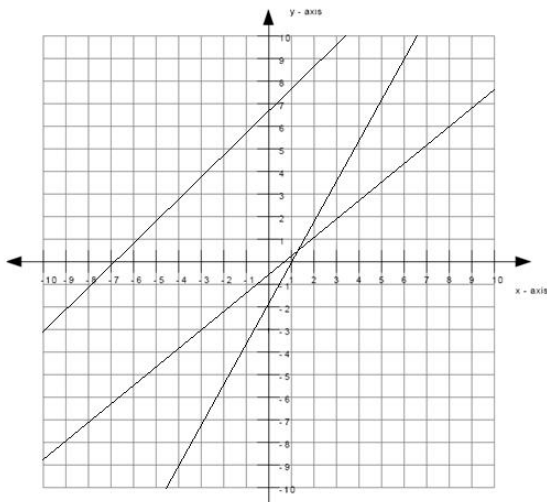
slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:
slope size = rise/run

- The graph below shows an example of a rise and a run.

194
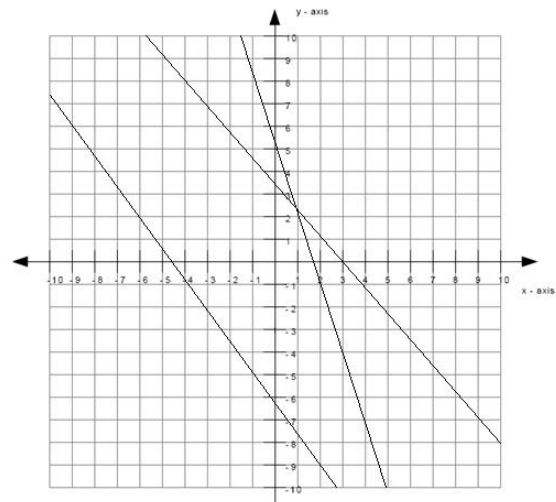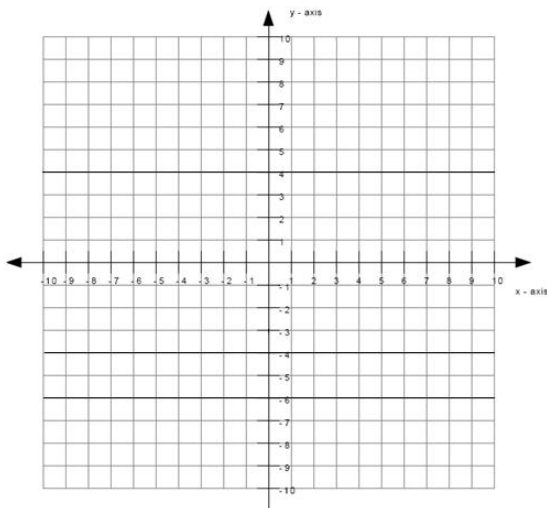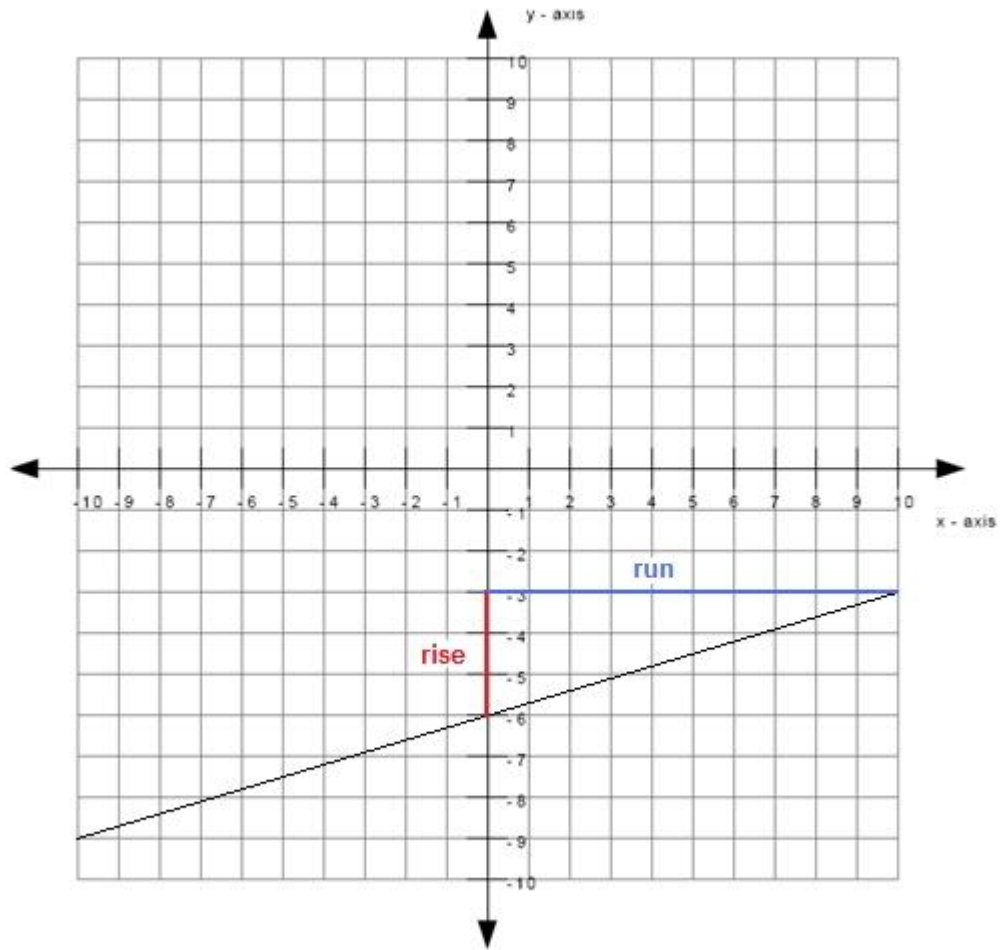
The length of the rise is 3 and the length of the run is 10.

slope size = 3/10

- Since the slope is positive and the size of the slope is 3/10 , the slope is therefore +3/10.

Type in 3/10.

Scaffold:
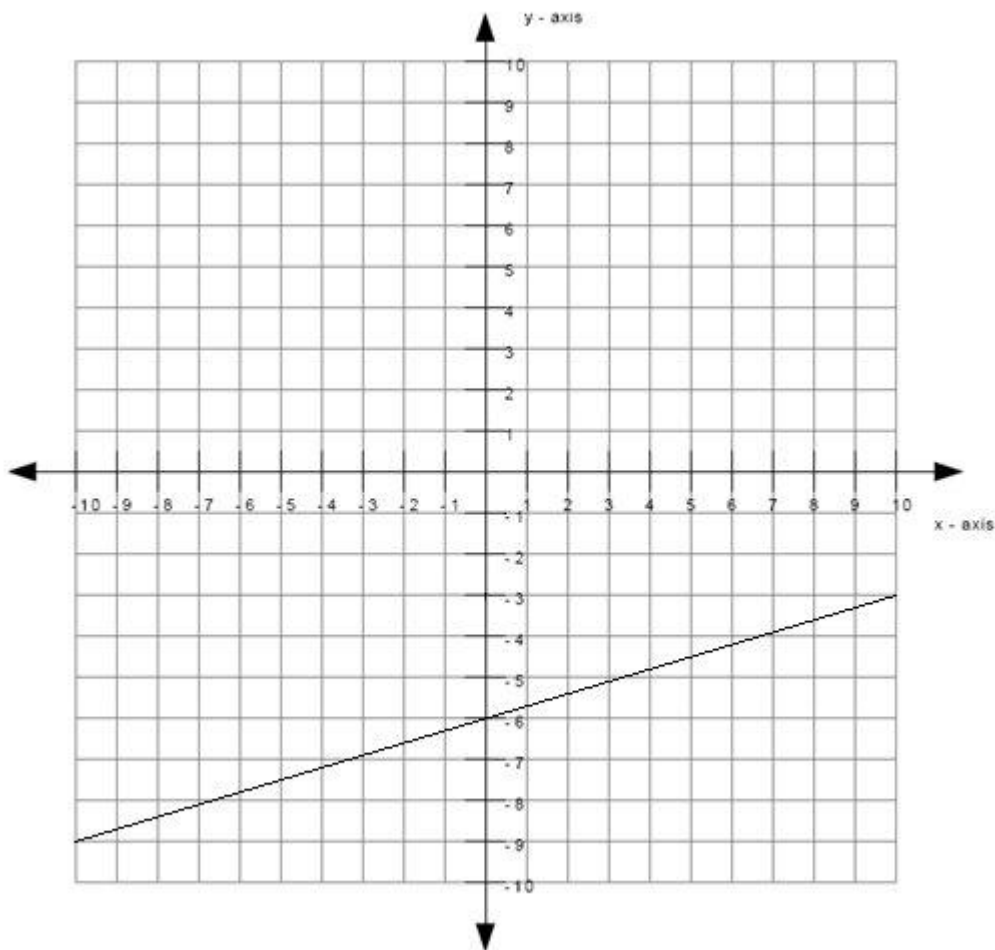
195

What is the y-intercept of the line?

Algebra:

✓ -6

Hints:

• The y-intercept is the point where the line intercepts (or cuts through) the y-axis.

• The green dot in the graph below is the y-intercept.
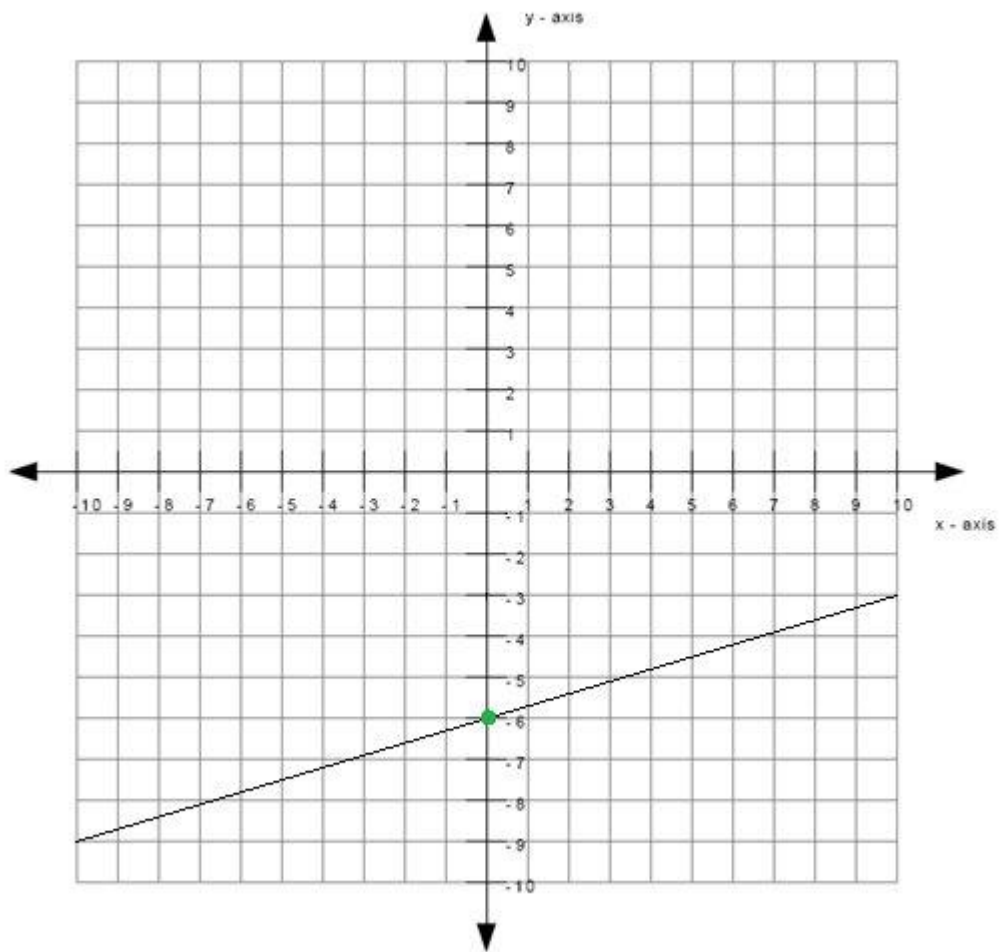
Therefore the y-intercept is -6.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:
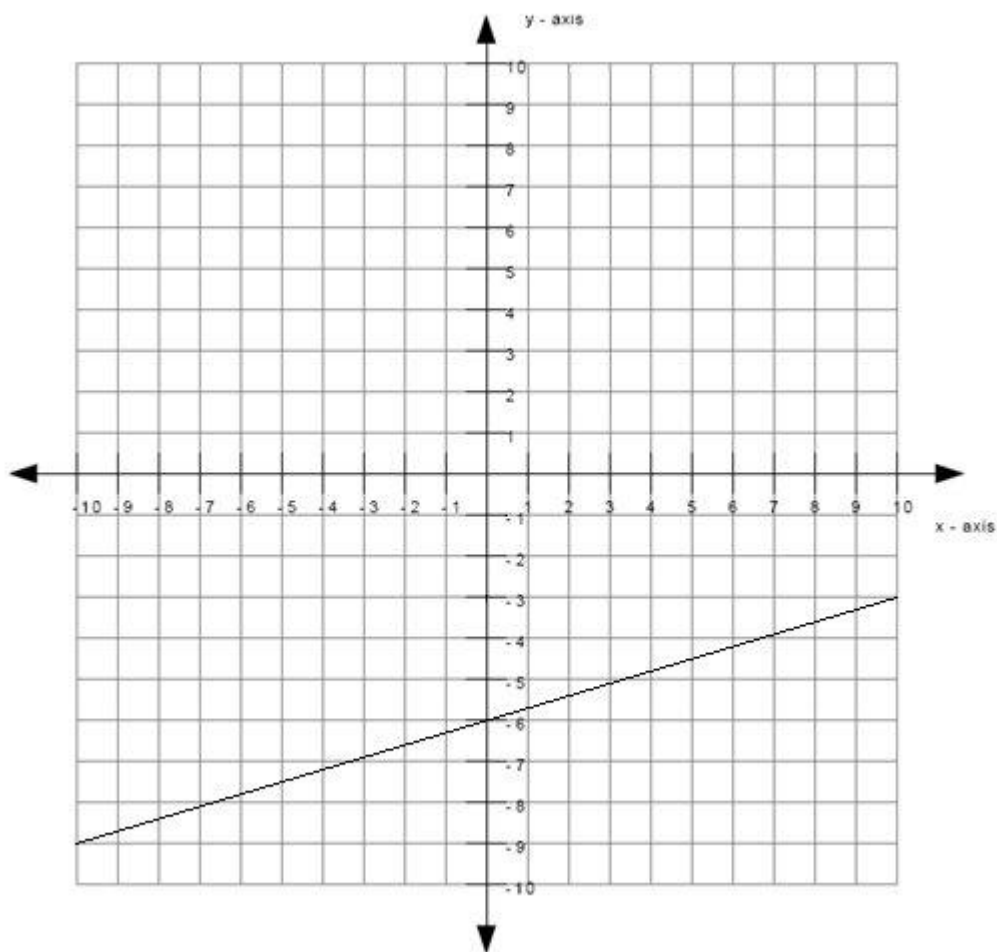
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=0.3*x + -6

✓ y=3/10x + -6

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

- You previously found that the slope is 3/10 which means that m = 3/10.
You also found that the y-intercept is -6 which means that b = -6.

- Substitute in m = 3/10 and b = -6 into y = mx + b.

- y = mx + b

y   = (3/10)x - 6

Type in y = (3/10)*x - 6.

198

What is the equation of the line graphed above?
Write your answer in the form y = _____

Algebra:

✔ y = %v{slopesign3*rise/run}*x + %v{c}

✔ y = %v{slopesign3*rise}/%v{run}*x + %v{c}

✔ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
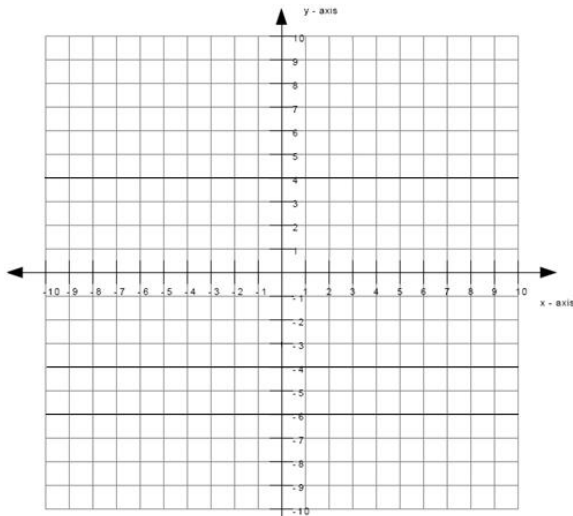
What is the slope of the line?

Algebra:

✔ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

200

slope size = %v{rise}/%v{run}

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?

Algebra:

✓ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=%v{slopesign3*rise/run}*x + %v{c}
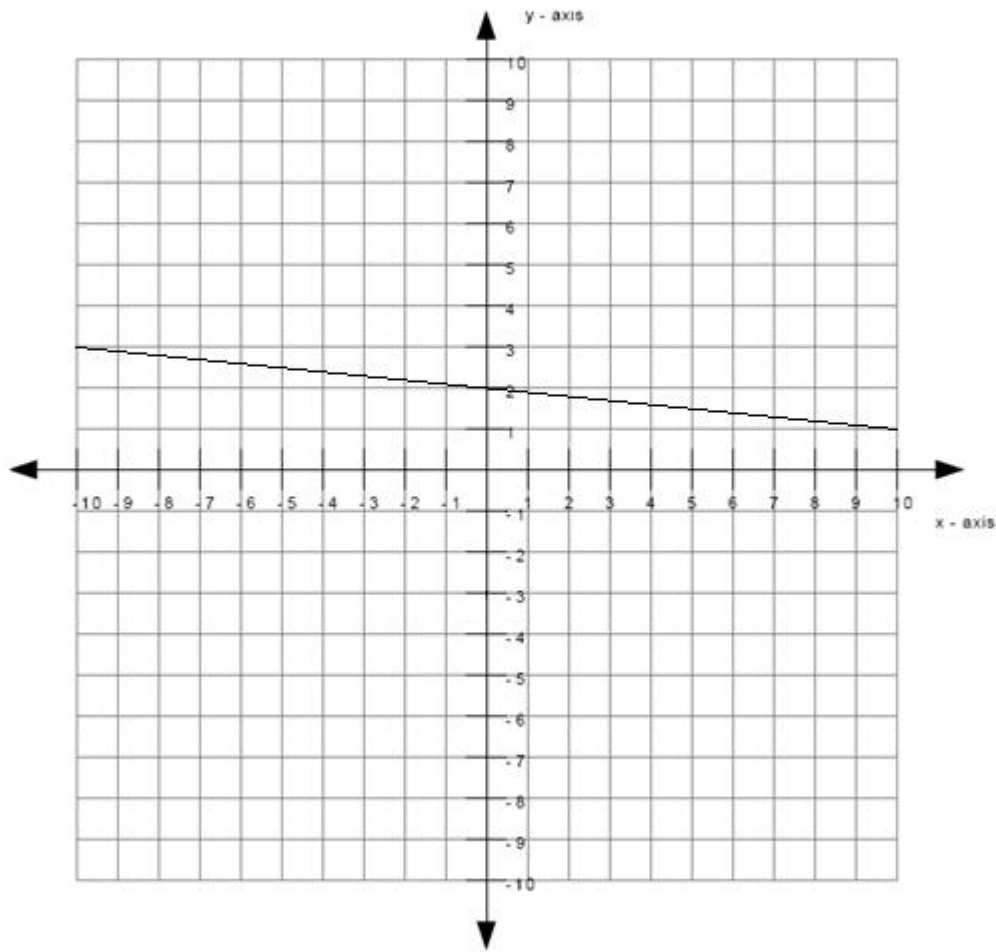
✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into y = mx + b.
- y = mx + b
- y   = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

What is the equation of the line graphed above?
Write your answer in the form y = _____

Algebra:

✓ $y = 0.1*x + -5$

✓ $y = 1/10x + -5$

Scaffold:

The equation of the line will be of the form $y = mx + b$ where m is the slope of the line and b is the y-intercept of the line.
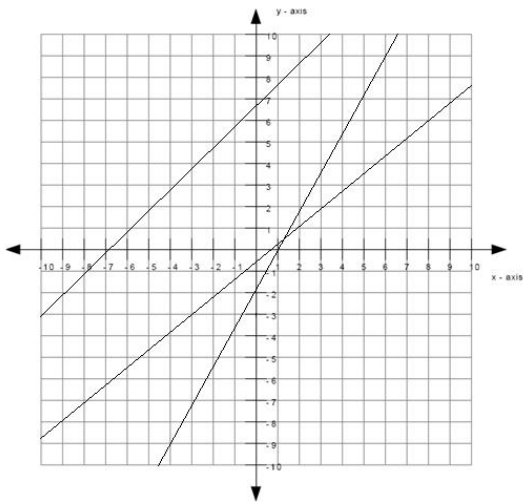
What is the slope of the line?

Algebra:

✓ 0.1

Hints:

- The line matches the first graph below, therefore the slope is positive.
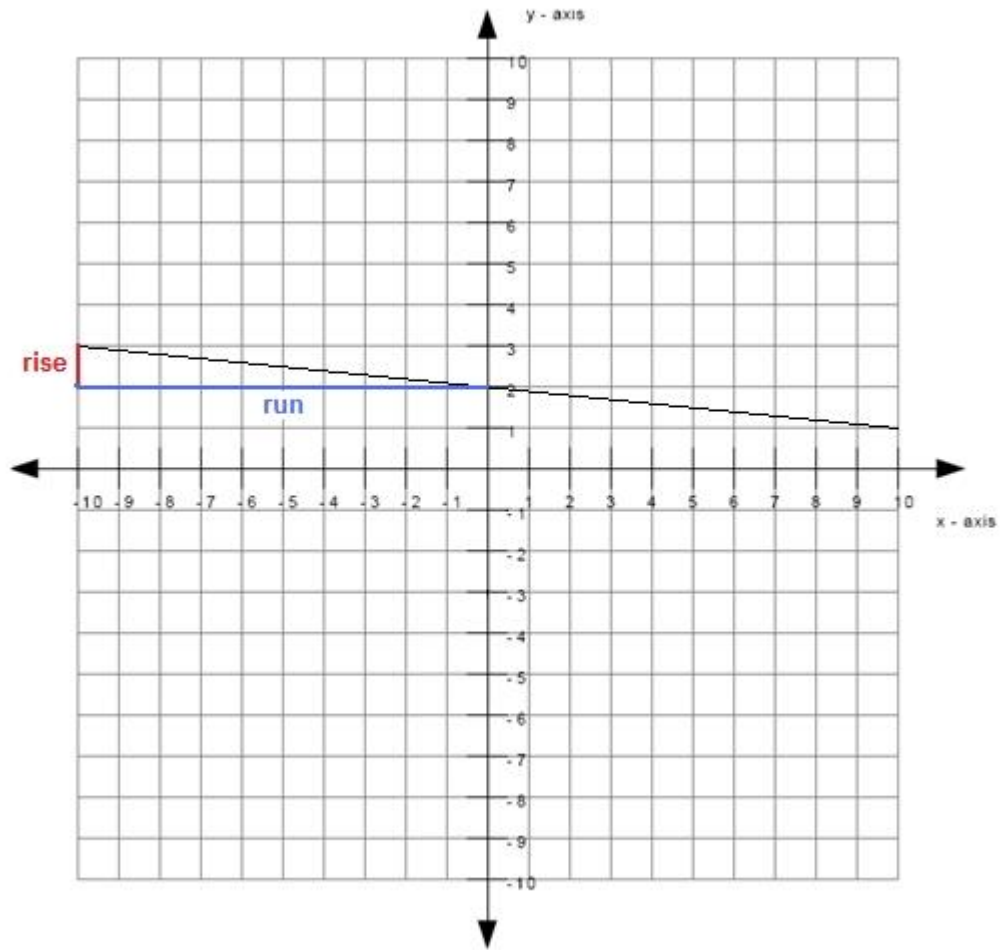
slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

204
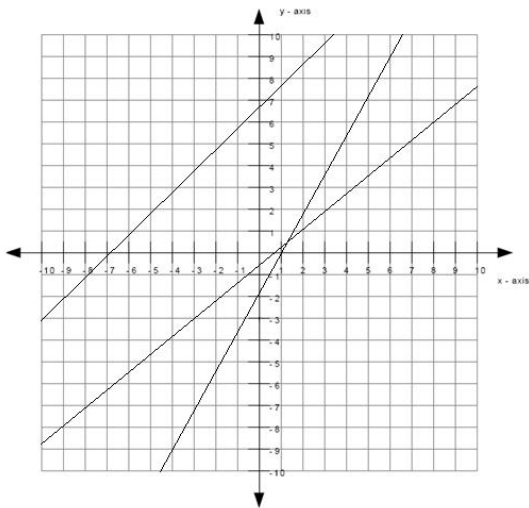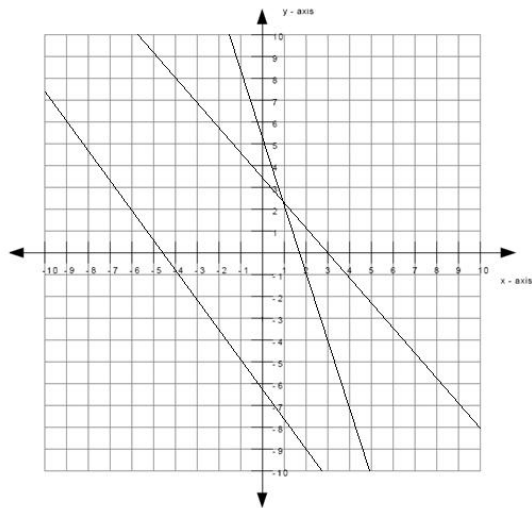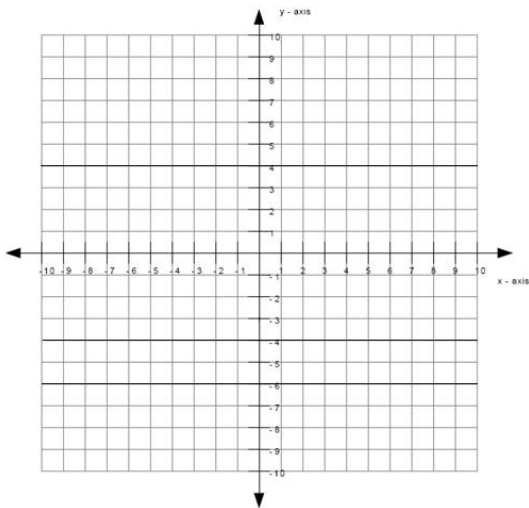
The length of the rise is 1 and the length of the run is 10.

slope size = 1/10

- Since the slope is positive and the size of the slope is 1/10 , the slope is therefore +1/10.

Type in 1/10.

Scaffold:

What is the y-intercept of the line?

Algebra:

✓ -5

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.

- The green dot in the graph below is the y-intercept.
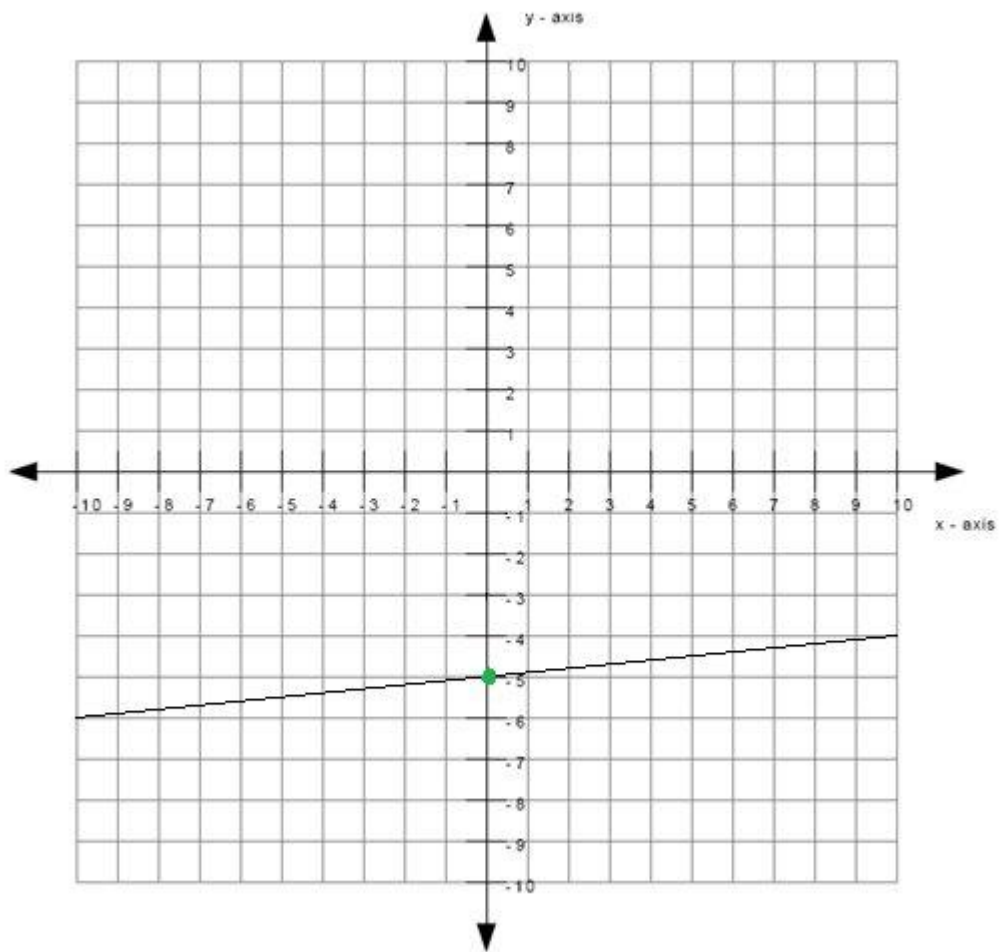
Therefore the y-intercept is -5.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

207
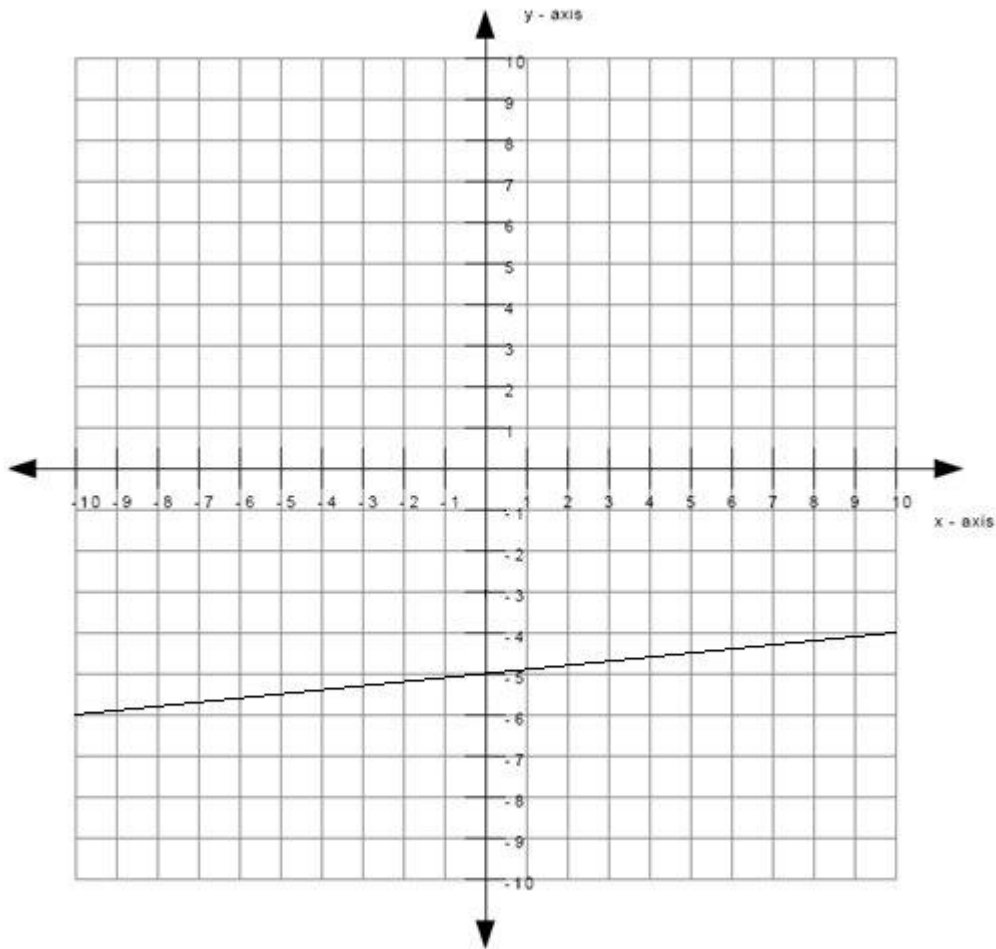
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=0.1*x + -5

✓ y=1/10x + -5

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

- You previously found that the slope is 1/10 which means that m = 1/10.
You also found that the y-intercept is -5 which means that b = -5.

- Substitute in m = 1/10 and b = -5 into y = mx + b.

- y = mx + b

y   = (1/10)x - 5

Type in y = (1/10)*x - 5.

208

What is the equation of the line graphed above?
Write your answer in the form y = _____
Algebra:

✓ y = %v{slopesign3*rise/run}*x + %v{c}

✓ y = %v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?
Algebra:

✓ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

slope size = %v{rise}/%v{run}

210

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?

Algebra:

✓ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=%v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into y = mx + b.
- y = mx + b
y   = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

Assistment #37494 "37494 - 30986 - Write equation from graph (Set 3)"

What is the equation of the line graphed above?
Write your answer in the form y = _____

Algebra:

✓ $y = 1.5*x + -7$

✓ $y=6/4x + -7$

Scaffold:

The equation of the line will be of the form $y = mx + b$ where m is the slope of the line and b is the y-intercept of the line.
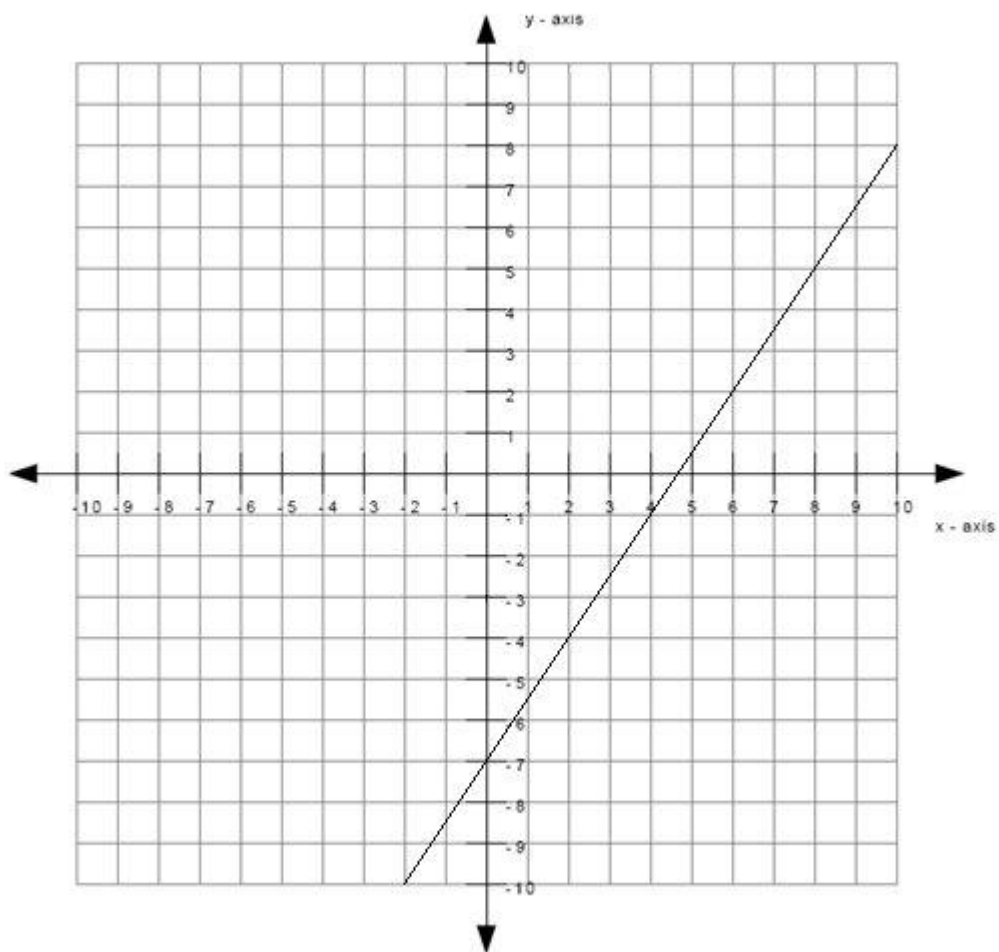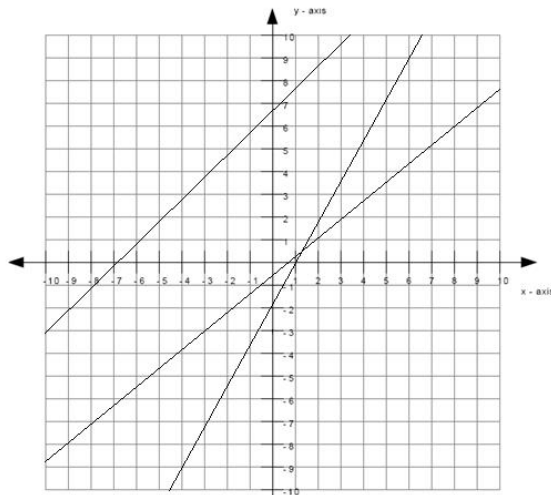
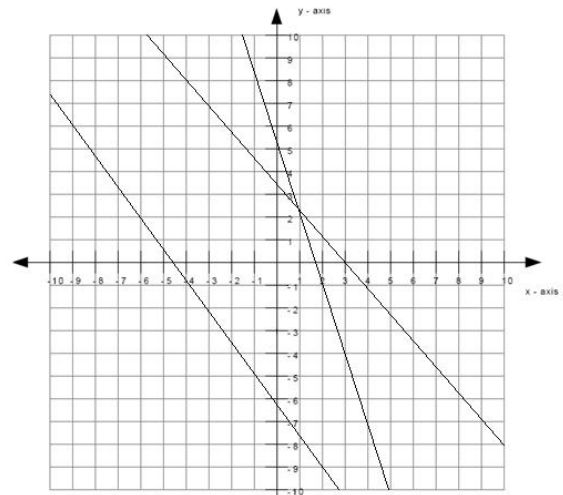What is the slope of the line?

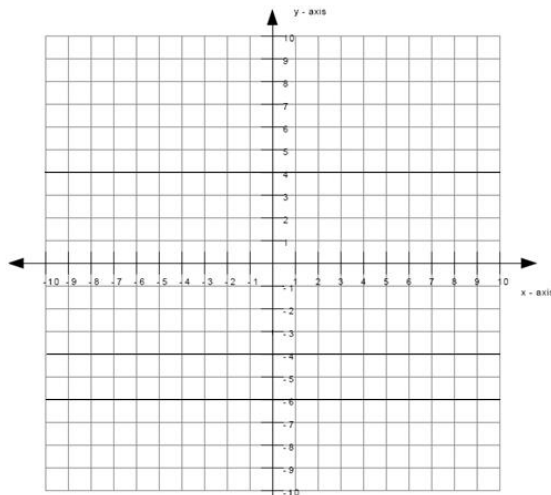**Algebra:**

✓ 1.5

Hints:

- The line matches the first graph below, therefore the slope is positive.
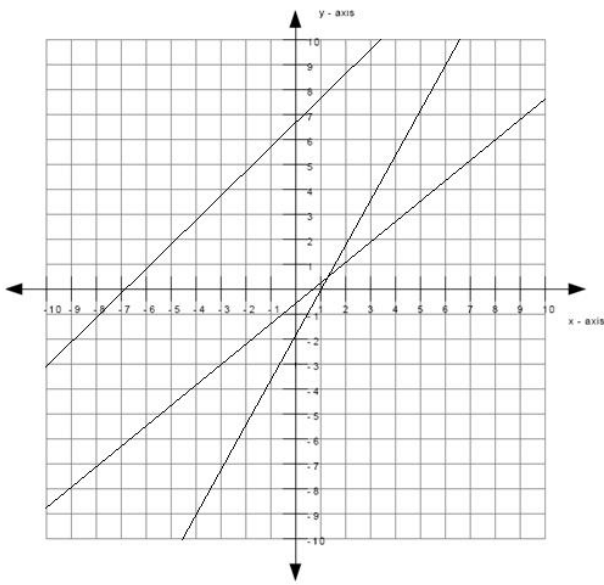
slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

214
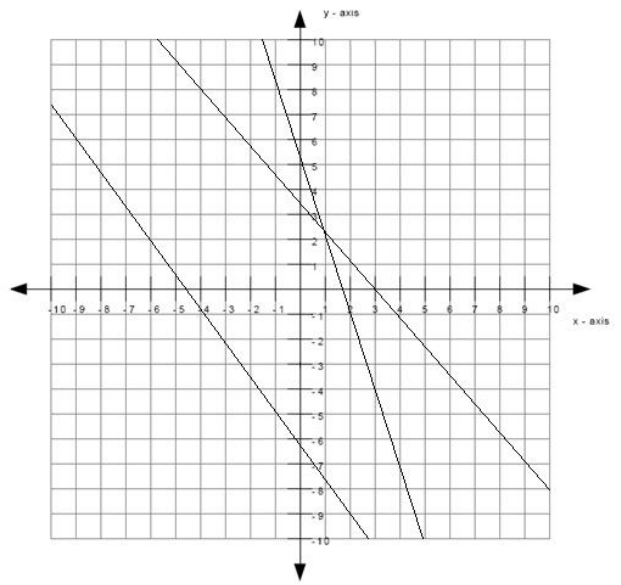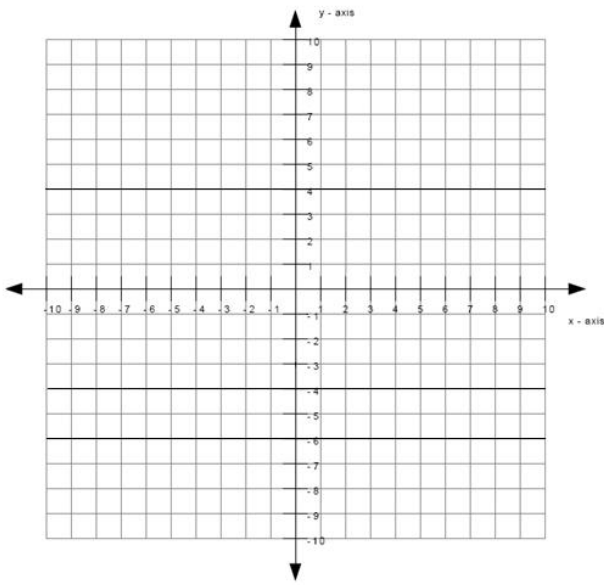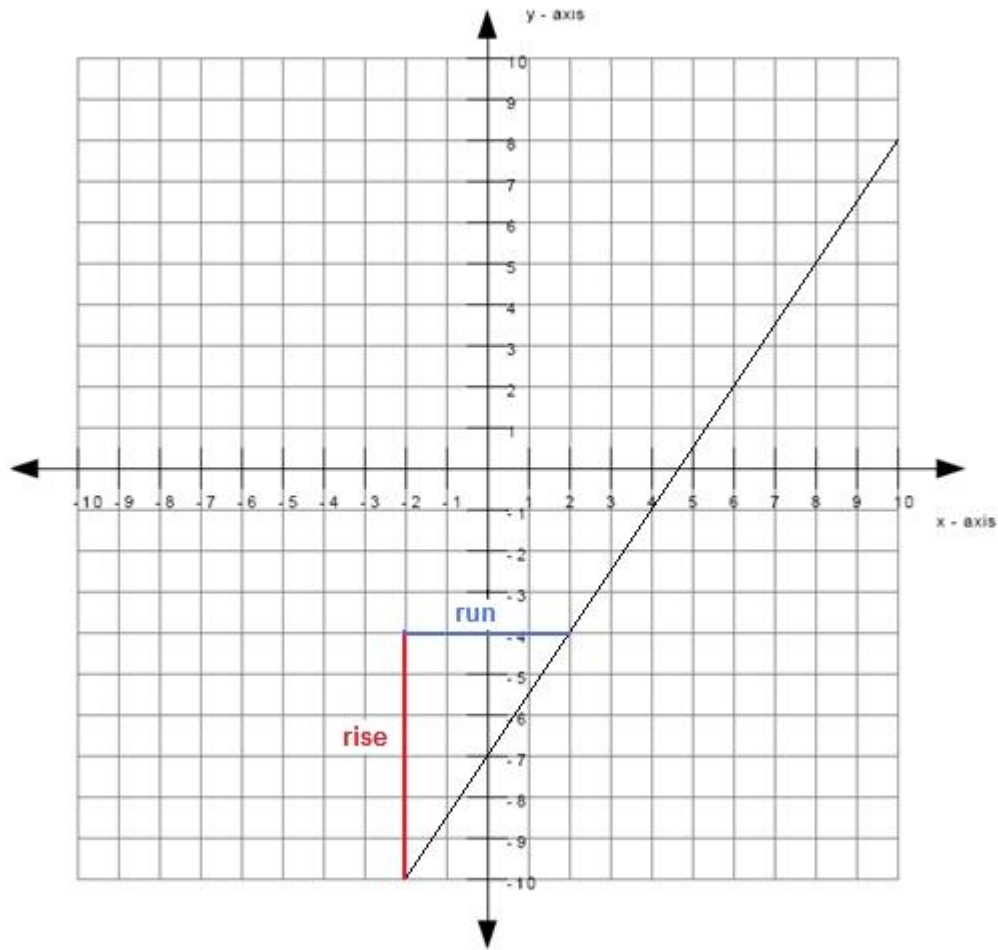
The length of the rise is 6 and the length of the run is 4.

slope size = 6/4

- Since the slope is positive and the size of the slope is 6/4 , the slope is therefore +6/4.

Type in 6/4.

Scaffold:

215
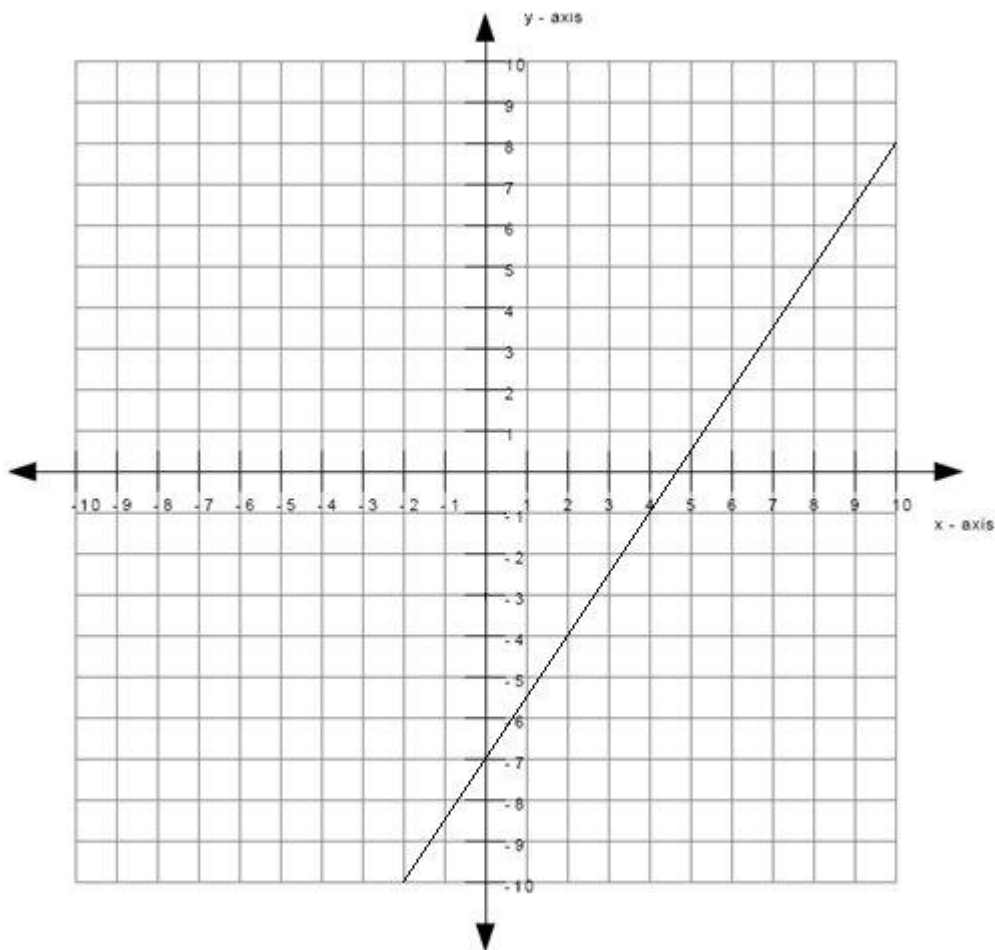
What is the y-intercept of the line?

Algebra:

✓ -7

Hints:

• The y-intercept is the point where the line intercepts (or cuts through) the y-axis.

• The green dot in the graph below is the y-intercept.
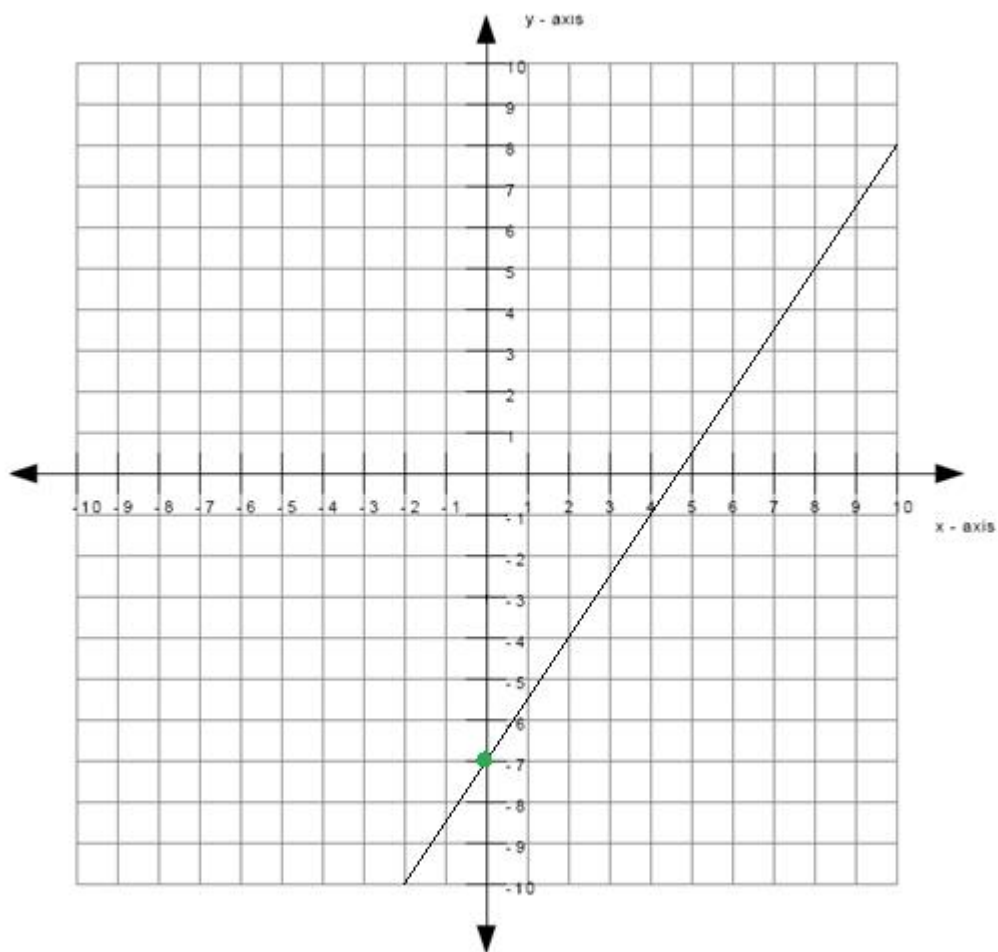
Therefore the y-intercept is -7.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:
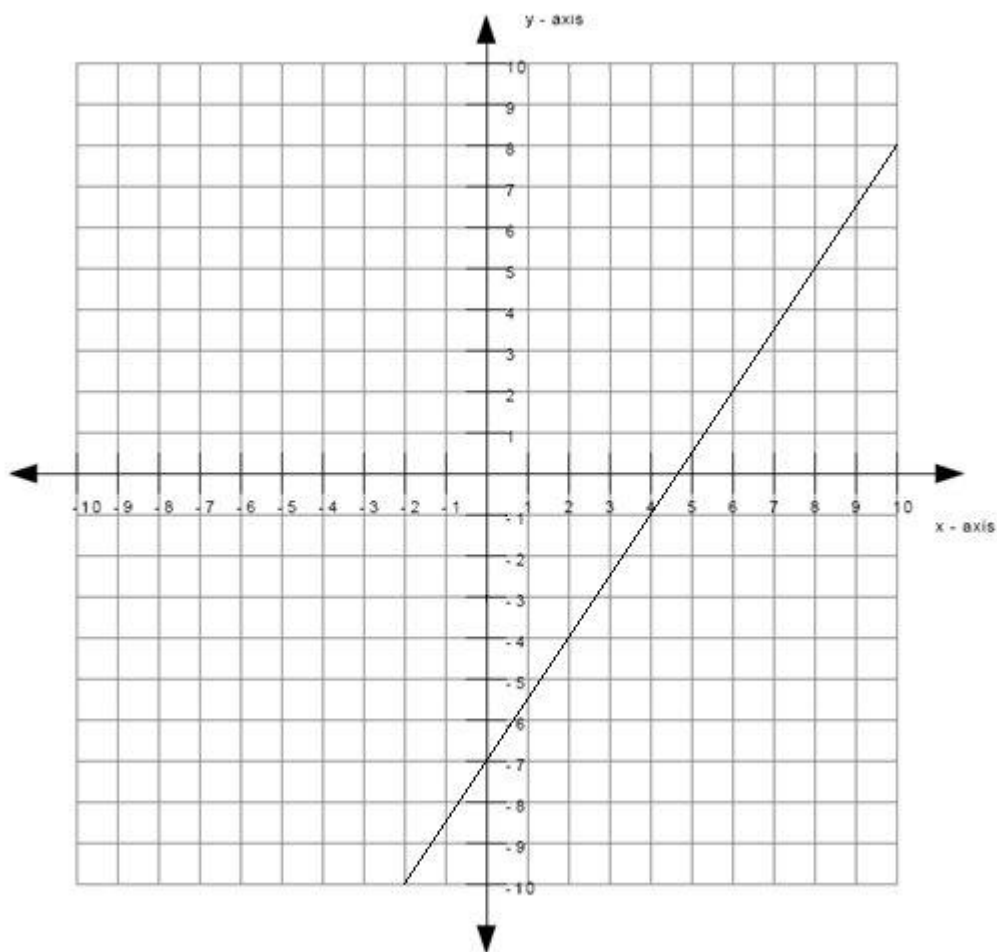
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=1.5*x + -7

✓ y=6/4x + -7

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

- You previously found that the slope is 6/4 which means that m = 6/4.
You also found that the y-intercept is -7 which means that b = -7.

- Substitute in m = 6/4 and b = -7 into y = mx + b.

- y = mx + b

y   = (6/4)x - 7

Type in y = (6/4)*x - 7.

218

What is the equation of the line graphed above?
Write your answer in the form y = _____

Algebra:

✓ y = %v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?

Algebra:

✓ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

slope size = %v{rise}/%v{run}

220

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?

Algebra:

✓ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=%v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into y = mx + b.

- y = mx + b

y   = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

Assistment #37524 "37524 - 30987 - Write equation from graph (Set 4)"

221

What is the equation of the line graphed above?

Write your answer in the form y = _____

Algebra:

✓ y = 0.4*x + -6

✓ y=2/5x + -6

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

222
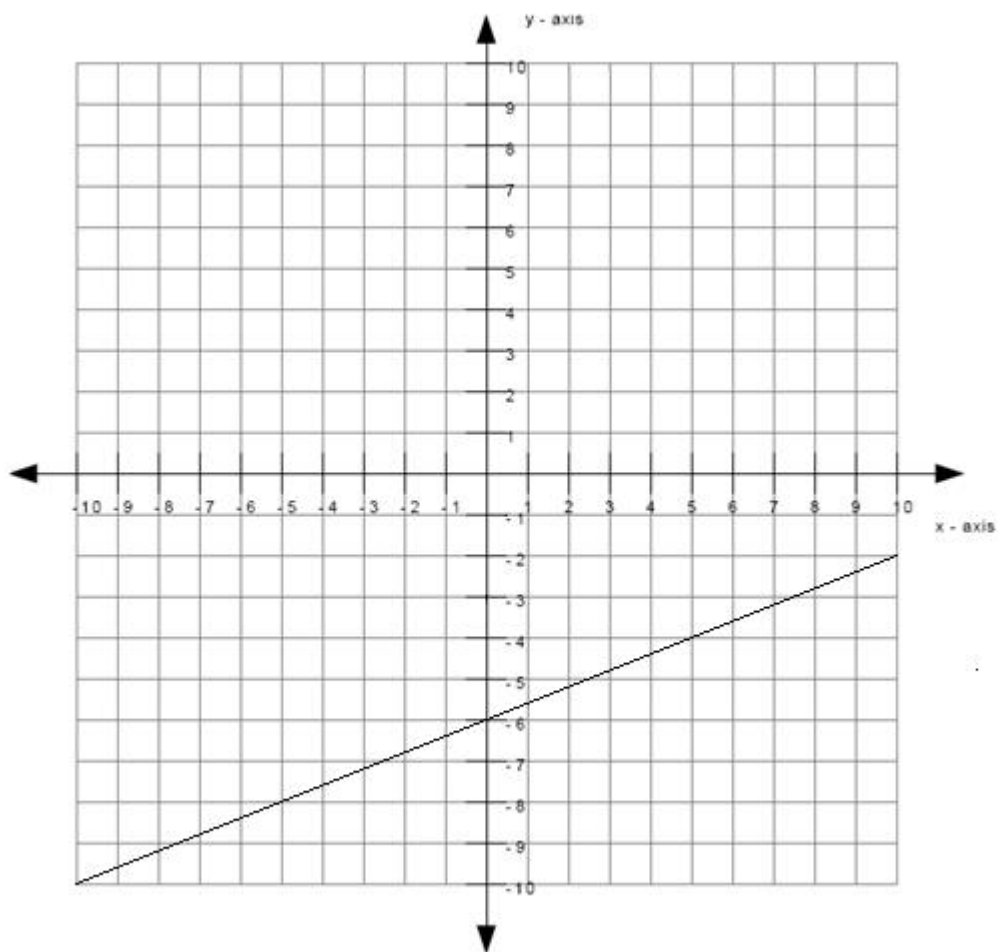
What is the slope of the line?

Algebra:

✓ 0.4

Hints:

- The line matches the first graph below, therefore the slope is positive.
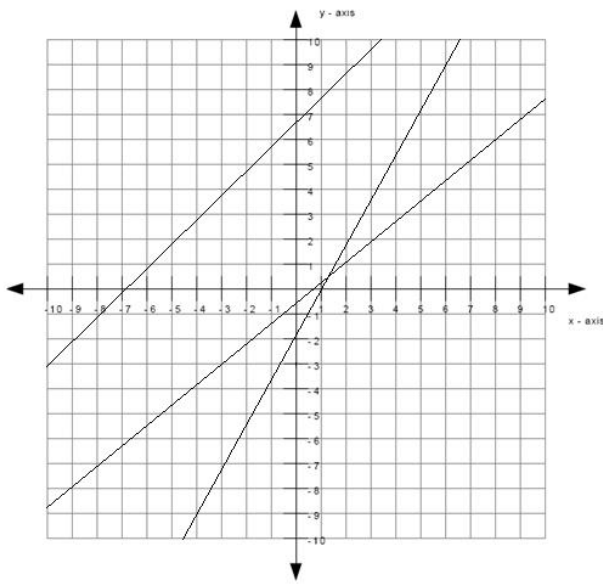
223

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:
slope size = rise/run

- The graph below shows an example of a rise and a run.

224
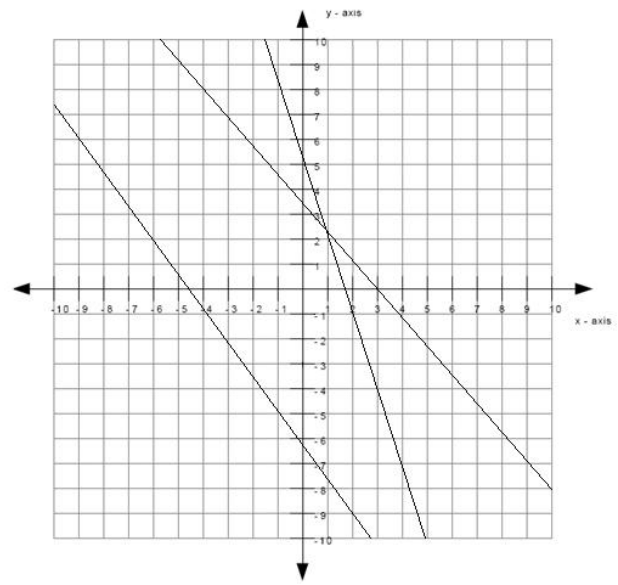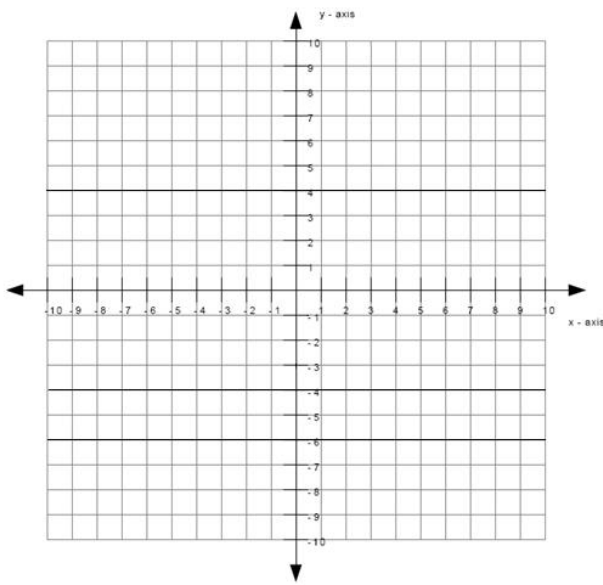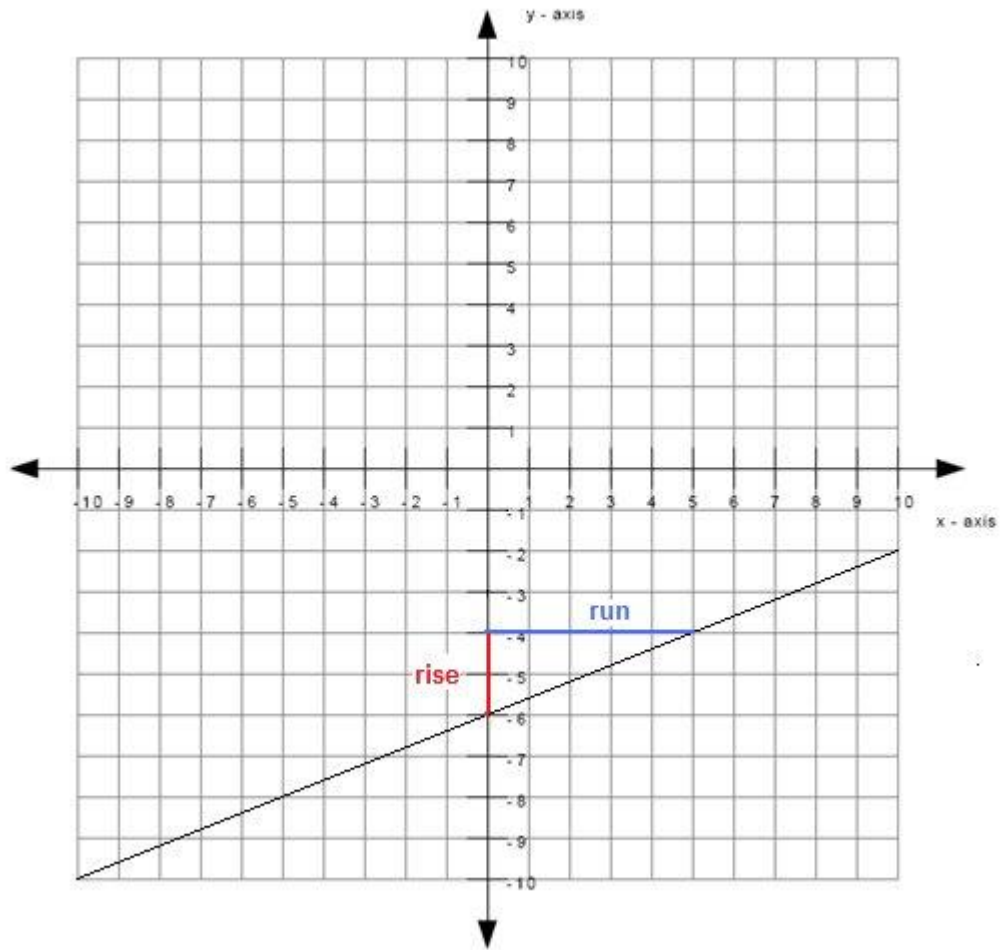
The length of the rise is 2 and the length of the run is 5.

slope size = 2/5

- Since the slope is positive and the size of the slope is 2/5 , the slope is therefore +2/5.

Type in 2/5.

Scaffold:
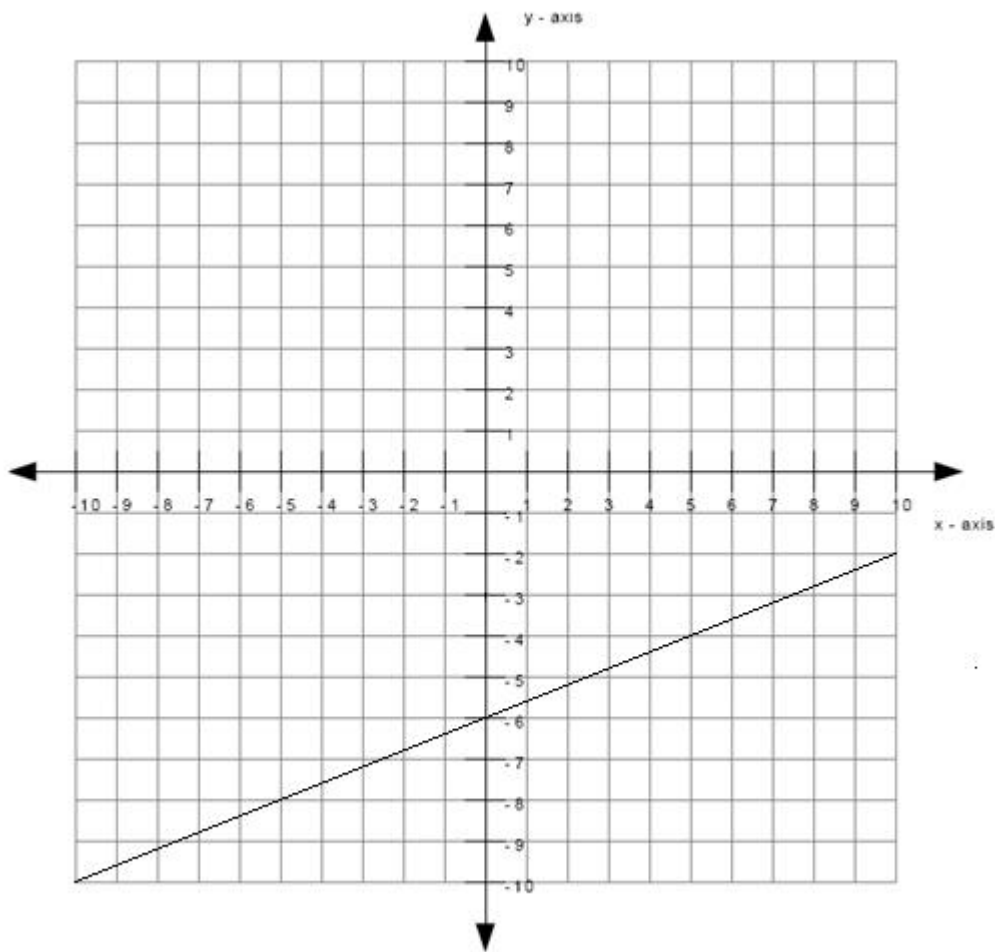
What is the y-intercept of the line?

Algebra:

✓ -6

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is -6.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

227
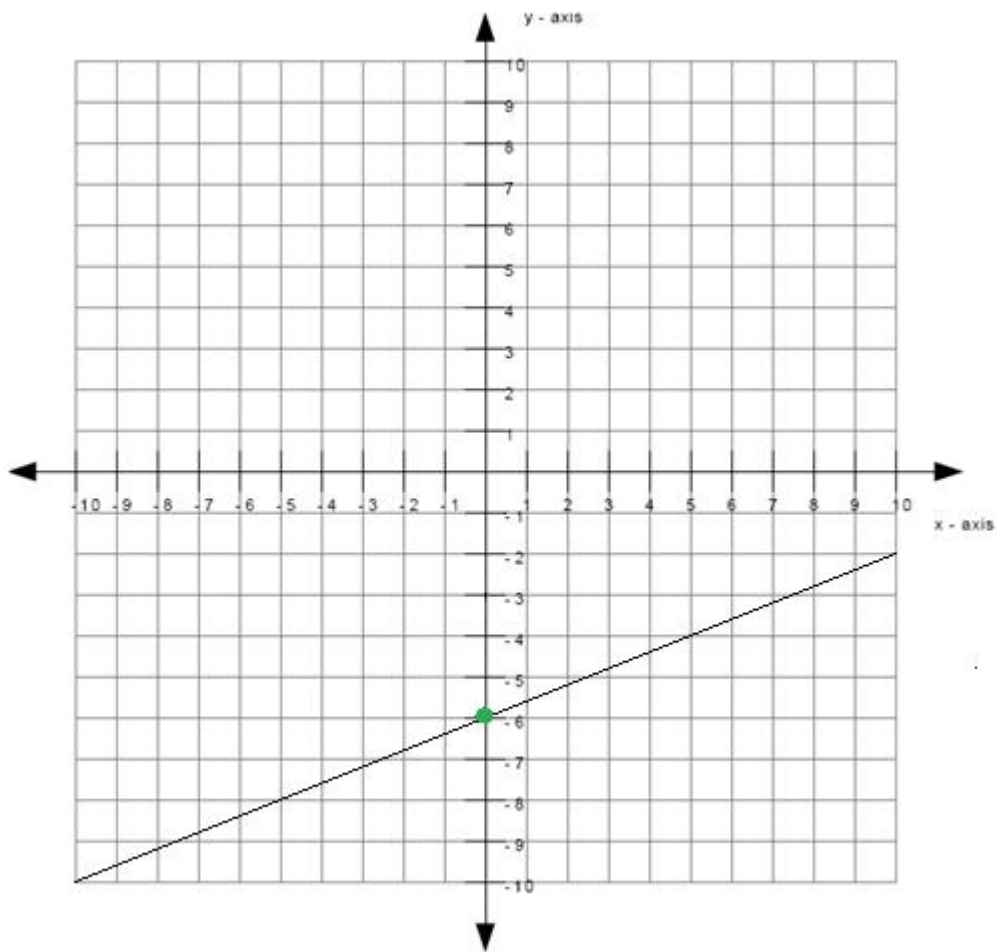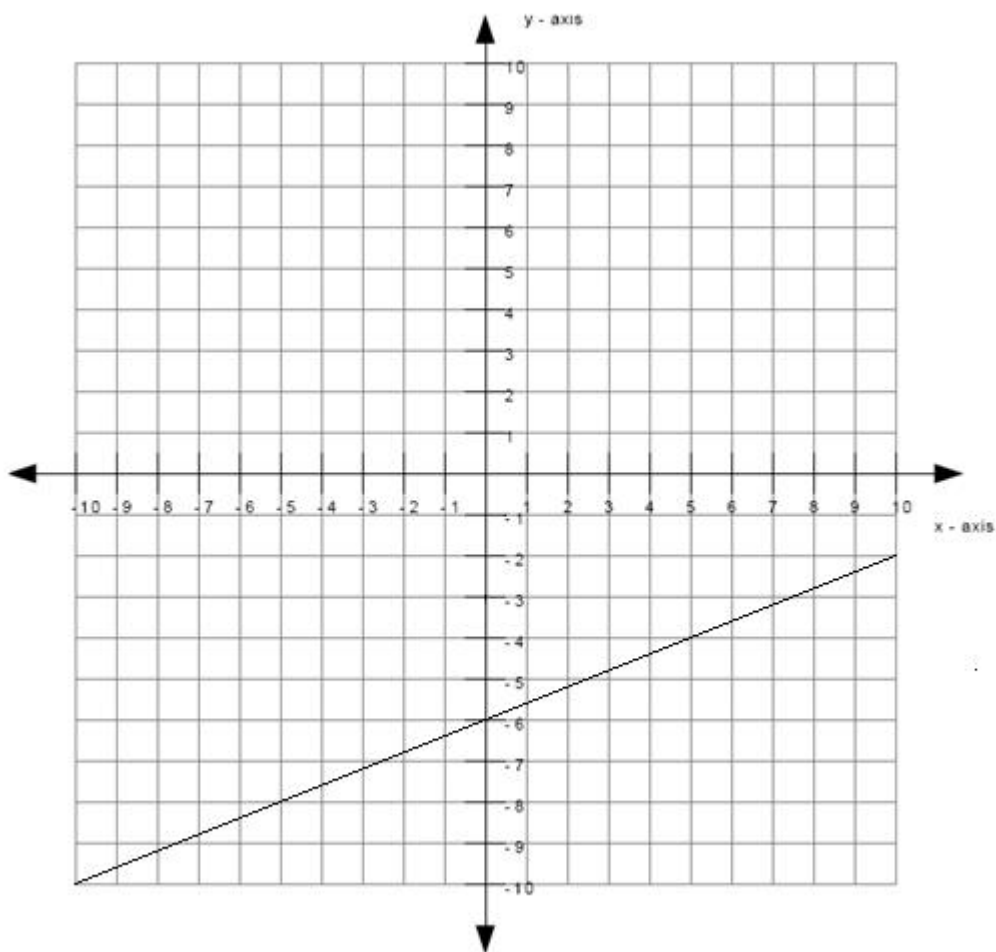
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=0.4*x + -6

✓ y=2/5x + -6

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

- You previously found that the slope is 2/5 which means that m = 2/5.
You also found that the y-intercept is -6 which means that b = -6.

- Substitute in m = 2/5 and b = -6 into y = mx + b.

- y = mx + b

y   = (2/5)x - 6

Type in y = (2/5)*x - 6.

228

What is the equation of the line graphed above?
Write your answer in the form y = _____

Algebra:

✓ y = %v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?

Algebra:

✓ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

slope size = %v{rise}/%v{run}

230

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?
Algebra:
✓ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:
Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form $y = mx + b$)
Algebra:
✓ y=%v{slopesign3*rise/run}*x + %v{c}
✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form $y = mx + b$ where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into $y = mx + b$.
- $y = mx + b$
y   = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

What is the equation of the line graphed above?

Write your answer in the form y = _____

Algebra:

✓ y = -0.1*x + -3

✓ y=-1/10x + -3

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?

Algebra:

✓ -0.1

Hints:

- The line matches the second graph below, therefore the slope is negative.

233

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

234

The length of the rise is 1 and the length of the run is 10.

slope size = 1/10

- Since the slope is negative and the size of the slope is 1/10 , the slope is therefore -1/10.

Type in -1/10.

Scaffold:

235
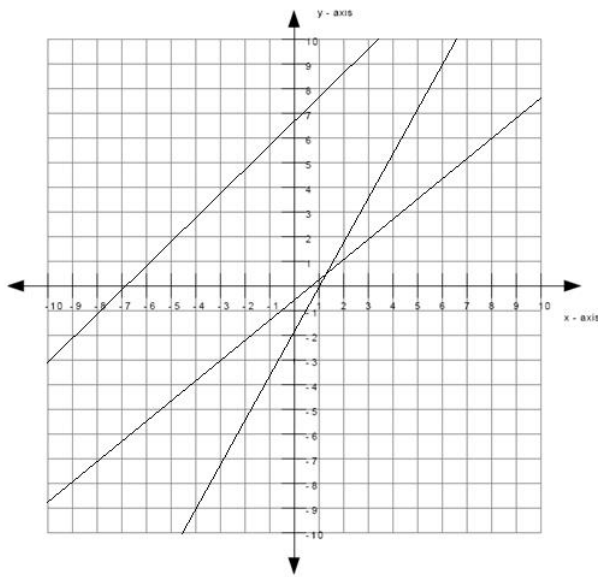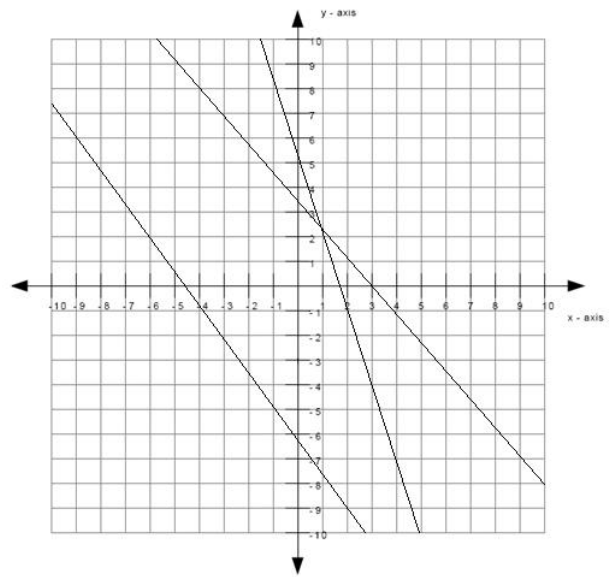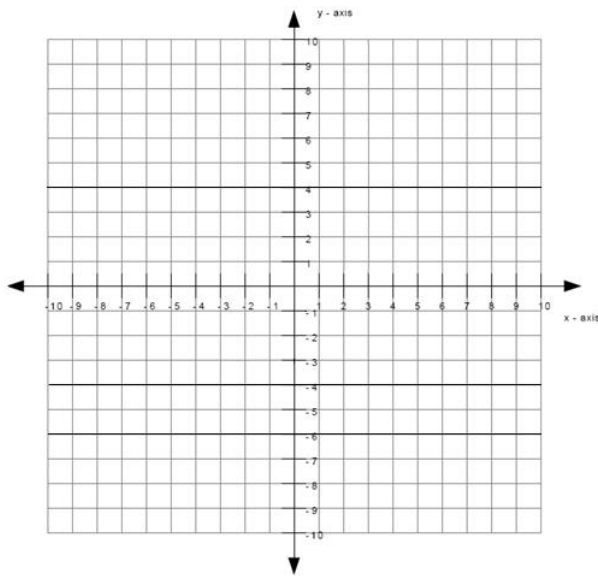
What is the y-intercept of the line?

Algebra:

✓ -3

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.

- The green dot in the graph below is the y-intercept.
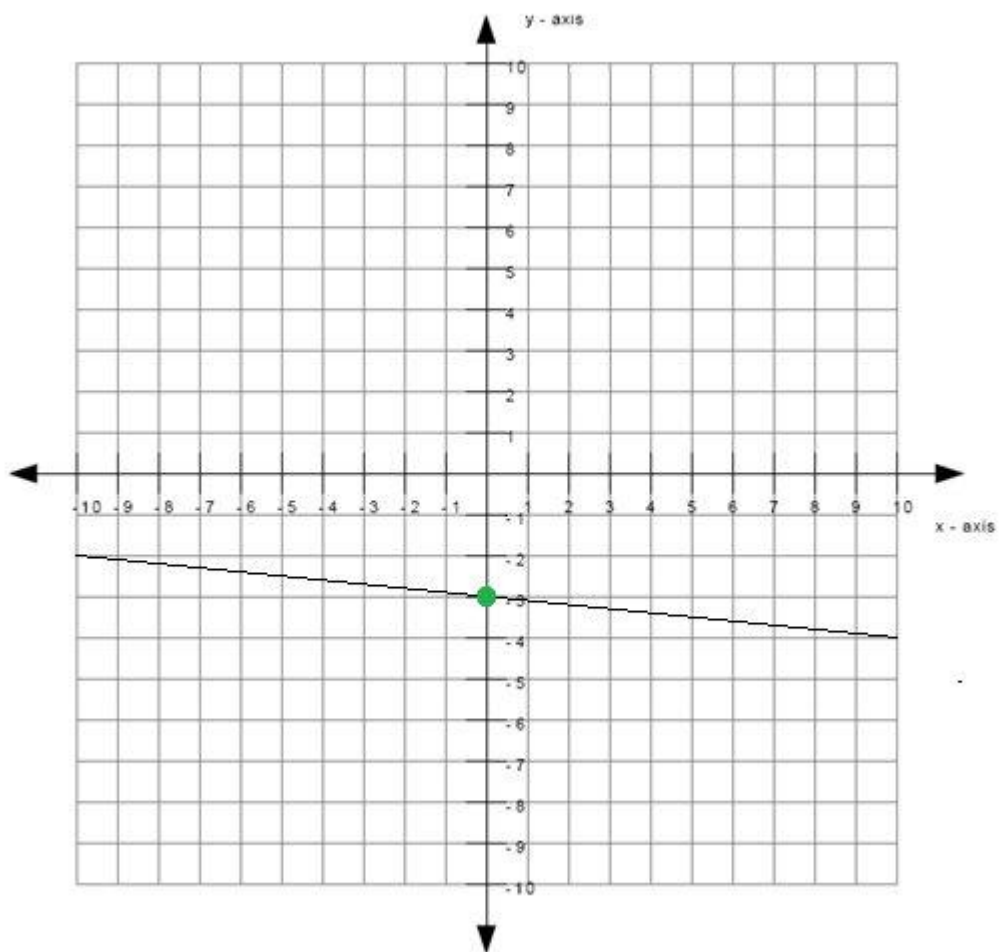
Therefore the y-intercept is -3.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

237
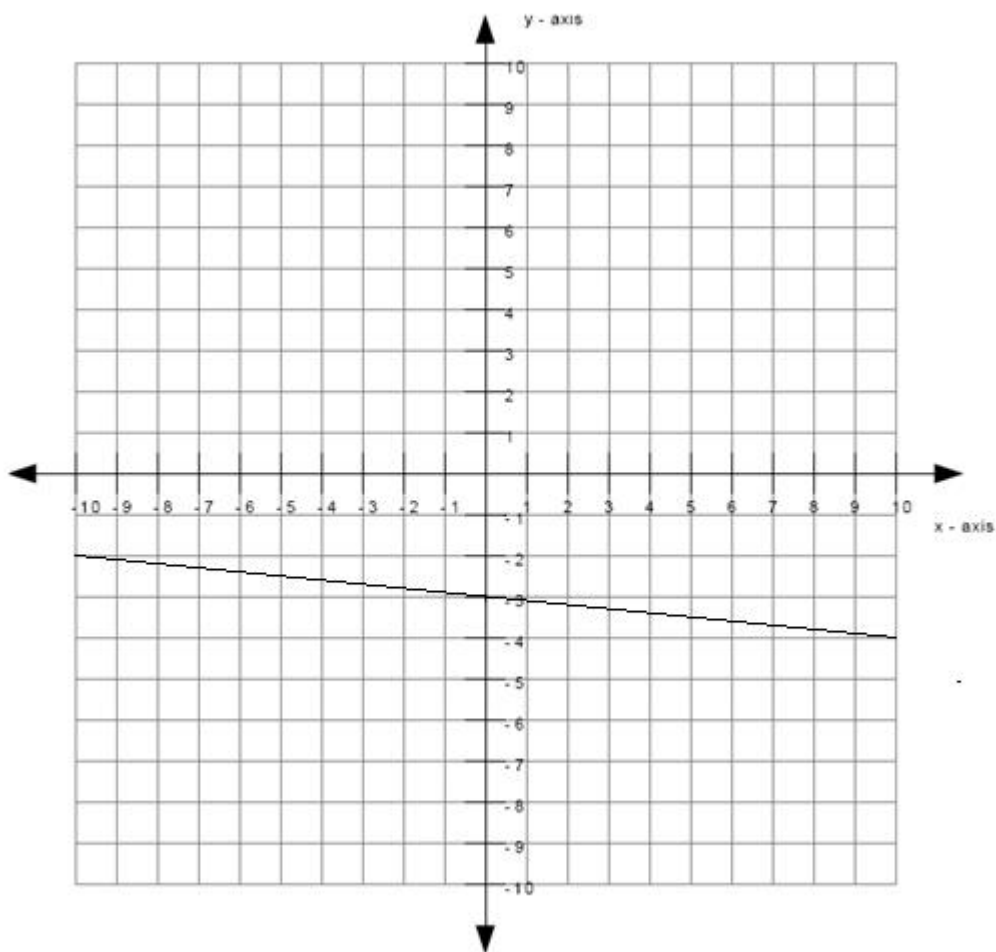
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=-0.1*x + -3

✓ y=-1/10x + -3

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

- You previously found that the slope is -1/10 which means that m = -1/10.
You also found that the y-intercept is -3 which means that b = -3.

- Substitute in m = -1/10 and b = -3 into y = mx + b.

- y = mx + b
y   = (-1/10)x - 3

Type in y = (-1/10)*x - 3.

238

What is the equation of the line graphed above?

Write your answer in the form y = _____

Algebra:

✓ y = %v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?

Algebra:

✓ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:

slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

slope size = %v{rise}/%v{run}

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

240

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?

Algebra:

✓ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=%v{slopesign3*rise/run}*x + %v{c}

✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into y = mx + b.
- y = mx + b
- y   = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

What is the equation of the line graphed above?

Write your answer in the form y = _____

Algebra:

✓ y = -0.1*x + 2

✓ y=-1/10x + 2

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?

Algebra:

✓ -0.1
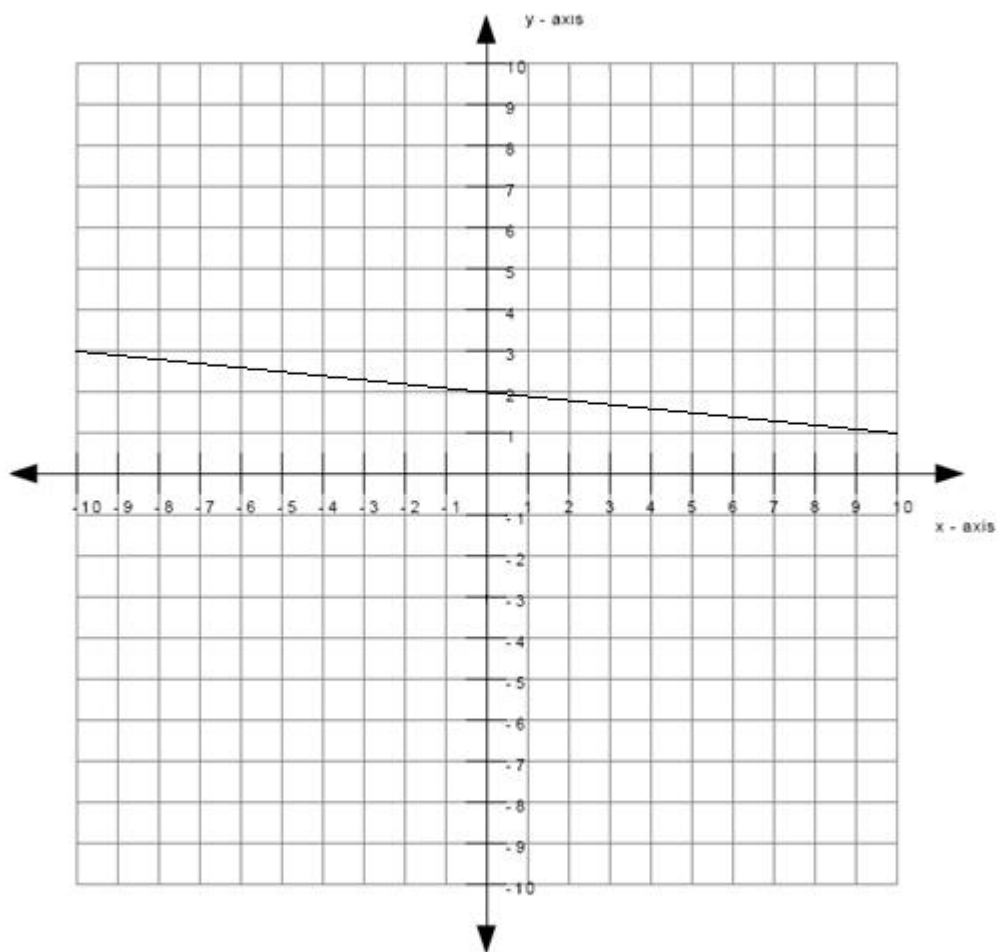
Hints:

- The line matches the second graph below, therefore the slope is negative.

slope is positive
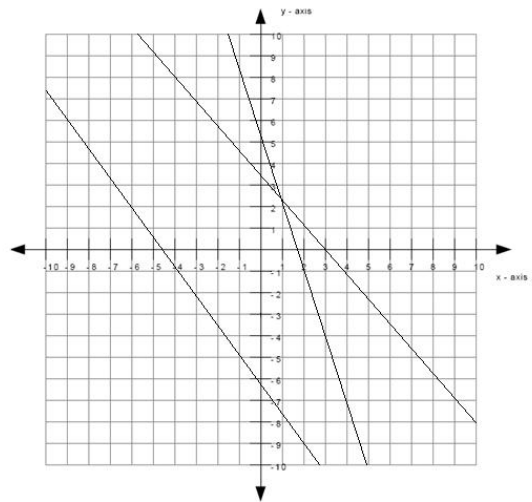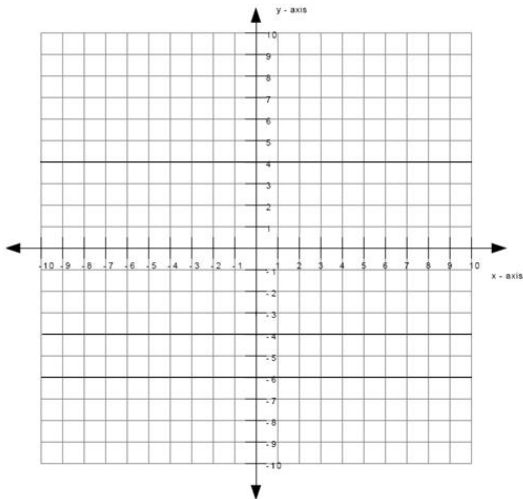
slope is negative

slope is zero

- The size of the slope can be found by:
slope size = rise/run

- The graph below shows an example of a rise and a run.

244

The length of the rise is 1 and the length of the run is 10.

slope size = 1/10

- Since the slope is negative and the size of the slope is 1/10 , the slope is therefore -1/10.

Type in -1/10.

Scaffold:

245

What is the y-intercept of the line?

Algebra:

✓ 2

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.
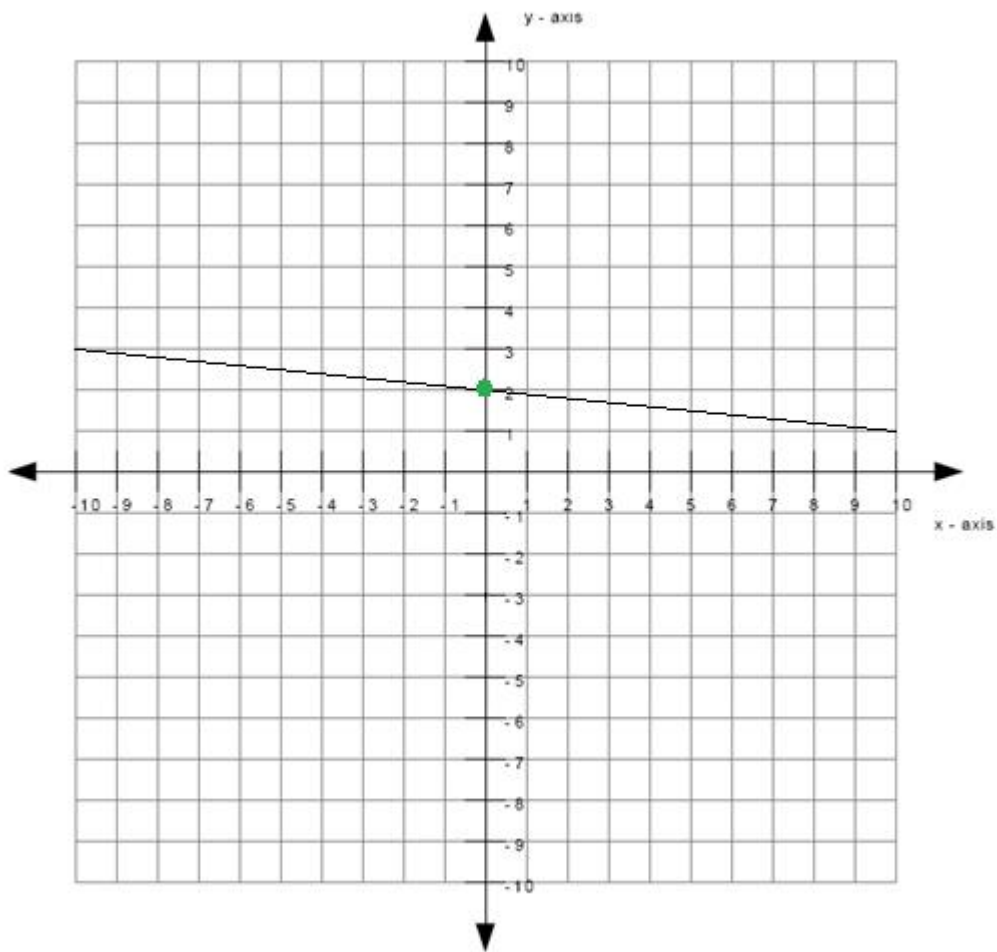
Therefore the y-intercept is 2.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:
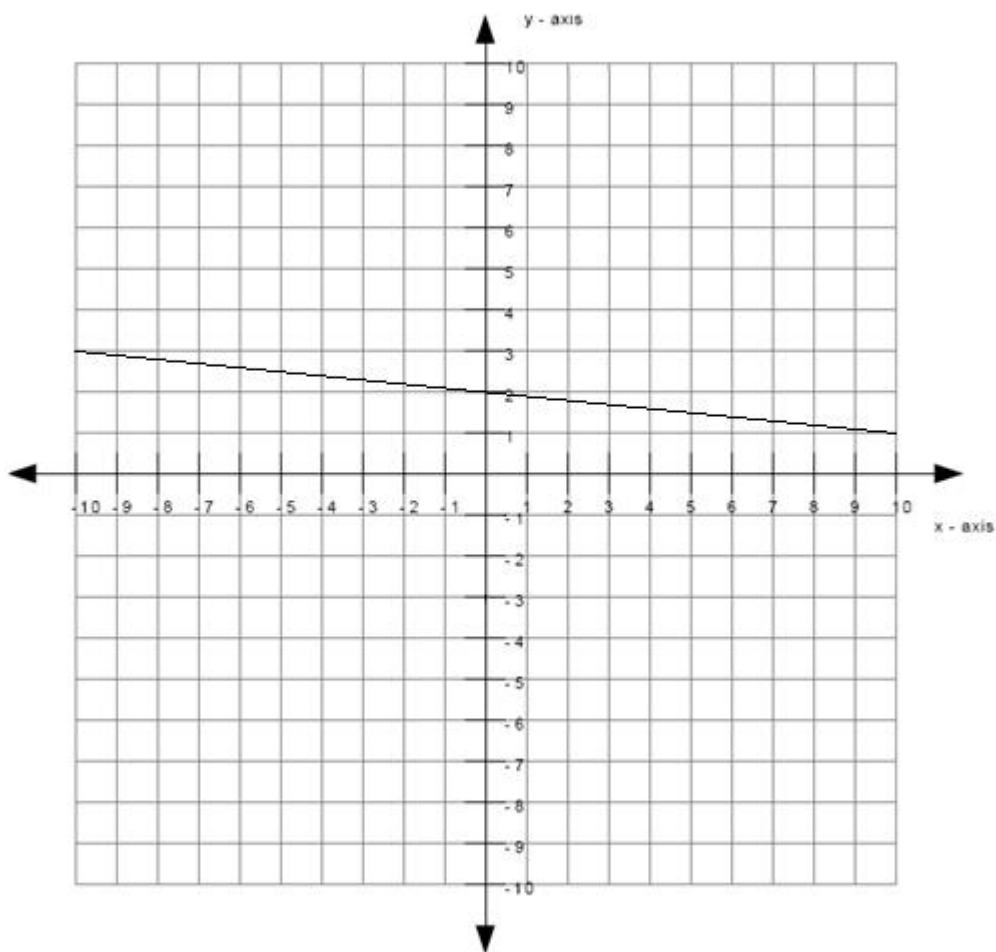
What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✓ y=-0.1*x + 2

✓ y=-1/10x + 2

Hints:

• Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

• You previously found that the slope is -1/10 which means that m = -1/10.
You also found that the y-intercept is 2 which means that b = 2.

• Substitute in m = -1/10 and b = 2 into y = mx + b.

• y = mx + b

y   = (-1/10)x + 2

Type in y = (-1/10)*x + 2.

248

What is the equation of the line graphed above?
Write your answer in the form y = _____
Algebra:
✓ y = %v{slopesign3*rise/run}*x + %v{c}
✓ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Scaffold:

The equation of the line will be of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.

What is the slope of the line?
Algebra:
✓ %v{slopesign3*rise/run}

Hints:

- The line matches the %v{match} graph below, therefore the slope is %v{slopesign}.

slope is positive

slope is negative

slope is zero

- The size of the slope can be found by:
slope size = rise/run

- The graph below shows an example of a rise and a run.

The length of the rise is %v{rise} and the length of the run is %v{run}.

slope size = %v{rise}/%v{run}

- Since the slope is %v{slopesign} and the size of the slope is %v{rise}/%v{run} , the slope is therefore %v{slopesign2}%v{rise}/%v{run}.

250

Type in %v{slopesign3*rise}/%v{run}.

Scaffold:

What is the y-intercept of the line?

Algebra:

✔ %v{c}

Hints:

- The y-intercept is the point where the line intercepts (or cuts through) the y-axis.
- The green dot in the graph below is the y-intercept.

Therefore the y-intercept is %v{c}.

Scaffold:

Now that you know the slope and the y-intercept of the line, try the original question again:

What is the equation of the line graphed above? (Write your answer in the form y = mx + b)

Algebra:

✔ y=%v{slopesign3*rise/run}*x + %v{c}

✔ y=%v{slopesign3*rise}/%v{run}x + %v{c}

Hints:

- Recall that the equation of the line is of the form y = mx + b where m is the slope of the line and b is the y-intercept of the line.
- You previously found that the slope is %v{slopesign3*rise}/%v{run} which means that m = %v{slopesign3*rise}/%v{run}.
You also found that the y-intercept is %v{c} which means that b = %v{c}.

- Substitute in m = %v{slopesign3*rise}/%v{run} and b = %v{c} into y = mx + b.
- y = mx + b
y = (%v{slopesign3*rise}/%v{run})x %v{c2}

Type in y = (%v{slopesign3*rise}/%v{run})*x %v{c2}.

Assistment #35653 "35653 - 34863 - Tables and rates (Set 1)"

The table below shows the number of miles traveled by Carol for 4 weeks.

weekly miles traveled	
week	number of miles traveled
1	18
2	25
3	32
4	39
5	
6	
7	
8	

If Carol continues to increase the number of miles traveled at a constant rate, what will be the number of miles traveled by Carol on week 7?

Algebra:

✓ 60

Scaffold:

Carol continues to increase the number of miles traveled at a constant rate. This means that Carol increases the number of miles traveled by the same number every week as shown below.

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ ?
2	25	
		+ ?
3	32	
		+ ?
4	39	
		+ ?
5		
		+ ?
6		

		+ ?
7		
		+ ?
8		

Carol increases the number of miles traveled every week by what same number?

Algebra:

✓ 7

Hints:

- The number of miles traveled by Carol on week 1 is 18. The number of miles traveled by Carol in the following week is 25 . By how much did the number of miles traveled increased by?

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ ?
2	25	
		+ ?
3	32	
		+ ?
4	39	
		+ ?
5		
		+ ?
6		

		+ ?
7		
		+ ?
8		

- The answer to the previous question is 7. This means that Carol increases the number of miles traveled by 7 every week as shown below. Type in 7.

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ 7
2	25	
		+ 7
3	32	
		+ 7
4	39	
		+ 7
5		
		+ 7
6		
		+ 7
7		
		+ 7
8		

254

The table below shows the number of miles traveled by Carol for 4 weeks.

weekly miles traveled	
week	number of miles traveled
1	18
2	25
3	32
4	39
5	
6	
7	
8	

If Carol continues to increase the number of miles traveled at a constant rate, what will be the number of miles traveled by Carol on week 7?

Algebra:

✓ 60

Hints:

- You know that Carol increases the number of miles traveled by 7 every week. Therefore you have the table below.

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ 7
2	25	
		+ 7
3	32	

		+ 7
4	39	
		+ 7
5		
		+ 7
6		
		+ 7
7		
		+ 7
8		

- Let me fill in week 5 for you.

On week 4, the number of miles traveled by Carol was 39. If she increases the number of miles traveled by 7 every week, then the number of miles traveled at week 5 will be 39 + 7 = 46 as shown below.

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ 7
2	25	
		+ 7
3	32	
		+ 7
4	39	

		+ 7
5	46	
		+ 7
6		
		+ 7
7		
		+ 7
8		

Now try filling in the rest of the table.

- A completely filled up table is shown below.

weekly miles traveled		
week	number of miles traveled	
1	18	
		+ 7
2	25	
		+ 7
3	32	
		+ 7
4	39	
		+ 7
5	46	

		+ 7
6	53	
		+ 7
7	60	
		+ 7
8	67	

As you can see, the number of miles traveled by Carol on week 7 is 60. Type in 60.

Assistment #34863 "34863 - Tables and rates (Set 1)"

The table below shows the %v{result} by %v{subject} for 4 %v{axis}s.

%v{table}	
%v{axis}	%v{result}
1	%v{d1}
2	%v{d2}
3	%v{d3}
4	%v{d4}
5	
6	
7	
8	

If %v{subject} continues to increase the %v{result} at a constant rate, what will be the %v{result} by %v{subject} on %v{axis} %v{lev}?

Algebra:

✔ %v{ans}

Scaffold:

%v{subject} continues to increase the %v{result} at a constant rate. This means that %v{subject} increases the %v{result} by the same number every %v{axis} as shown below.

258

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ ?
2	%v{d2}	
		+ ?
3	%v{d3}	
		+ ?
4	%v{d4}	
		+ ?
5		
		+ ?
6		
		+ ?
7		
		+ ?
8		

%v{subject} increases the %v{result} every %v{axis} by what same number?

Algebra:

✓ %v{rt}

Hints:

- The %v{result} by %v{subject} on %v{axis} 1 is %v{d1}. The %v{result} by %v{subject} in the following %v{axis} is %v{d2} . By how much did the %v{result} increased by?

%v{table}

259

%v{axis}	%v{result}	
1	%v{d1}	
		+ ?
2	%v{d2}	
		+ ?
3	%v{d3}	
		+ ?
4	%v{d4}	
		+ ?
5		
		+ ?
6		
		+ ?
7		
		+ ?
8		

- The answer to the previous question is %v{rt}. This means that %v{subject} increases the %v{result} by %v{rt} every %v{axis} as shown below. Type in %v{rt}.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}

3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5		
		+ %v{rt}
6		
		+ %v{rt}
7		
		+ %v{rt}
8		

Scaffold:

Now try the original problem again.

The table below shows the %v{result} by %v{subject} for 4 %v{axis}s.

%v{table}	
%v{axis}	%v{result}
1	%v{d1}
2	%v{d2}
3	%v{d3}
4	%v{d4}
5	
6	
7	
8	

If %v{subject} continues to increase the %v{result} at a constant rate, what will be the %v{result} by %v{subject} on %v{axis} %v{lev}?

Algebra:

✓ %v{ans}

Hints:

- You know that %v{subject} increases the %v{result} by %v{rt} every %v{axis}. Therefore you have the table below.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5		
		+ %v{rt}
6		
		+ %v{rt}
7		
		+ %v{rt}
8		

- Let me fill in %v{axis} 5 for you.

On %v{axis} 4, the %v{result} by %v{subject} was %v{d4}. If she increases the %v{result} by

262

%v{rt} every %v{axis}, then the %v{result} at %v{axis} 5 will be %v{d4} + %v{rt} = %v{d5} as shown below.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6		
		+ %v{rt}
7		
		+ %v{rt}
8		

Now try filling in the rest of the table.

- A completely filled up table is shown below.

263

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6	%v{d6}	
		+ %v{rt}
7	%v{d7}	
		+ %v{rt}
8	%v{d8}	

As you can see, the %v{result} by %v{subject} on %v{axis} %v{lev} is %v{ans}. Type in %v{ans}.

Assistment #35683 "35683 - 34865 - Tables and rates (Set 2)"

The table below shows the number of miles traveled by Carol for 5 weeks.

weekly miles traveled	
week	number of miles traveled

264

1	38
2	40
3	42
4	44
5	46
6	
7	
8	

If Carol continues to increase the number of miles traveled at a constant rate, what will be the number of miles traveled by Carol on week 7?

Algebra:

✓ 50

Scaffold:

Carol continues to increase the number of miles traveled at a constant rate. This means that Carol increases the number of miles traveled by the same number every week as shown below.

weekly miles traveled		
week	number of miles traveled	
1	38	
		+ ?
2	40	
		+ ?
3	42	
		+ ?
4	44	
		+ ?
5	46	
		+ ?
6		
		+ ?

7		
		+ ?
8		

Carol increases the number of miles traveled every week by what same number?

Algebra:

✓ 2

Hints:

- The number of miles traveled by Carol on week 1 is 38. The number of miles traveled by Carol in the following week is 40 . By how much did the number of miles traveled increased by?

weekly miles traveled

week	number of miles traveled	
1	38	
		+ ?
2	40	
		+ ?
3	42	
		+ ?
4	44	
		+ ?
5	46	
		+ ?
6		
		+ ?
7		

266

		+ ?
8		

- The answer to the previous question is 2. This means that Carol increases the number of miles traveled by 2 every week as shown below. Type in 2.

weekly miles traveled

week	number of miles traveled	
1	38	
		+ 2
2	40	
		+ 2
3	42	
		+ 2
4	44	
		+ 2
5	46	
		+ 2
6		
		+ 2
7		
		+ 2
8		

Scaffold:

267

The table below shows the number of miles traveled by Carol for 5 weeks.

weekly miles traveled	
week	number of miles traveled
1	38
2	40
3	42
4	44
5	46
6	
7	
8	

If Carol continues to increase the number of miles traveled at a constant rate, what will be the number of miles traveled by Carol on week 7?

Algebra:

✔ 50

Hints:

- You know that Carol increases the number of miles traveled by 2 every week. Therefore you have the table below.

weekly miles traveled		
week	number of miles traveled	
1	38	
		+ 2
2	40	
		+ 2
3	42	
		+ 2
4	44	

268

		+ 2
5	46	
		+ 2
6		
		+ 2
7		
		+ 2
8		

- Let me fill in week 6 for you.

On week 5, the number of miles traveled by Carol was 46. If she increases the number of miles traveled by 2 every week, then the number of miles traveled at week 6 will be 46 + 2 = 48 as shown below.

weekly miles traveled		
week	number of miles traveled	
1	38	
		+ 2
2	40	
		+ 2
3	42	
		+ 2
4	44	
		+ 2
5	46	

		+ 2
6	48	
		+ 2
7		
		+ 2
8		

Now try filling in the rest of the table.

- A completely filled up table is shown below.

weekly miles traveled		
week	number of miles traveled	
1	38	
		+ 2
2	40	
		+ 2
3	42	
		+ 2
4	44	
		+ 2
5	46	
		+ 2
6	48	

		+ 2
7	50	
		+ 2
8	52	

As you can see, the number of miles traveled by Carol on week 7 is 50. Type in 50.

Assistment #34865 "34865 - Tables and rates (Set 2)"
The table below shows the %v{result} by %v{subject} for 5 %v{axis}s.

%v{table}	
%v{axis}	%v{result}
1	%v{d1}
2	%v{d2}
3	%v{d3}
4	%v{d4}
5	%v{d5}
6	
7	
8	

If %v{subject} continues to increase the %v{result} at a constant rate, what will be the %v{result} by %v{subject} on %v{axis} %v{lev}?
Algebra:
  ✔ %v{ans}

  Scaffold:
    %v{subject} continues to increase the %v{result} at a constant rate. This means that %v{subject} increases the %v{result} by the same number every %v{axis} as shown below.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	

		+ ?
2	%v{d2}	
		+ ?
3	%v{d3}	
		+ ?
4	%v{d4}	
		+ ?
5	%v{d5}	
		+ ?
6		
		+ ?
7		
		+ ?
8		

%v{subject} increases the %v{result} every %v{axis} by what same number?

Algebra:

✓ %v{rt}

Hints:

- The %v{result} by %v{subject} on %v{axis} 1 is %v{d1}. The %v{result} by %v{subject} in the following %v{axis} is %v{d2} . By how much did the %v{result} increased by?

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	+ ?

272

2	%v{d2}	
		+ ?
3	%v{d3}	
		+ ?
4	%v{d4}	
		+ ?
5	%v{d5}	
		+ ?
6		
		+ ?
7		
		+ ?
8		

- The answer to the previous question is %v{rt}. This means that %v{subject} increases the %v{result} by %v{rt} every %v{axis} as shown below. Type in %v{rt}.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}

273

4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6		
		+ %v{rt}
7		
		+ %v{rt}
8		

Scaffold:

Now try the original problem again.

The table below shows the %v{result} by %v{subject} for 5 %v{axis}s.

%v{table}	
%v{axis}	%v{result}
1	%v{d1}
2	%v{d2}
3	%v{d3}
4	%v{d4}
5	%v{d5}
6	
7	
8	

If %v{subject} continues to increase the %v{result} at a constant rate, what will be the %v{result} by %v{subject} on %v{axis} %v{lev}?

Algebra:

274

✓ %v{ans}

Hints:

- You know that %v{subject} increases the %v{result} by %v{rt} every %v{axis}. Therefore you have the table below.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6		
		+ %v{rt}
7		
		+ %v{rt}
8		

- Let me fill in %v{axis} 6 for you.

On %v{axis} 5, the %v{result} by %v{subject} was %v{d5}. If she increases the %v{result} by %v{rt} every %v{axis}, then the %v{result} at %v{axis} 6 will be %v{d5} + %v{rt} = %v{d6} as shown below.

275

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	
		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6	%v{d6}	
		+ %v{rt}
7		
		+ %v{rt}
8		

Now try filling in the rest of the table.

- A completely filled up table is shown below.

%v{table}		
%v{axis}	%v{result}	
1	%v{d1}	

276

		+ %v{rt}
2	%v{d2}	
		+ %v{rt}
3	%v{d3}	
		+ %v{rt}
4	%v{d4}	
		+ %v{rt}
5	%v{d5}	
		+ %v{rt}
6	%v{d6}	
		+ %v{rt}
7	%v{d7}	
		+ %v{rt}
8	%v{d8}	

As you can see, the %v{result} by %v{subject} on %v{axis} %v{lev} is %v{ans}. Type in %v{ans}.

Assistment #35773 "35773 - 31459 - Inequality solving (Set 1)"

Which graph below represents the solution to the inequality below? (Type in the graph number.)

$32x + 27 \geq 987$

26 27 28 29 30 31 32 33 34

26 27 28 29 30 31 32 33 34

26 27 28 29 30 31 32 33 34

277

26 27 28 29 30 31 32 33 34

Algebra:

✓ 1

Hints:

- First, you have to solve for x in the equation

$32x + 27 \geq 987$

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- $32x + 27 \quad \geq 987$

  $32x + 27 - 27 \geq 987 - 27$

  $32x \qquad \geq 960$

- $32x \geq 960$

$$\frac{32x}{32} \geq \frac{960}{32}$$

$$x \geq \frac{960}{32}$$

$x \geq 30$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- $x \geq 30$ means that the x is any value that is equal to or more than 30. This means that the thick black arrow must start at 30 and point in the direction where the values are greater than 30. The graph that represents this is graph 1.

26 27 28 29 30 31 32 33 34

26 27 28 29 30 31 32 33 34

26   27   28   29   30   31   32   33   34

Type in 1.

Assistment #31459 "31459 - Inequality solving (Set 1)"

Which graph below represents the solution to the inequality below? (Type in the graph number.)

%v{c1}x + %v{c2} %v{inq} %v{c3}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}   %v{a+6}
%v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}   %v{a+6}
%v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}   %v{a+6}
%v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}   %v{a+6}
%v{a+7}   %v{a+8}

Algebra:

✓ %v{sel}

Hints:

- First, you have to solve for x in the equation

%v{c1}x + %v{c2} %v{inq} %v{c3}

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- %v{c1}x + %v{c2}   %v{inq} %v{c3}
%v{c1}x + %v{c2} - %v{c2} %v{inq} %v{c3} - %v{c2}
%v{c1}x   %v{inq} %v{c3-c2}

- %v{c1}x %v{inq} %v{c3-c2}

279

%v{c1}x   %v{c3-c2}

$$\frac{\%v\{c1\}x}{\%v\{c1\}} \;\%v\{inq\}\; \frac{\%v\{c3-c2\}}{\%v\{c1\}}$$

$$x \;\%v\{inq\}\; \frac{\%v\{c3-c2\}}{\%v\{c1\}}$$

x %v{inq} %v{final}

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- x %v{inq} %v{final} means that the x is any value that is equal to or more than %v{final}. This means that the thick black arrow must start at %v{final} and point in the direction where the values are %v{dir} than %v{final}. The graph that represents this is graph %v{sel}.

     %v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5} %v{a+6}   %v{a+7}   %v{a+8}

     %v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5} %v{a+6}   %v{a+7}   %v{a+8}

     %v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5} %v{a+6}   %v{a+7}   %v{a+8}

     %v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5} %v{a+6}   %v{a+7}   %v{a+8}

Type in %v{sel}.

Assistment #35983 "35983 - 32883 - Inequality solving (Set 6)"

Which graph below represents the solution to the inequality below? (Type in the graph number.)

$25(27x + 49) \geq -20375$

     -36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

Algebra:

✓ 1

Hints:

- First, you have to solve for x in the equation

$25(27x + 49) \geq -20375$

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- Distribute the 25 to each term inside the paranthesis.

$25(27x + 49) \qquad \geq -20375$

$25*27x + 25*49 \geq -20375$

$675x + 1225 \quad \geq -20375$

- $675x + 1225 \qquad \geq -20375$

$675x + 1225 - 1225 \geq -20375 - 1225$

$675x \qquad\qquad \geq -21600$

- $675x \geq -21600$

$$\frac{675x}{675} \geq \frac{-21600}{675}$$

$$x \geq \frac{-21600}{675}$$

$$x \geq -32$$

(Note: Remember that you should not switch the direction of the inequality sign around unless you

281

divide or multiply both sides by a negative number.)

- x ≥ -32 means that the x is any value that is equal to or more than -32. This means that the thick black arrow must start at -32 and point in the direction where the values are greater than -32. The graph that represents this is graph 1.

<div align="center">

-36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

-36 -35 -34 -33 -32 -31 -30 -29 -28

</div>

Type in 1.

Assistment #32883 "32883 - Inequality solving (Set 6)"

Which graph below represents the solution to the inequality below? (Type in the graph number.)

%v{c1}(%v{c2}x + %v{c3}) %v{inq} %v{c4}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1}
%v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7}
%v{a+8}

Algebra:

✓ %v{sel}

Hints:

- First, you have to solve for x in the equation

282

%v{c1}(%v{c2}x + %v{c3}) %v{inq} %v{c4}

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- Distribute the %v{c1} to each term inside the paranthesis.

%v{c1}(%v{c2}x + %v{c3})   %v{inq} %v{c4}

%v{c1}*%v{c2}x + %v{c1}*%v{c3} %v{inq} %v{c4}

 %v{c1*c2}x + %v{c1*c3}   %v{inq} %v{c4}

- %v{c1*c2}x + %v{c1*c3}   %v{inq} %v{c4}

%v{c1*c2}x + %v{c1*c3} - %v{c1*c3} %v{inq} %v{c4} - %v{c1*c3}

%v{c1*c2}x   %v{inq} %v{c4-c1*c3}

- %v{c1*c2}x %v{inq} %v{c4-c1*c3}

$$\frac{\%v\{c1*c2\}x}{\%v\{c1*c2\}} \ \%v\{inq\} \ \frac{\%v\{c4-c1*c3\}}{\%v\{c1*c2\}}$$

$$x \ \ \ \%v\{inq\} \ \frac{\%v\{c4-c1*c3\}}{\%v\{c1*c2\}}$$

 x %v{inq} %v{final}

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- x %v{inq} %v{final} means that the x is any value that is equal to or more than %v{final}. This means that the thick black arrow must start at %v{final} and point in the direction where the values are %v{dir} than %v{final}. The graph that represents this is graph %v{sel}.

  %v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

  %v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

  %v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

283

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6}
%v{a+7} %v{a+8}

Type in %v{sel}.

Assistment #36073 "36073 - 32904 - Inequality solving (Set 11)"

Which graph below represents the solution to the inequality below? (Type in the graph number.)

$$\frac{-20x}{19} \leq \frac{-7500}{95}$$

71 72 73 74 75 76 77 78 79

71 72 73 74 75 76 77 78 79

71 72 73 74 75 76 77 78 79

71 72 73 74 75 76 77 78 79

Algebra:

✓ 1

Hints:

- First, you have to solve for x in the equation

$$\frac{-20x}{19} \leq \frac{-7500}{95}$$

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- $$\frac{-20x}{19} \leq \frac{-7500}{95}$$

$$\frac{-20x*19}{19} \leq \frac{-7500*19}{95}$$

$$-20x \leq \frac{-142500}{95}$$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- $$-20x \leq \frac{-142500}{95}$$

$$\frac{-20x}{-20} \geq \frac{-142500}{95*-20}$$

$$x \geq \frac{-142500}{-1900}$$

$$x \geq 75$$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number. In this case, you have to switch the direction of the inequality sign around as shown in green above.)

• $x \geq 75$ means that the x is any value that is equal to or more than 75. This means that the thick black arrow must start at 75 and point in the direction where the values are greater than 75. The graph that represents this is graph 1.

71   72   73   74   75   76   77   78   79

285

71 72 73 74 75 76 77 78 79

71 72 73 74 75 76 77 78 79

71 72 73 74 75 76 77 78 79

Type in 1.

Assistment #32904 "32904 - Inequality solving (Set 11)"
Which graph below represents the solution to the inequality below? (Type in the graph number.)

$$\frac{\%v\{c1\}x}{\%v\{c2\}} \; \%v\{inq\} \; \frac{\%v\{c3\}}{\%v\{c4\}}$$

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

%v{a} %v{a+1} %v{a+2} %v{a+3} %v{a+4} %v{a+5} %v{a+6} %v{a+7} %v{a+8}

Algebra:
✔ %v{sel}

Hints:
- First, you have to solve for x in the equation

$$\frac{\%v\{c1\}x}{} \; \%v\{inq\} \; \frac{\%v\{c3\}}{}$$

286

%v{c2}   %v{c4}

To do this, treat the inequality sign as a equal sign. However, if you divide or multiply both sides by a negative number, the inequality sign have to switch directions.

- $$\frac{\%v\{c1\}x}{\%v\{c2\}} \; \%v\{inq\} \; \frac{\%v\{c3\}}{\%v\{c4\}}$$

$$\frac{\%v\{c1\}x*\%v\{c2\}}{\%v\{c2\}} \; \%v\{inq\} \; \frac{\%v\{c3\}*\%v\{c2\}}{\%v\{c4\}}$$

$$\%v\{c1\}x \; \%v\{inq\} \; \frac{\%v\{c3*c2\}}{\%v\{c4\}}$$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number.)

- $$\%v\{c1\}x \; \%v\{inq\} \; \frac{\%v\{c3*c2\}}{\%v\{c4\}}$$

$$\frac{\%v\{c1\}x}{\%v\{c1\}} \; \%v\{swinq\} \; \frac{\%v\{c3*c2\}}{\%v\{c4\}*\%v\{c1\}}$$

$$x \; \%v\{swinq\} \; \frac{\%v\{c3*c2\}}{\%v\{c4*c1\}}$$

$$x \; \%v\{swinq\} \; \%v\{final\}$$

(Note: Remember that you should not switch the direction of the inequality sign around unless you divide or multiply both sides by a negative number. In this case, you have to switch the direction of the inequality sign around as shown in green above.)

- x %v{swinq} %v{final} means that the x is any value that is equal to or more than %v{final}. This means that the thick black arrow must start at %v{final} and point in the direction where the values are %v{dir} than %v{final}. The graph that represents this is graph %v{sel}.

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}
%v{a+6}   %v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}
%v{a+6}   %v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}
%v{a+6}   %v{a+7}   %v{a+8}

%v{a}   %v{a+1}   %v{a+2}   %v{a+3}   %v{a+4}   %v{a+5}
%v{a+6}   %v{a+7}   %v{a+8}

Type in %v{sel}.

Assistment #37109 "37109 - 34868 - Proportions (Set 1)"

When making tea, you use 6 spoons of sugar for every 4 quarts of tea. Which of the following equations can be used to calculate c, the number of spoons of sugar needed for 19 quarts of tea?

Multiple choice:

✓ 6/4 = c/19
✗ 6/4 = 19/c
✗ 6/19 = 4/c
✗ 19/4 = 6/c

Hints:

- The problem is about the following ratio

number of spoons of sugar : number of quarts of tea

- This ratio means that

$$\frac{\text{number of spoons of sugar}}{\text{number of quarts of tea}} = k$$

288

where k is some constant.

- We know that 6 spoons of sugar is needed for every 4 quarts of tea used. This means that

$$6 : 4$$

or

$$\frac{6}{4} = k$$

- We also know that c spoons of sugar is needed for every 19 quarts of tea used. This means that

$$c : 19$$

or

$$\frac{c}{19} = k$$

- Notice that the two equations from the previous two hints are equal to k. (The two equations are shown again below.)

$$\frac{6}{4} = k$$

$$\frac{c}{19} = k$$

This means that they are equal to each other. Therefore,

$$\frac{6}{4} = \frac{c}{19}$$

This is an equation that can be used to find c, the number of spoons of sugar needed for 19 quarts of tea.
So the answer is 6/4 = c/19.

When %v{activity}, you use %v{x1} %v{top} for every %v{y1} %v{bottom}. Which of the following equations can be used to calculate %v{x2}, the number of %v{top} needed for %v{y2} %v{bottom}?

Multiple choice:

✓ %v{ax1}/%v{ay1} = %v{ax2}/%v{ay2}

✗ %v{bx1}/%v{by1} = %v{bx2}/%v{by2}

✗ %v{cx1}/%v{cy1} = %v{cx2}/%v{cy2}

✗ %v{dx1}/%v{dy1} = %v{dx2}/%v{dy2}

Hints:

- The problem is about the following ratio

number of %v{top} : number of %v{bottom}

- This ratio means that

$$\frac{\text{number of } \%v\{top\}}{\text{number of } \%v\{bottom\}} = k$$

where k is some constant.

- We know that %v{x1} %v{top} is needed for every %v{y1} %v{bottom} used. This means that

%v{x1} : %v{y1}

or

$$\frac{\%v\{x1\}}{\%v\{y1\}} = k$$

- We also know that %v{x2} %v{top} is needed for every %v{y2} %v{bottom} used. This means

290

that

$$%v\{x2\} : %v\{y2\}$$

or

$$\frac{%v\{x2\}}{%v\{y2\}} = k$$

- Notice that the two equations from the previous two hints are equal to k. (The two equations are shown again below.)

$$\frac{%v\{x1\}}{%v\{y1\}} = k$$

$$\frac{%v\{x2\}}{%v\{y2\}} = k$$

This means that they are equal to each other. Therefore,

$$\frac{%v\{x1\}}{%v\{y1\}} = \frac{%v\{x2\}}{%v\{y2\}}$$

This is an equation that can be used to find %v{x2}, the number of %v{top} needed for %v{y2} %v{bottom}.
So the answer is %v{ax1}/%v{ay1} = %v{ax2}/%v{ay2}.

Assistment #37139 "37139 - 34874 - Proportions (Set 5)"

When making tea, you use 18 spoons of sugar for every 12 quarts of tea. Which of the following equations can be used to calculate c, the number of quarts of tea needed for 24 spoons of sugar?

Multiple choice:
- ✓ 18/12 = 24/c
- ✗ 18/12 = c/24
- ✗ 18/c = 12/24

291

✖ c/12 = 18/24

Hints:

- The problem is about the following ratio

number of spoons of sugar : number of quarts of tea

- This ratio means that

$$\frac{\text{number of spoons of sugar}}{\text{number of quarts of tea}} = k$$

where k is some constant.

- We know that 18 spoons of sugar is needed for every 12 quarts of tea used. This means that

18 : 12

or

$$\frac{18}{12} = k$$

- We also know that 24 spoons of sugar is needed for every c quarts of tea used. This means that

24 : c

or

$$\frac{24}{c} = k$$

- Notice that the two equations from the previous two hints are equal to k. (The two equations are shown again below.)

$$\frac{18}{12} = k$$

$$\frac{24}{c} = k$$

This means that they are equal to each other. Therefore,

$$\frac{18}{12} = \frac{24}{c}$$

This is an equation that can be used to find 24, the number of spoons of sugar needed for c quarts of tea.

So the answer is 18/12 = 24/c.

Assistment #34874 "34874 - Proportions (Set 5)"

When %v{activity}, you use %v{x1} %v{top} for every %v{y1} %v{bottom}. Which of the following equations can be used to calculate %v{y2}, the number of %v{bottom} needed for %v{x2} %v{top}?

Multiple choice:

✓ %v{ax1}/%v{ay1} = %v{ax2}/%v{ay2}

✗ %v{bx1}/%v{by1} = %v{bx2}/%v{by2}

✗ %v{cx1}/%v{cy1} = %v{cx2}/%v{cy2}

✗ %v{dx1}/%v{dy1} = %v{dx2}/%v{dy2}

Hints:

- The problem is about the following ratio

number of %v{top} : number of %v{bottom}

- This ratio means that

$$\frac{\text{number of \%v\{top\}}}{\text{number of \%v\{bottom\}}} = k$$

where k is some constant.

- We know that %v{x1} %v{top} is needed for every %v{y1} %v{bottom} used. This means that

%v{x1} : %v{y1}

293

or

$$\frac{\%v\{x1\}}{\%v\{y1\}} = k$$

- We also know that $\%v\{x2\}$ $\%v\{top\}$ is needed for every $\%v\{y2\}$ $\%v\{bottom\}$ used. This means that

$$\%v\{x2\} : \%v\{y2\}$$

or

$$\frac{\%v\{x2\}}{\%v\{y2\}} = k$$

- Notice that the two equations from the previous two hints are equal to k. (The two equations are shown again below.)

$$\frac{\%v\{x1\}}{\%v\{y1\}} = k$$

$$\frac{\%v\{x2\}}{\%v\{y2\}} = k$$

This means that they are equal to each other. Therefore,

$$\frac{\%v\{x1\}}{\%v\{y1\}} = \frac{\%v\{x2\}}{\%v\{y2\}}$$

This is an equation that can be used to find $\%v\{x2\}$, the number of $\%v\{top\}$ needed for $\%v\{y2\}$ $\%v\{bottom\}$.
So the answer is $\%v\{ax1\}/\%v\{ay1\} = \%v\{ax2\}/\%v\{ay2\}$.

294

8.6 Data Analysis

8.6.1 Data Analysis Problem sets

Problem Set "8th Grade Data Analysis Pre-Test (11 items) V1.0 With Tutoring" id:[5293]

1) Assistment #27826 "27826 - Problem 30 - 2002 (Morph)"

The Venn diagram below shows Leila's graduating classes from middle school, high school, and college. How many students graduated together from **both** Leila's middle school and high school?

Leila's Graduating Classes

College 367 4 6 7 423 High School 143 15 Middle School
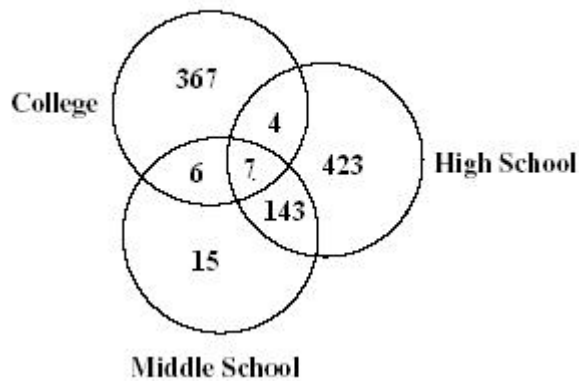
Fill in:

✓ 150

✗ 143

Scaffold:

A Venn diagram shows a relationship by visually grouping things into sets. Which of the following sections represents students both from middle school and high school?

Leila's Graduating Classes

College B A C D High School Middle School

Multiple choice:

295
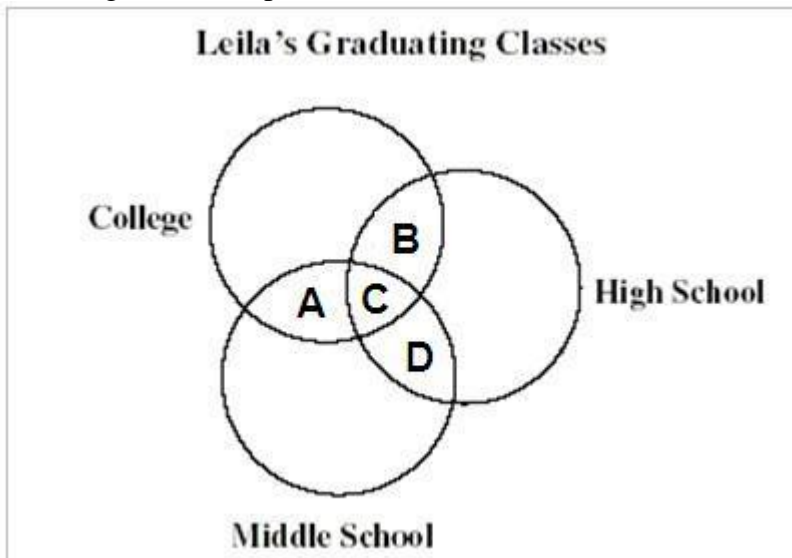
✖ A, B, C and D

No, that is not correct.

✖ A, B and C.

No, that is not correct.

✖ A, C and D

No, that is not correct.

✔ C and D

Hints:

• Use the diagram below to get an idea. It shows three different groups (head, mouth, and eyes) and their intersections.

Head, Mouth, and Eyes
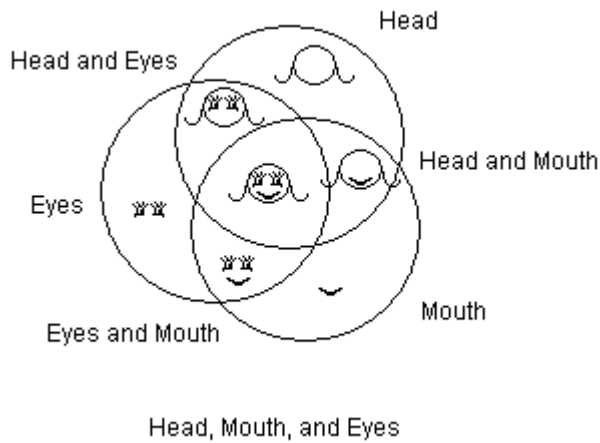
• It would be the sections included both by the Middle School circle and the High School circle.

• C and D represents the students both from middle school and high school.
Select C and D.

Scaffold:

Now add up the number of students in these sections to get the answer to the question "How many students graduated together from **both** Leila's middle school and high school?".

Leila's Graduating Classes

College 367, 4, 6, 7, 423, **High School** 143, 15, **Middle School**
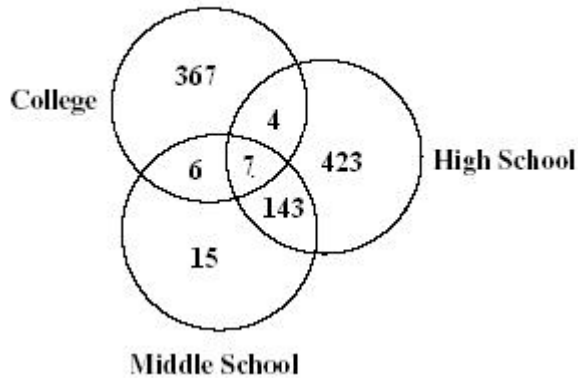
Fill in:

✓ 150

Hints:

Leila's Graduating Classes

College 367, 4, 6, 7, 423, **High School** 143, 15, **Middle School**

-
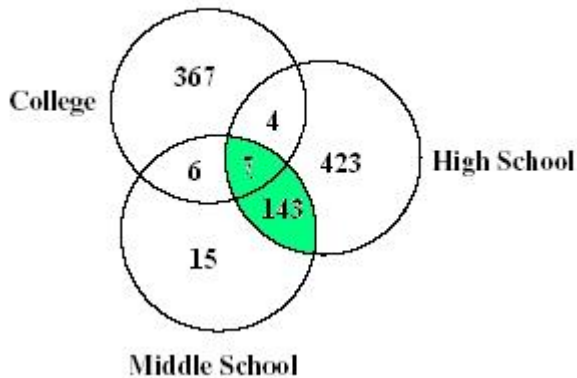
The highlighted area represents the students that graduate from both Leila's middle school and high school.

- 143 + 7 = 150. The correct answer is 150.

---

2) Assistment #27827 "27827 - 1998 - 14 Morph"

Mr. Hong took a survey in which he asked each of the 30 students in his math class to choose his or her favorite food. He tallied the results in this chart. Mr. Hong wants to construct a circle graph for this data. For this circle graph, what should be the measure of the angle in the tacos section?

Favorite Food

Food	Number of Students Choosing Food
Tacos	卌 I
Pizza	卌 IIII
French Fries	III
Hot Dogs	IIII
Hamburgers	卌 III

Algebra:

✓ 72

✗ 20

Scaffold:

How many students said tacos were their favorite food?

Algebra:

✓ 6

Hints:

- Count the tally marks to the right of the word "tacos" in the chart.

Favorite Food

Food	Number of Students Choosing Food
Tacos	卌 I
Pizza	卌 IIII
French Fries	III
Hot Dogs	IIII
Hamburgers	卌 III

- There are 6 tally marks.

Type in 6.

Scaffold:

How many students are there in Mr. Hong's class?

Algebra:

✓ 30

Hints:

- The number of students in his class is in the problem description.

Mr. Hong took a survey in which he asked each of the **30 students** in his math class to choose his or her favorite food.

- The answer is 30.

Type in 30.

Scaffold:

If you divide the circle into 30 sections (one section for each student) how many degrees would there be in each section?
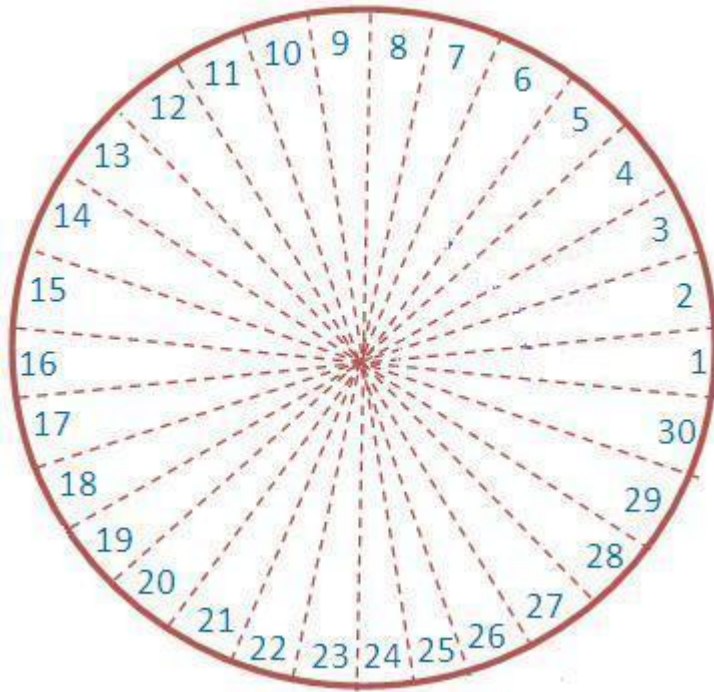
Algebra:

✔ 12

Hints:

- A cricle has 360 degrees.

- 360 divided into 30 equal sections means 360 ÷ 30

- 360 ÷ 30 = 12

Therefore, if a circle is divided into 30 equal sections, there would be **12 degrees** in each section.

Type in 12.

Scaffold:

Mr. Hong took a survey in which he asked each of the 30 students in his math class to choose his or her favorite food. He tallied the results in this chart. Mr. Hong wants to construct a circle graph for this data. For this circle graph, what should be the measure of the angle in the tacos section?

299

Favorite Food

Food	Number of Students Choosing Food
Tacos	ⵜⵜⵜ I
Pizza	ⵜⵜⵜ IIII
French Fries	III
Hot Dogs	IIII
Hamburgers	ⵜⵜⵜ III

Algebra:

✓ 72

Hints:

- We just found that there are **6 students** who liked tacos.
- We also found that **each student** in a circle represents a section of **12 degrees**.
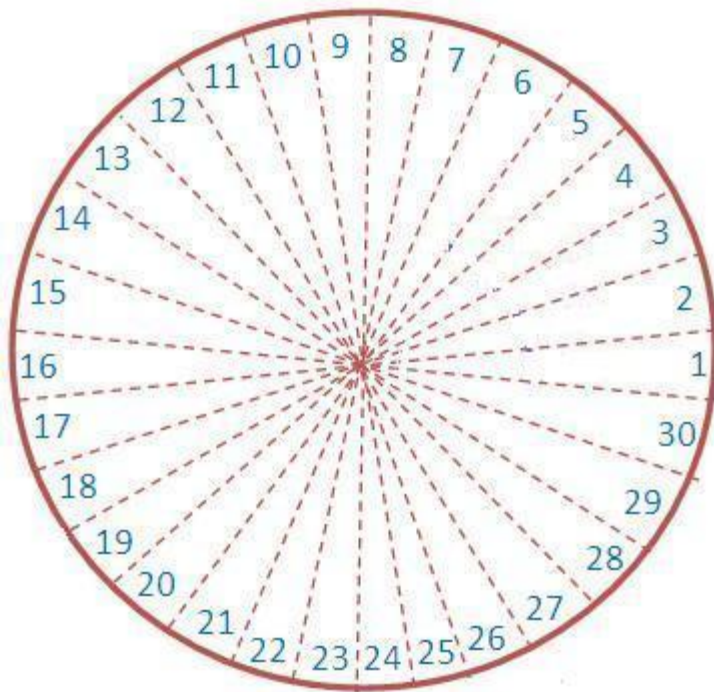
- Therefore, **6 students** in a cricle would represent a section of **(6 * 12) degrees**.

300
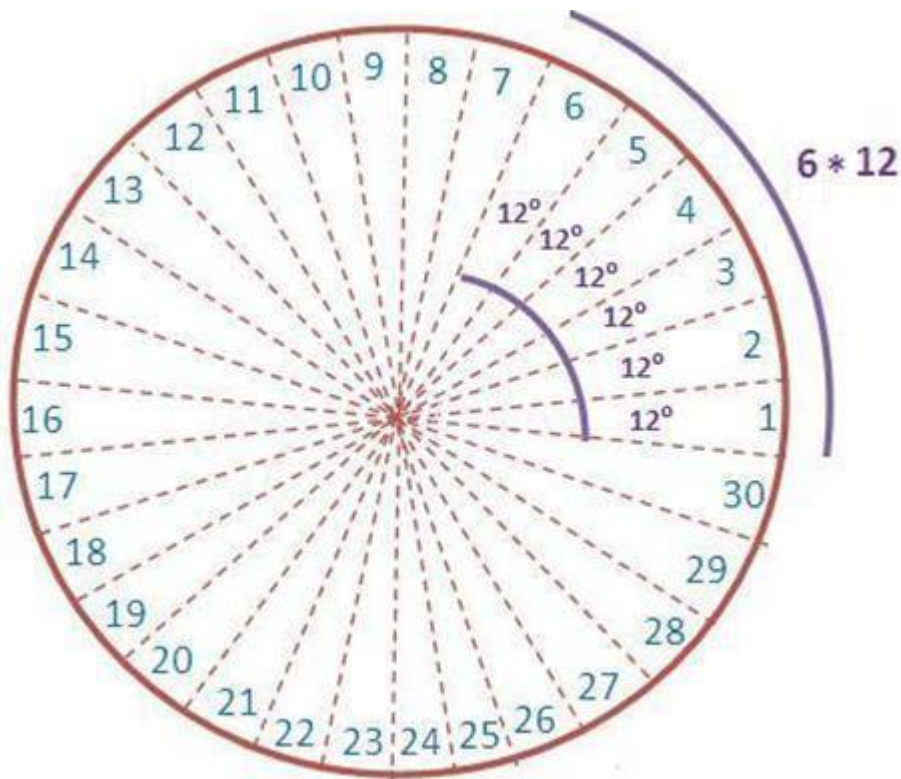
- 6 * 12 = 72

Therefore, the measure of the angle in the **tacos section** should be **72 degrees**.

Type in 72.

Scaffold:

Let's set up a ratio to solve this problem. How many students said tacos were their favorite food?

Algebra:

✓ 6

Hints:

- Count the tally marks to the right of the word "tacos" in the chart.

Favorite Food

Food	Number of Students Choosing Food
Tacos	ЖĦ I
Pizza	ЖĦ IIII
French Fries	III
Hot Dogs	IIII
Hamburgers	ЖĦ III

- There are 6 tally marks.

Type in 6.

Scaffold:

How many students are there in Mr. Hong's class?

Algebra:

✔ 30

Hints:

- The number of students in his class is in the problem description.
  Mr. Hong took a survey in which he asked each of the **30 students** in his math class to choose his or her favorite food.

- The answer is 30.
  Type in 30.

Scaffold:

Good, now we know that 6/30 students chose tacos so we can set up the second part of the ratio. We will measure the angle for the section of the graph for tacos in degrees. How many degrees are there in a circle?

Algebra:

✔ 360

Hints:

- There are 360 degrees in a circle.

Scaffold:

Good - there are 360 degrees in a circle and there are 6 out of 30 kids that like tacos which ratio is correct?

A. $\dfrac{6}{??} = \dfrac{360}{30}$

B. $\dfrac{6}{360} = \dfrac{??}{30}$

C. $\dfrac{6}{\rule{1cm}{0.4pt}} = \dfrac{??}{\rule{1cm}{0.4pt}}$

30   360

D. $\dfrac{??}{360} = \dfrac{30}{6}$

Multiple choice:

✘ A

✘ B

✔ C

✘ D

Hints:

- We know that 6 out of 30 students prefer tacos. As a fraction we show this as 6/30.

- If we do not know how many out of our circle prefer tacos we represent the unknown as x. Therefore, the second portion of our ratio is x/360.

- Therefore, if 6/30 equals the number of students in our class that prefer tacos and x/360 is the portion of our circle we are trying to find so the correct answer is C.

$\dfrac{6}{30} = \dfrac{??}{360}$

Select C.

Scaffold:

Great! we have our ratio to solve this problem.

Now let's go back to our original question.

Mr. Hong took a survey in which he asked each of the 30 students in his math class to choose his or her favorite food. He tallied the results in this chart. Mr. Hong wants to construct a circle graph for this data. For this circle graph, what should be the measure of the angle in the tacos section?

Favorite Food

Food	Number of Students Choosing Food
Tacos	~~IIII~~ I
Pizza	~~IIII~~ IIII
French Fries	III
Hot Dogs	IIII
Hamburgers	~~IIII~~ III

Algebra:

✖ 12

✔ 72

✖ 240

✖ 45

Hints:

- We found that the ratio to solve this problem is:

$$\frac{6}{30} = \frac{??}{360}$$

To find the correct answer, we have to find the scale factor.

- $\dfrac{6 \times \Delta}{30 \times \Delta} = \dfrac{??}{360}$

We can find the scale factor, **Δ** by dividing 360 by 30.

- let's divide 360 by 30.

360 / 30 = **12**

Hence, **12** is the scale factor.

- Multiply the scale factor, 12 by 6 to find the value of "??".

-

?? = 12 * 6

   = 72

This can be visualized easily using following figure.

12 * 6 = 72°
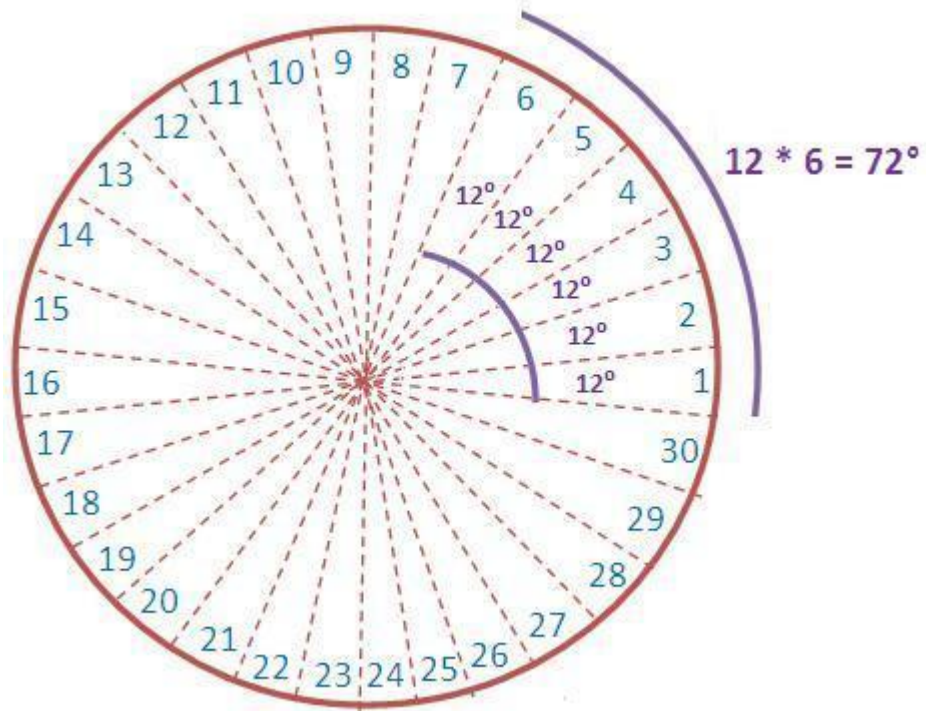
- Therefore, ?? = 72, which means the measure of the angle in the tacos section should be 72 degress.

Type in 72.

---

3) Assistment #27828 "27828 - 2201 - Problem 8 - 2003"

The stem-and-leaf plot below shows the ages of the people who bought skateboards at a store during a sale. What is the median age of the people who bought skateboards during the sale?

Ages of People

Stem	Leaf
1	234566789
2	3568
3	5
4	45
6	77
7	2

Key
6│2 = 62

Fill in:

✓ 23

✗

Scaffold:

305

In stem-and-leaf plots, each data number is separated into a "stem" and "leaf", where the "stem" is the tens digit and the "leaf" is the ones digit. Which of the following numbers does the stem-and-leaf plot above represents?

Stem	Leaf
4	3 6

Multiple choice:

✘ 4 and 36

✘ 4, 3 and 6

✔ 43 and 46

✘ 436

Hints:

- Use the stem as the tens digit. Use the leaf as the ones digit.

11

Stem	Leaf

- The stem is 4. The leaves are 3 and 6.

- The two numbers are 43 and 46.

Scaffold:

Good, now we know what the stem-and-leaf plot means. The next step is to understand what the median means. Which of the following is the right definition of median?

Multiple choice:

✘ An average of the numbers.

> No. This is the right definition for the mean, but you are looking for the median.

✔ The middle value of the numbers.

✘ The most frequent value.

> No. The mode is the most frequent value, but you are looking for the median.

Hints:

- It is **not** "an average of the numbers". That is the **Mean**.

- It is **not** "the most frequent value". That is the **Mode**.

- The **Median** is "The middle value of the numbers". Select "The middle value of the numbers.

Scaffold:

Now we know that the median is the measure of central tendency. Median is the middle value of a data set. Out of 19 data numbers in an ordered list, which one (the order) is the middle one?

306

Multiple choice:

✓ 10th

✗ 11st
> No, that is not correct.

✗ 7th
> No, that is not correct.

✗ 9th
> No, that is not correct.

Hints:

- Count up from the beginning of the ordered list and find out which number is the middle.
- The correct answer is 10th. There are 9 numbers in front of it and 9 numbers behind it.

Scaffold:

Now, find the value of the 10th data number to get the median. What is the median age going to be?

Fill in:

✓ 23

Hints:

- Locate the 10th number in numerical order.
- The correct answer is 23.

---

4) Assistment #27829 "27829 - 2005-26"

Three friends played a video game. Naomi scored the greatest number of points.
The chart below shows the results of the game.

Results of Video Game	
Player	**Number of Points**
Naomi	5,000
Darla	2,000
Isaac	3,000

Type in the fraction that represents Naomi's score out of the total points.

Algebra:

✓ 1/2

✗ $^9/_{11}$

✗ $^4/_5$

307

✖ $^{11}/_{20}$

Scaffold:

In order to find the fraction of the total pints scored by Naomi we need to find the total points scored and the number of points Naomi scored.
Lets start by finding the number of points Naomi scored.

How many points did Naomi score?

Algebra:

✔ 5000

✔ 5,000

✖ 2000

✖ 2,000

✖ 3000

✖ 3,000

Hints:

- Look at the table for the row that has Naomi's name in it

- How many points are listed in Naomi's row?

Results of Video Game	
Player	Number of Points
Naomi	5,000
Darla	2,000
Isaac	3,000

- Naomi scored 5,000 points.

Scaffold:

Now lets find the total points scored.

How many points were scored by all three players?

Algebra:

✔ 10000

✔ 10,000

Hints:

- What is the sum of all of the points listed in the table?

Results of Video Game	
• Player	Number of Points
Naomi	5,000
Darla	+ 2,000

308

Isaac	+ 3,000

$$\overline{}$$
?

What is 5,000 + 2,000 + 3,000?

- 5,000 + 2,000 + 3,000 = **10,000**.

Scaffold:

Now try to solve the original question again.

Three friends played a video game. Naomi scored the greatest number of points. The chart below shows the results of the game.

Results of Video Game	
Player	**Number of Points**
Naomi	5,000
Darla	2,000
Isaac	3,000

Type in the fraction that represents Naomi's score out of the total points.

Algebra:

✔ 1/2

✘ $^{9}/_{11}$

✘ $^{4}/_{5}$

✘ $^{11}/_{20}$

Hints:

- The numerator of the fraction is how many points Naomi scored, the denominator is the sum of all the points.

- Here is the fraction (ratio of Naomi's points to total number of points).

Now, let's reduce $^{5,000}/_{10,000}$.

- To start reducing the fraction, remove the last two zeros in each number. This is the same as dividing both by 100.

Now, you have $^{50}/_{100}$

This can still be reduced.

- 50 and 100 are both divisible by 50.

50 divided by 50 is 1

309

100 divided by 50 is 2

- The fraction is $^1/_2$

---

5) Assistment #27830 "27830 - 1998-7"

In the scatterplot, each dot represents one student who participated in the 50-meter race. Vicki won the race.

According to the scatterplot, how old is Vicki?

Ages of Students and Times in 50-Meter Race
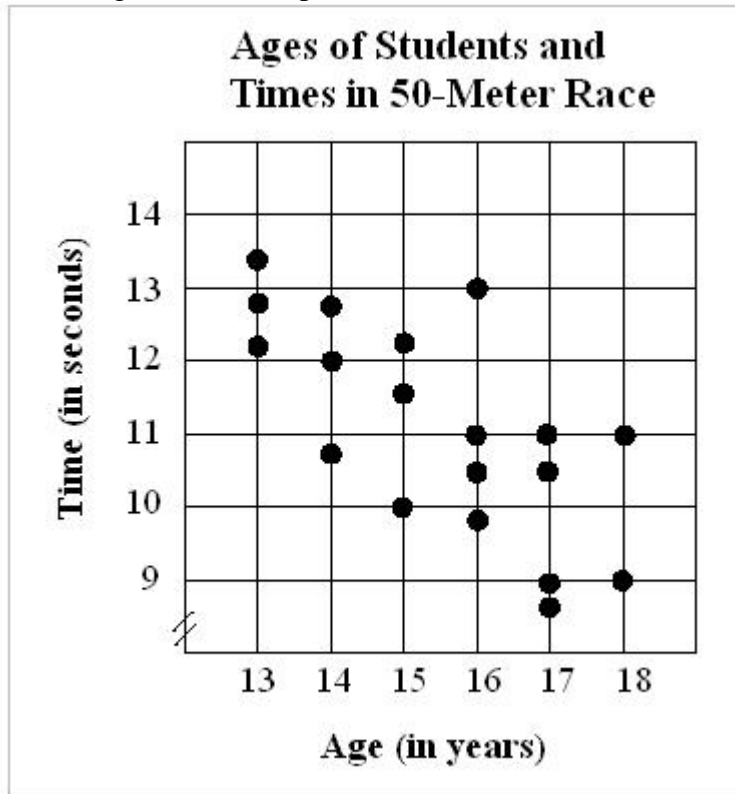
Fill in:

✖ 10
✖ 13
✔ 17
✖ 15

Scaffold:

First, let's identify what we are looking for.
What determines who wins the race?

Multiple choice:

✔ who has the shortest time
✖ who ran the farthest distance

310

The race was the 50 meter dash, everyone runs the same distance.

✖ who has the longest time

The longest time to run 50 meters would be the person who came in last.

✖ who was the oldest

Hints:

- To win the 50-meter race, you must run the fastest.
- If you win, you will have the lowest, or shortest, time.

Scaffold:

Good, now (looking at points A through E only) what point has the fastest time on the scattergram?

Ages of Students and Times in 50-Meter Race
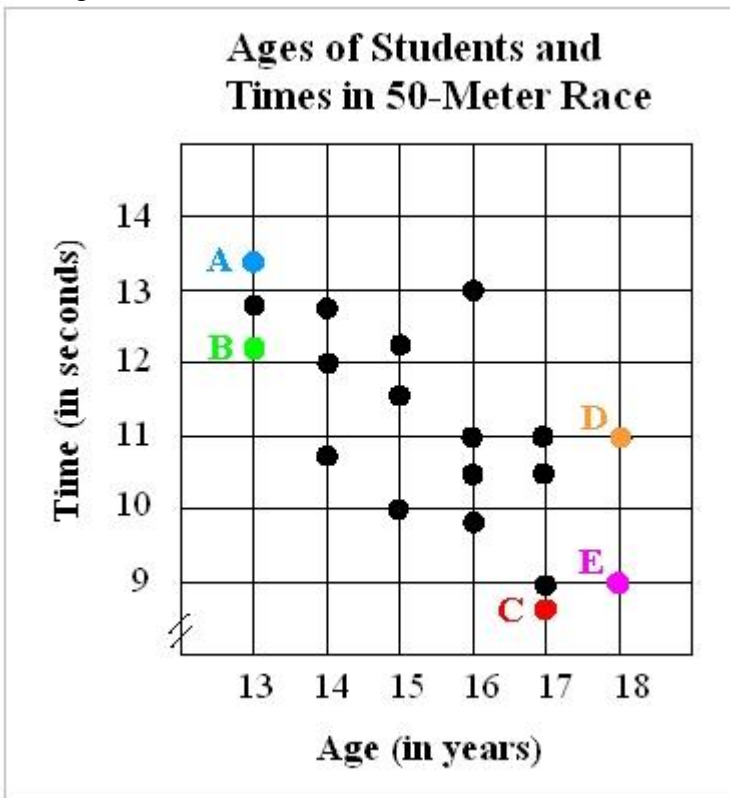
Multiple choice:

✖ Point A

No, point A is between 13 and 14 seconds, lower times are towards the bottom of the graph.

✖ Point B

No point B is between 12 and 13 seconds.

✔ Point C

✖ Point D

No, point D is at 11 seconds.

✖ Point E

311

No, point E is at 9 seconds.

Scaffold:

Great, now if Vicki won the race, she must have the fastest time.
How old is Vicki?

Ages of Students and
Times in 50-Meter Race
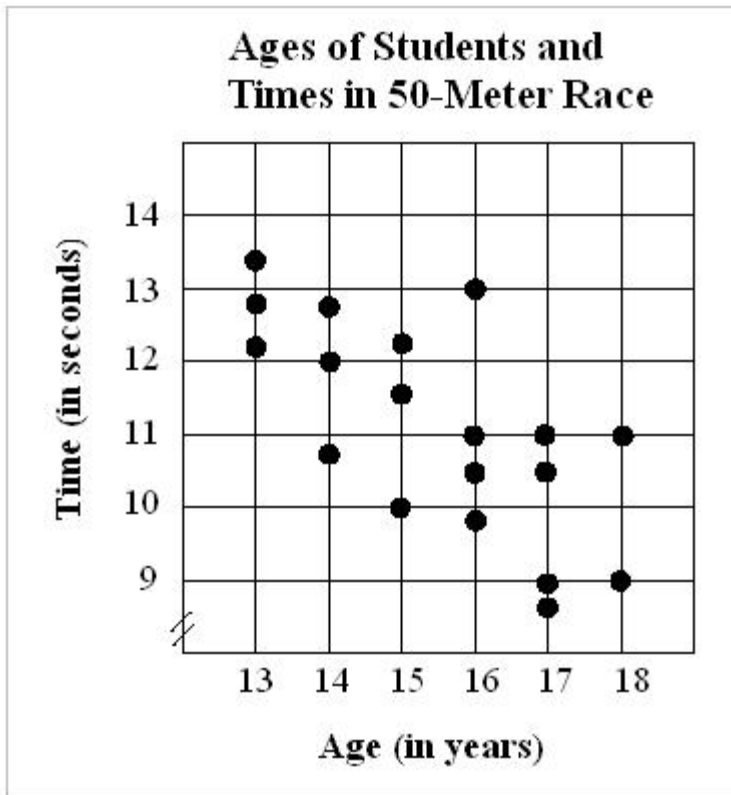
Fill in:

✔ 17

✔ 17 years old

✔ 17 years

✔ 17 yrs

✔ 17yrs

✘ 9

- What age is associated with point C?

Ages of Students and Times in 50-Meter Race

Time (in seconds)

Age (in years)

- Vicki must be 17 years old. Type in 17

---

6) Assistment #27832 "27832 - Gr.8 2007 - #13 - Histogram (Morph)"

Abe tested 85 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

313

Life Spans of
85 Brand X Light Bulbs
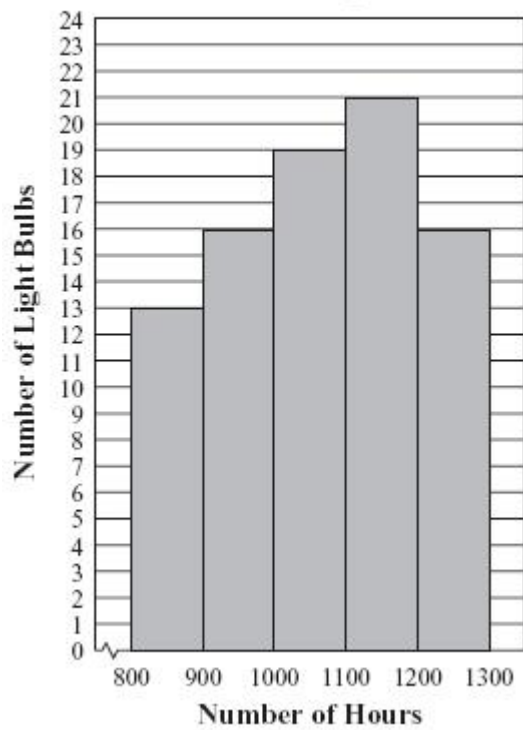
What was the total number of Brand X light bulbs that had life spans greater than or equal to 900 hours?

Fill in:

✓ 72

✗ 37

Hints:

- Only the last four columns on this histogram have light bulbs with life spans greater than or equal to 900 hours.

- Now, add the values of the four columns together to find the total.

314

Life Spans of
85 Brand X Light Bulbs
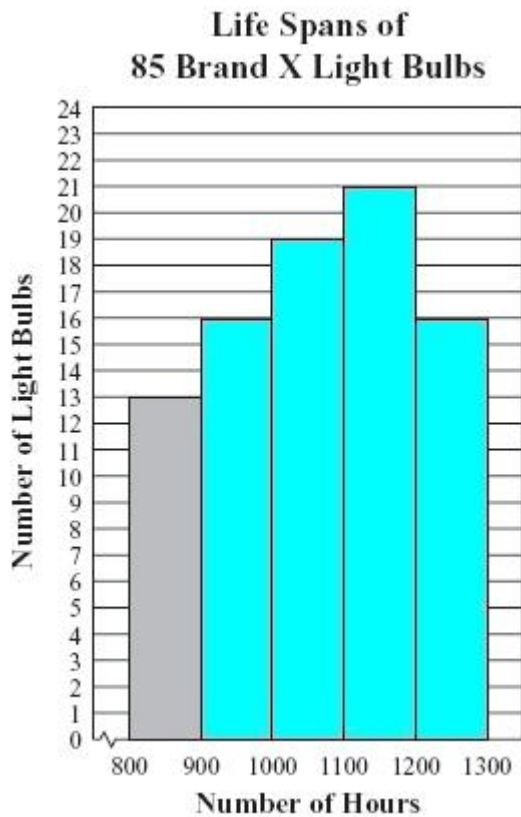
These four columns have the values 16, 19, 21, and 16.

- 16 + 19 + 21 + 16 = 72

So, only 72 light bulbs have a life span that is greater than or equal to 900 hours.

Type in 72.

---

7) Assistment #27833 "27833 - Gr.8 2007 - #33 - Box + Whisker"

Ms. Simmons made the box-and-whisker plot below to show some statistics about the ages of the students in her class at a community college.

Ages of Students (in years)

What is the median age of the students in her class?
Algebra:

315
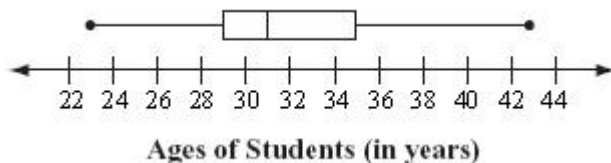
✖ 25
✓ 31
✖ 29

Hints:

- In a box and whisker plot, the median is the line in the middle of the box.
- From this plot, we know that this line is between 30 and 32 on the number line.
- So, the median must be 31.

   Type in 31.

---

8) Assistment #27831 "27831 - Problem 30a - 1998"

The coach of the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	15, 24, 32, 15, 22, 19, 26, 29, 11, 17
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the **mean** number of points scored by Geltz?

Algebra:

✓ 21

✖ 20

✖ 22

✖ 20.5

Scaffold:

   Let's start with the definition. Which of the following is the right definition for the mean?

   Multiple choice:

   ✖ the most frequent value

      No. The most frequent value is called mode not mean.

   ✓ an average of the numbers

   ✖ the middle number

      No. The middle number is called median not mean.

   Hints:

- "The most frequent value" is called Mode.
- "The middle number" is called Median.
- The **Mean** is "An average of the numbers".
   Select "An average of the numbers".

Scaffold:

So the mean is the average of the numbers.

To find the average, **you sum the numbers** and divide by **how many numbers make up the sum.**

So first, let's find **the total number of points scored by Geltz.** (Later we will ask you for the mean)

Name of Player	Number of points scored in last ten games
Geltz	15, 24, 32, 15, 22, 19, 26, 29, 11, 17
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

Fill in:

✔ 210

✘ 21

Hints:

- To find the mean, divide **the sum of the numbers** by **how many numbers make up the sum.**

These are the numbers you have to add up:

15 + 24 + 32 + 15 + 22 + 19 + 26 + 29 + 11 + 17

- **The sum of the points equals** to 15 + 24 + 32 + 15 + 22 + 19 + 26 + 29 + 11 + 17 = **210**
- **Gentz scored a total of 210 points in the past 10 games.**
Type in 210.

Scaffold:

Good. Let's try the original problem again.

The coach of the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Gentz	15, 24, 32, 15, 22, 19, 26, 29, 11, 17
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the mean number of points scored by Geltz?

Algebra:

✔ 21

317

Hints:

- To find the mean, **we first find the sum of all the points scored by Gentz.**

- **210 is the total number of points.** Now find the mean.

- **There are 10 items in the list. To find the mean, you divide the sum by the number of the items.** What is 210/10?

- 210/10 = 21

The mean number of points scored by Gentz is 21. Enter 21.

---

9) Assistment #27840 "27840 - Problem 30b - 1998 Morph"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	15, 24, 32, 15, 22, 19, 26, 29, 11, 17
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the **median** number of points scored by Geltz?

Algebra:

✓ 20.5

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

Multiple choice:

✓ the middle number

✗ an average of the numbers

> No, it is not correct. This is the right definition for the mean, but you are looking for the median. Think carefully.

✗ the most frequent value

Hints:

- It is **not** "the most frequent value" that is the **Mode**.

- It is **not** "An average of the numbers" that is the **mean**.

- The Median is "the middle number". Select "the middle number"

Scaffold:

Good. But, how do we find the median? First step you have to do is to sort the numbers in increasing order. Which of the following sequences represents points scored by Geltz in increasing order?

Multiple choice:

✗ 24, 26, 11, 15, 19, 15, 17, 15, 32, 29

318

✘ 32, 29, 26, 24, 22, 19, 17, 15, 15, 11

✔ 11, 15, 15, 17, 19, 22, 24, 26, 29, 32

✘ 15, 15, 19, 11, 17, 29, 22, 24, 26, 32

Hints:

- Increasing order means from the smallest to the largest.
- The correct answer is 11, 15, 15, 17, 19, 22, 24, 26, 29, 32.

Scaffold:

Next, start crossing one number at a time from both ends until you are left with one single number
(or two if you started with an even amount of numbers) in the middle.
This will give you the middle value or the median.
If you are left with 2 numbers in the middle, you have to find the average of them.
What is the average (mean) of the two numbers that are left?

11 15 15 17 19 22 24 26 29 32

Fill in:

✔ 20.5

Hints:

- To find the mean, divide the sum of the numbers by how many numbers make up the sum.

- The sum of the points equals $19 + 22 = 41$.

- The mean equals $41 / 2 = 20.5$.

The correct answer is 20.5.

---

10) Assistment #27841 "27841 - Problem 30b - 1998 - Range - Morph"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	28, 42, 18, 18, 24, 28, 20, 16, 26, 20
Luna	21, 18, 32, 5, 41, 24, 31, 15, 22, 31

What is the **range** number of points scored by Luna?

Fill in:

✔ 36

Scaffold:

Let's start with the definition. Which of the following is the right definition for the range?

319

Multiple choice:

✖ Most frequent value

No. The most frequent value is called mode not range.

✖ An average of all values

No. An average of all values is called mean not range.

✖ The middle value

No. The middle value is called median not range.

✔ The difference between the highest and the lowest value

Hints:

- "The most frequent value" is called the Mode.

- "An average of all values" is called the
Mean.

- "The middle value" is called the Median.

- Range is "the difference between the highest and the lowest values".

Scaffold:

Good. Now, let's move on to find the range.
What is the **range** number of points scored by Luna?

Algebra:

✔ 36

Hints:

- We know that the range is the difference between the highest and the lowest number.
So, at first we have to find the highest and the lowest number in the list.

- Note we are looking only on Luna's list which is:
21, 18, 32, 5, 41, 24, 31, 15, 22, 31

- The highest number in the list is 41.
The lowest number in the list is 5.

- Range = Highest Number - Lowest Number
   = 42   - 5
   = 36

Therefore, the range number of points scored by Luna is 36.
Type in 36.

---

11) Assistment #27842 "27842 - Problem 30b - 1998 - Mode - Morph"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	28, 12, 38, 58, 24, 38, 20, 46, 6, 10
Luna	15, 20, 35, 8, 21, 21, 35, 11, 25, 35

What is the **mode** number of points scored by Luna?

Fill in:

✓ 35

Hints:

- The **mode** is the number that appears the most.
- Remember, we are only looking at the numbers on Luna's list which is:

15, 20, 35, 8, 21, 21, 35, 11, 25, 35

- From this list:

15, 20, 35, 8, 21, 21, 35, 11, 25, 35

The number that appeared the most in this list is 35, so the **mode** is 35.

Type in 35.

Problem Set "8th Grade Data Analysis Post Test (11 items) With Tutoring" id:[5988]

1) Assistment #27902 "27902 - 8th Data - Post Post Test - Venn Diagram"

Heather asked her classmates if they
went to a movie, a play, a concert, or
any combination of those events during
the last month. The Venn diagram below
represents her data.

Students Attending Events

Movies   Plays

13   1   11

1

5   3

7
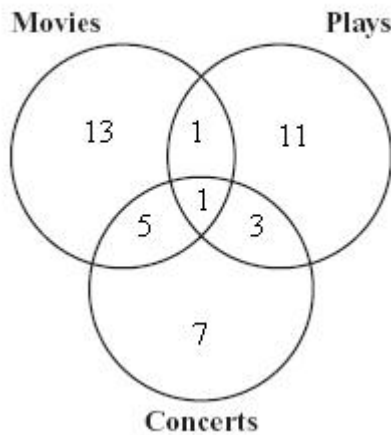
Concerts

Based on the diagram, what is the total
number of Heather's classmates who
went to a concert during the last month?

Algebra:

✔ 16

Hints:

• To find the total number of classmates who went to a concert during the last month you need to look at the whole circle for concerts.

• This circle has 4 numbers:

7 students only went to concerts.
1 student went to concerts but also wen to Movies and Plays
5 students only went to movies nad concerts (did not go to Plays)
3 stdents only went to plays and concerts (did not go to movies)

• To find the total number of students who went to Concerts you have to add those numbers together.

$7 + 1 + 5 + 3$

- $7 + 1 + 5 + 3 = 16$. The total number of students who went to concerts during the last month was 16. Type in 16.

---

2) Assistment #27903 "27903 - 8th Data - Post Post Test - Circle Graph"

The circle graph below shows the percentages of people who brought each type of baked good to sell at a recent bake sale. If 60 people brought cakes to sell, what is the total number of people who brought baked goods to sell?

Percentage of People Bringing Baked Goods
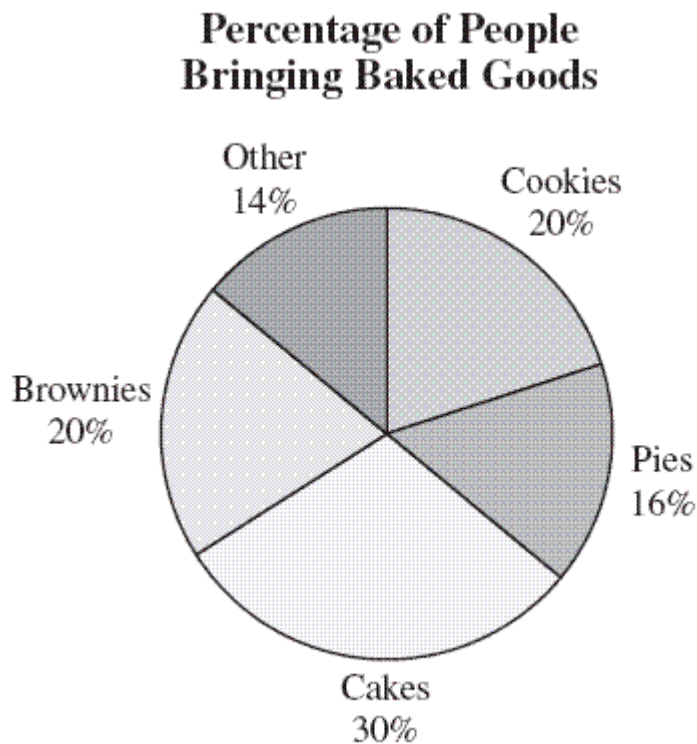
Algebra:

✘ 180

✔ 200

✘ 280

✘ 300

Scaffold:

You can solve this question by setting up a proportion. Choose the correct proportion for this problem.

Multiple choice:

✔ $60/x = 30/100$

✘ $60/30 = x/100$

✘ x/60 = 30/100

✘ 30/x = 60/100

Hints:

- The percentage of people who brought cakes is 30%. 30/100 is another way of saying 30%

- We are looking for the total number of people who brought baked goods. Call that **x**

- 60 people out of **x** brought cakes.

- The answer is 60/x = 30/100. Please choose 60/x = 30/100

Scaffold:

Okay, 60/x = 30/100.

Now solve for x to find the total number of people who brought baked goods.

Fill in:

✔ 200

Hints:

- Since 60 is twice as much as 30, x should be twice as much as 100

- What is twice as much as 100?

- The answer is 200. Please enter 200.

---

3) Assistment #27904 "27904 - 8th Data - Post Post Test - Stem and Leaf"

The stem-and-leaf plot below shows the ages of the people who bought skateboards at a store during a sale. What is the median age of the people who bought skateboards during the sale?

Ages of People

Stem	Leaf
1	1 3 4 5 5 6 6 7 7
2	2 3 4 7
3	4
4	1 5
6	5 8
7	3

Key
6|2 = 62

Algebra:

✔ 22

Scaffold:

In stem-and-leaf plots, each data number is separated into a "stem" and "leaf", where the "stem" is the tens digit and the "leaf" is the ones digit. Which of the following numbers does the stem-and-leaf plot above represents?

Stem	Leaf
4	3 6

Multiple choice:

✖ 4 and 36

✖ 4, 3 and 6

✔ 43 and 46

✖ 436

Hints:

- Use the stem as the tens digit. Use the leaf as the ones digit.

  11

Stem	Leaf

- The stem is 4. The leaves are 3 and 6.
- The two numbers are 43 and 46.

Scaffold:

Good, now we know what the stem-and-leaf plot means. The next step is to understand what the median means. Which of the following is the right definition of median?

Multiple choice:

✖ An average of the numbers.

No. This is the right definition for the mean, but you are looking for the median.

✔ The middle value of the numbers.

✖ The most frequent value.

No. The mode is the most frequent value, but you are looking for the median.

Hints:

- Median is the same as the middle.
- The "middle value" of the list is the correct answer.

Scaffold:

Now we know that the median is the measure of central tendency. Median is the middle value of a data set. Out of 19 data numbers in an ordered list, which one (the order) is the middle one?

Multiple choice:

✔ 10th

✖ 11st

325

No, that is not correct.

✖ 7th

No, that is not correct.

✖ 9th

No, that is not correct.

Hints:

- The correct answer is 10th. There are 9 numbers in front of it and 9 numbers behind it.

Scaffold:

Now, find the value of the 10th data number to get the median. What is the median age going to be?

Fill in:

✔ 22

Hints:

- Locate the 10th number in numerical order.
- The correct answer is 22.

---

4) Assistment #27905 "27905 - 8th Data - Post Post Test - Chart"

Three friends played a video game. Naomi scored the greatest number of points.
The chart below shows the results of the game.

Results of Video Game	
Player	**Number of Points**
Naomi	6,000
Darla	2,000
Isaac	2,000

Type in the fraction that represents Naomi's score out of the total points.

Algebra:

✔ 3/5

✖ 10/6

✖ 4/5

✖ 7/10

Scaffold:

How many points did Naomi score?

Results of Video Game

326

Player	Number of Points
Naomi	6,000
Darla	2,000
Isaac	2,000

Fill in:

✓ 6000

✓ 6,000

Hints:

- Look at the table for the row that has Naomi's name in it
- How many points are listed in Naomi's row?

Results of Video Game	
Player	**Number of Points**
Naomi	6,000
Darla	2,000
Isaac	2,000

- Naomi scored 6,000 points. Type in 6000.

Scaffold:

How many points were scored by all three players?

Results of Video Game	
Player	**Number of Points**
Naomi	6,000
Darla	2,000
Isaac	2,000

Fill in:

✓ 10000

✓ 10,000

Hints:

- What is the sum of all of the points listed in the table?

Results of Video Game	
• **Player**	**Number of Points**
Naomi	6,00
Darla	+ 2,000

327

Isaac	+ 2,000

———————————

?

What is 6,000 + 2,000 + 2,000?

- 6,000 + 2,000 + 2,000 = **10,000**.   Type in 10000

Scaffold:

Now let's return to the original question.

Three friends played a video game. Naomi scored the greatest number of points.
The chart below shows the results of the game.

Results of Video Game	
Player	**Number of Points**
Naomi	6,000
Darla	2,000
Isaac	2,000

Type in the fraction that represents Naomi's score out of the total points.

Algebra:

✓ 3/5

✗ 10/6

✗ 4/5

✗ 7/10

Hints:

- The numerator of the fraction is how many points Naomi scored, the denominator is the sum of all the points.

- Here is the fraction (ratio of Naomi's points to total number of points).

Now, let's reduce $^{6000}/_{10000}$.

- To start reducing the fraction, remove the last three zeros in each number. This is the same as dividing both by 1000.

Now, you have $^{6}/_{10}$

This can still be reduced.

- 6 and 10 are both divisible by 2.
6 divided by 2 is 3
10 divided by 2 is 5

- The fraction is $^{3}/_{5}$

328

5) Assistment #36638 "36638 - 8th Data - Post Post Test - Scatterplot"

In the scatterplot, each dot represents one student who participated in the 50-meter race. Danielle came in last in the race.

According to the scatterplot, how old is Danielle?

Ages of Students and Times in 50-Meter Race
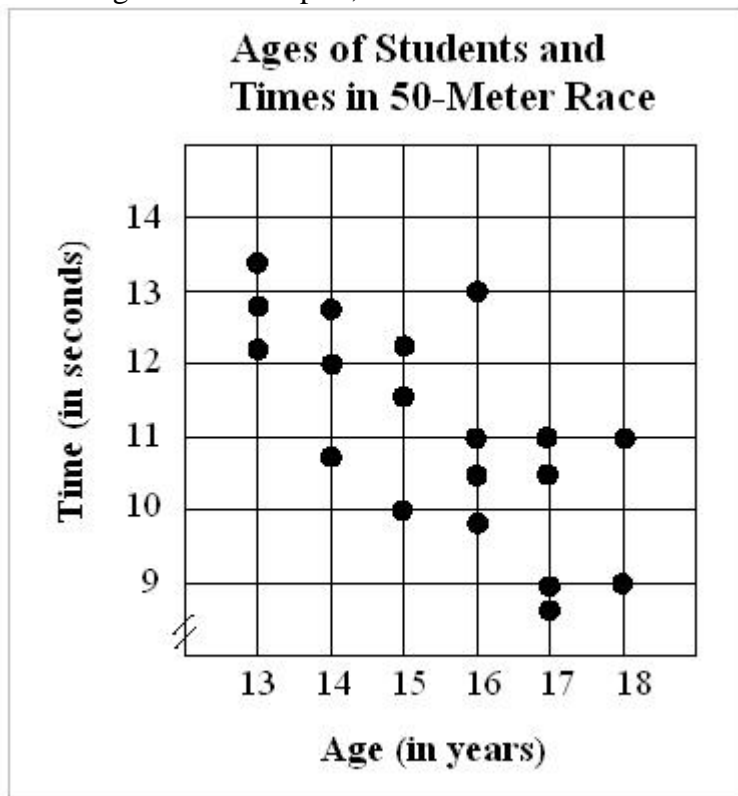
Algebra:

✗ 10

✓ 13

✗ 17

✗ 15

Scaffold:

First, let's identify what we are looking for.
What determines who comes in last in the race?

Multiple choice:

✗ who has the shortest time

> The shortest time is for the person who comes in first and wins the race.

✗ who ran the farthest distance

> The race was the 50 meter dash, everyone runs the same distance.

✓ who has the longest time

✗ who was the oldest

Hints:

- To come in last in the 50-meter race, you must run the slowest.
- If you come in last, you will have the highest, or longest, time.

Scaffold:

Good, now (looking at points A through E only) what point has the slowest time on the scattergram?

Ages of Students and Times in 50-Meter Race
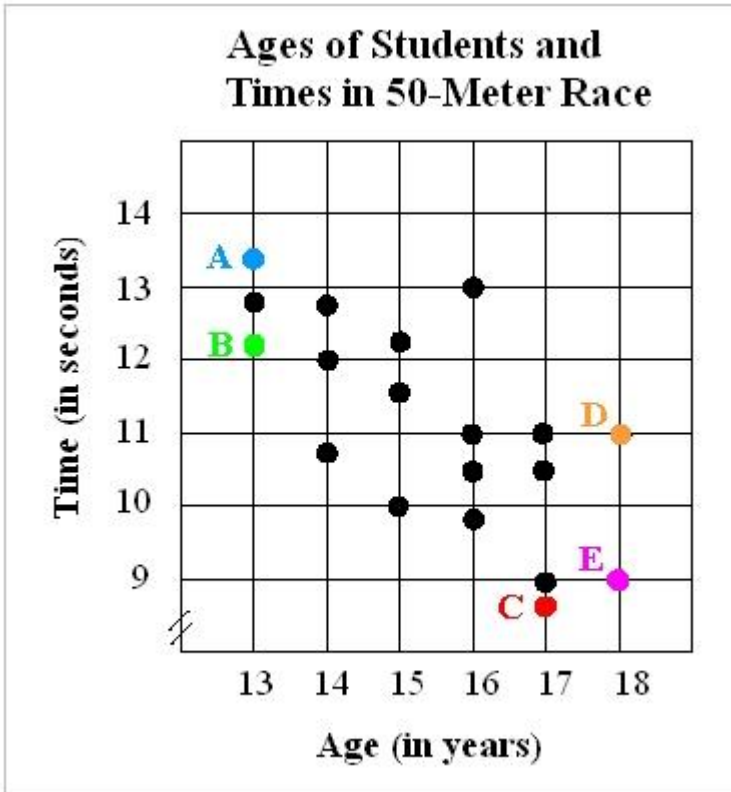
Multiple choice:

✓ Point A

✗ Point B

No point B is between 12 and 13 seconds.

✗ Point C

No point C is the smallest time between 8 and 9 seconds.

✗ Point D

No, point D is at 11 seconds.

✗ Point E

No, point E is at 9 seconds.

330

Hints:

- Time is on the y-axis, the vertical axis.
- High times are toward the top of the scattergram.
- Which point is the highest on the scattergram?
- Point A is the highest, that means point A has the slowest time. Select A.

Scaffold:

Great, now if Danielle came in last in the race, he must have the slowest time.
How old is Danielle?

Ages of Students and Times in 50-Meter Race
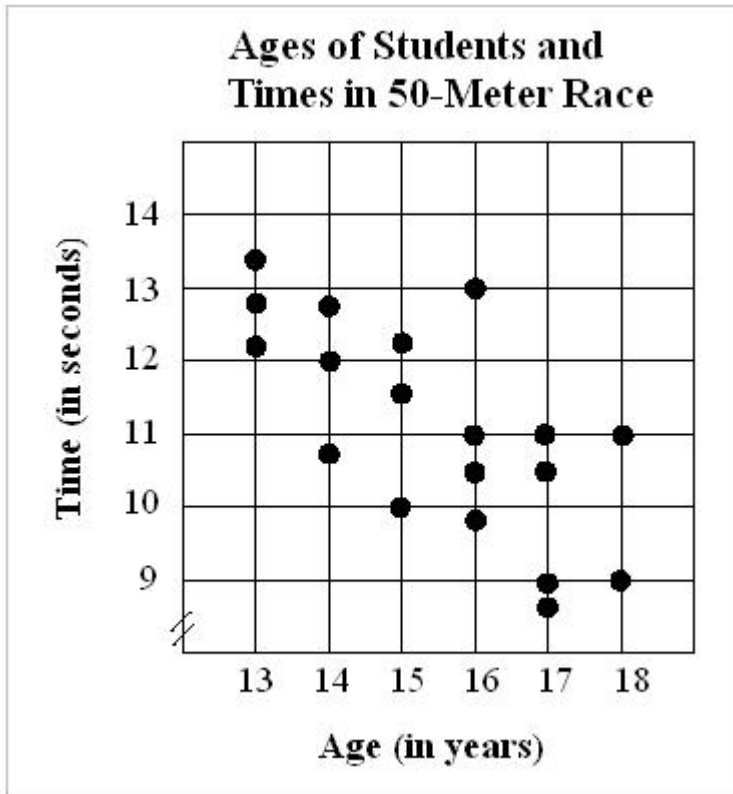
Algebra:

✔ 13

Hints:

- Danielle is represented by point A.

331

Ages of Students and Times in 50-Meter Race
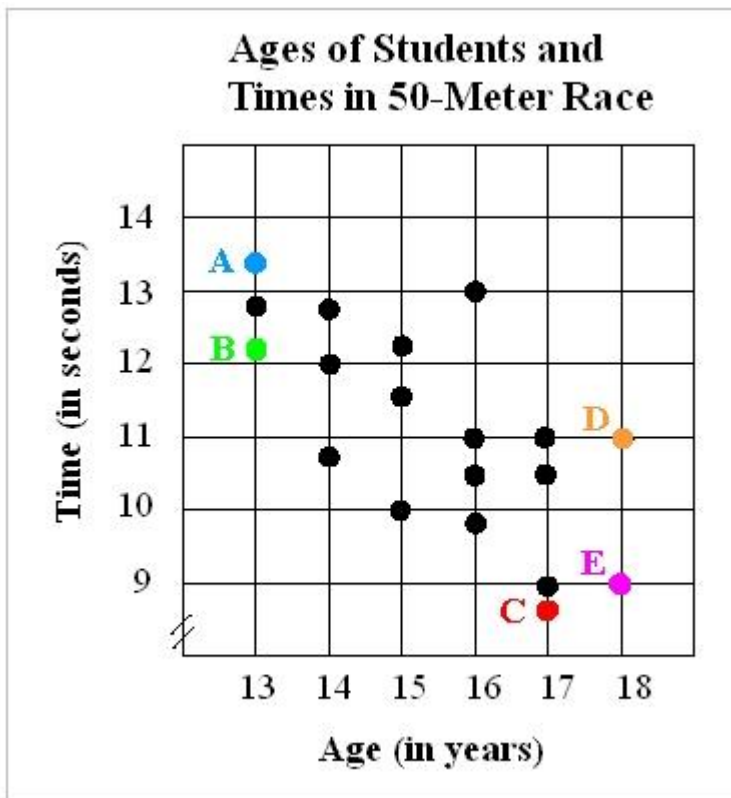
- What age is associated with point A. Move down the graph to the Age axis to read Danielle's age.

- Danielle must be 13 years old. Type in 13

---

6) Assistment #27906 "27906 - 8th Data - Post Post Test - Mean"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	14, 18, 15, 23, 8, 18, 31, 15, 11, 37
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the **mean** (average) number of points scored by Geltz?

Fill in:

✓ 19

Scaffold:

Let's start with the definition. Which of the following is the right definition for the mean?

Multiple choice:

332

✖ the most frequent value

> No, it is not correct. Mode is the most frequent value, but you are looking for the mean. Think carefully.

✔ an average of the numbers

✖ the middle number

> No, it is not correct. Median is the middle number, but you are looking for the mean. Think carefully.

Hints:

- Mean is the same as an average.
- An average of the numbers is the correct answer.

Scaffold:

Good. Now, how do we find the mean?
To find the mean, you sum the numbers and divide by how many numbers make up the sum.
Now, let's find the mean number of points scored by Geltz.

Fill in:

✔ 19

Hints:

- To find the mean, divide the sum of the numbers by how many numbers make up the sum.
- The sum of the points equals to 14 + 18 + 15 + 23 + 8 + 18 + 31 + 15 + 11 + 37 = 190
- The mean equals to 190 / 10 = 19. The correct answer is 19.

---

7) Assistment #27907 "27907 - 8th Data - Post Post Test - Median"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	14, 18, 16, 23, 8, 18, 31, 15, 11, 37
Luna	22, 17, 23, 8, 24, 24, 22, 20, 18, 22

What is the **median** number of points scored by Geltz?

Fill in:

✔ 17

✖ 16

✖ 18

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

333

Multiple choice:

✔ the middle number

✘ an average of the numbers

> No, it is not correct. This is the right definition for the mean, but you are looking for the median. Think carefully.

✘ the most frequent value

Hints:

- Median is the same as the middle.
- The middle number is the correct answer.

Scaffold:

Good. But, how do we find the median? First step you have to do is to sort the numbers in increasing order. Which of the following sequences represents points scored by Geltz in increasing order?

Multiple choice:

✘ 37, 18, 18, 16, 11, 14, 8, 23, 31, 15

✘ 37, 31, 23, 18, 18, 16, 15, 14, 11, 8

✔ 8, 11, 14, 15, 16, 18, 18, 23, 31, 37

✘ 8, 11, 15, 14, 18, 16, 18, 23, 31, 37

Hints:

- Increasing order means from the smallest to the largest.
- The correct answer is 8, 11, 14, 15, 16, 18, 18, 23, 31, 37.

Scaffold:

Next, start crossing one number at a time from both ends until you are left with one single number
(or two if you started with an even amount of numbers) in the middle.
This will give you the middle value or the median.
If you are left with 2 numbers in the middle, you have to find the average of them.
What is the average (mean) of the two numbers that are left?

8 11 14 15 16 18 18 23 31 37

Fill in:

✔ 17

Hints:

- To find the mean, divide the sum of the numbers by how many numbers make up the sum.
- The sum of the points equals $16 + 18 = 17$.
- The mean equals $34 / 2 = 17$.

334

The correct answer is 17.

Scaffold:

So, what is the median number of points scored by Geltz?

Fill in:

✓ 17

Hints:

- The median number of points will be equal to the average of the two middle numbers from the sorted list of points scored in the last ten games.

- The correct answer is 17.

---

8) Assistment #27908 "27908 - 8th Data - Post Post Test - Range"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	28, 42, 18, 18, 24, 28, 20, 16, 26, 20
Luna	17, 18, 22, 15, 6, 26, 24, 12, 16, 33

What is the **range** number of points scored by Luna?

Fill in:

✓ 27

Hints:

- The **range** is the difference between the highest number and the lowest number.

- Remember, we are only looking at the numbers on Luna's list which is:

17, 18, 22, 15, 6, 26, 24, 12, 16, 33

- From this list:

17, 18, 22, 15, 6, 26, 24, 12, 16, 33

The highest number is 33 and the lowest number is 6.
Now we have to subtract the lowest number from the highest number.

- 33 - 6 =27

So, the **range** of Luna's points scored is 27.
Type in 27.

335

9) Assistment #27909 "27909 - 8th Data - Post Post Test - Mode"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in his last 10 games.

Name of player	Number of points scored in last ten games
Geltz	28, 12, 38, 58, 24, 38, 20, 46, 6, 10
Luna	31, 15, 15, 12, 16, 18, 18, 19, 15, 16

What is the **mode** number of points scored by Luna?

Fill in:

✓ 15

Hints:

- The **mode** is the number that appears the most.
- Remember, we are only looking at the numbers on Luna's list which is:

  31, 15, 15, 12, 16, 18, 18, 19, 15, 16

- From this list:

  31, 15, 15, 12, 16, 18, 18, 19, 15, 16

  The number that appeared the most in this list is 15, so the **mode** is 15.

  Type in 15.

---

10) Assistment #36639 "36639 - 8th Data - Post Post Test - Histogram"

Abe tested 85 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 85 Brand X Light Bulbs
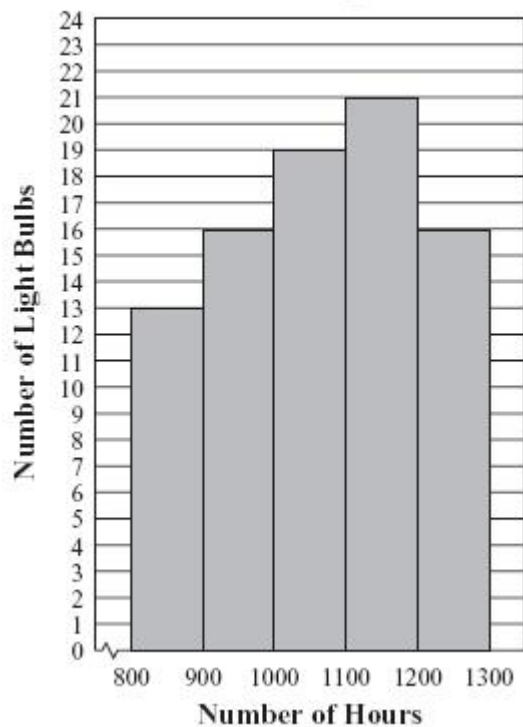
What was the total number of Brand X light bulbs that had life spans less than or equal to 1200 hours?

Algebra:

✓ 69

Hints:

- The first four columns on this histogram have light bulbs with life spans less than or equal to 1200 hours.
- Now, add the values of the four columns together to find the total.

These four columns have the values 13, 16, 19, 21.

- $13 + 16 + 19 + 21 = 69$

So, only 69 light bulbs have a life span that is less than or equal to 1200 hours.

Type in 69.

---

11) Assistment #36706 "36706 - 8th Data - Post Post Test - Box and Whisker"

Ms. Simmons made the box-and-whisker plot below to show some statistics about the ages of the students in her class at a community college.

Ages of Students (in years)
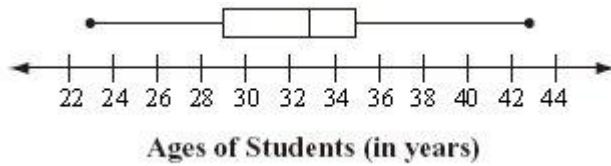
What is the median age of the students in her class?

Algebra:

✗ 25

✓ 33

✗ 29

Hints:

- In a box and whisker plot, the median is the line in the middle of the box.
- From this plot, we know that this line is between 32 and 34 on the number line.
- So, the median must be 33.

   Type in 33.

8.6.2 Data Analysis Mastery Learning

Assistment #36760 "36760 - 30041 - Venn Diagram - Using Eyeballs"

The Venn diagram below shows the winter sports that students generally participated in. Using the diagram, how many students participated in both **Skiing** and **Sledding**?

Winter Sports

Skiing   Snowboarding

        8   2   8
                    1
              3   3
                 10
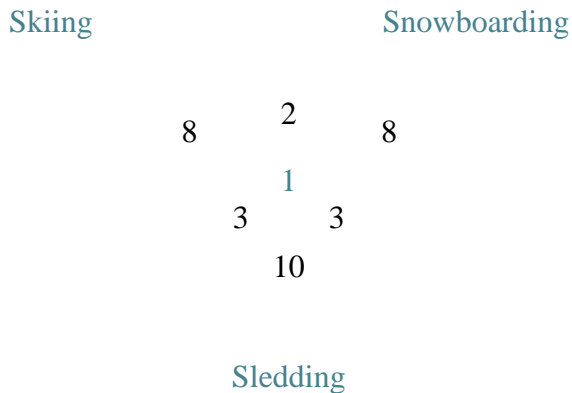
                    Sledding

Algebra:

✔ 4

Scaffold:

A Venn diagram shows a relationship by visually grouping things into sets. Which of the following sections represents students who participated in both **Skiing** and **Sledding**?

Winter Sports

Skiing   Snowboarding

                    a

                    d
              c   b

                    Sledding
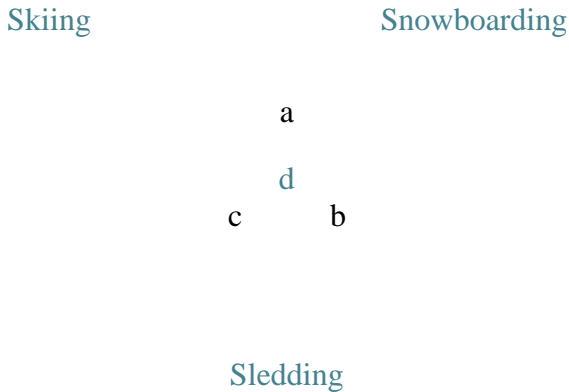
Multiple choice:

✖ a, b, c, and d

✖ b, c, and d

✔ c, and d

✖ a, c, and d

Hints:

- Use the diagram below to get an idea. It shows three different groups (head, mouth, and eyes) and their intersections.
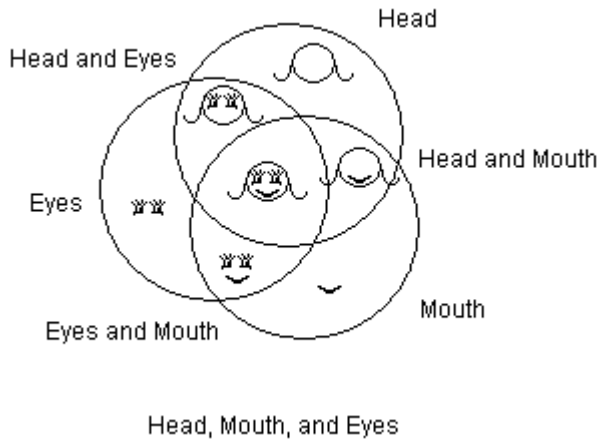
- The sections we are looking for is included by both the **Skiing** circle and the **Sledding** circle.

- Only c, and d is included by both the **Skiing** circle and the **Sledding** circle.

Choose the option with only c, and d.

Scaffold:

Now, we just have to add the two sections together to answer the question,

"how many students participated in both **Skiing** and **Sledding**?"

Winter Sports

Skiing   Snowboarding

8   2   8

1

340

3   3

10

Sledding

Algebra:

✓ 4

Hints:

- Remember we are only looking at the sections that includes both the **Skiing** circle and the **Sledding** circle.

- # Winter Sports

Skiing   Snowboarding

a

d

c   b
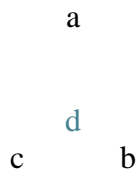
Sledding

The highlighted regions shows the two numbers that we have to add.

- $3 + 1 = 4$

A total of 4 students participated in both **Skiing** and **Sledding**.

Type in 4.

Assistment #30041 "30041 - Venn Diagram - Using Eyeballs"

The Venn diagram below shows the %v{sub} that students generally participated in. Using the diagram, how many students participated in both **%v{want1}** and **%v{want2}**?

%v{title}

%v{cat1}   %v{cat2}

%v{v5}   %v{v1}   %v{v6}

%v{v4}

%v{v3}

%v{v2}

%v{v7}

%v{cat3}
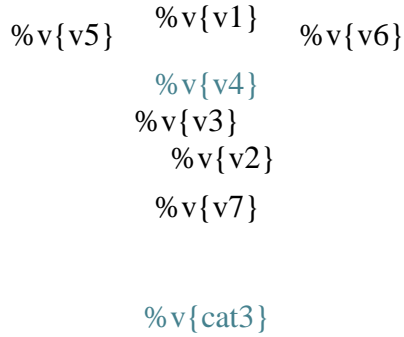
Algebra:

✓ %v{ans}

Scaffold:

A Venn diagram shows a relationship by visually grouping things into sets. Which of the following sections represents students who participated in both **%v{want1}** and **%v{want2}**?

%v{title}

%v{cat1}   %v{cat2}

a

d

c   b

%v{cat3}

Multiple choice:

342

✖ a, b, c, and d

✖ b, c, and d

✔ %v{scaffold}

✖ a, c, and d

Hints:

- Use the diagram below to get an idea. It shows three different groups (head, mouth, and eyes) and their intersections.
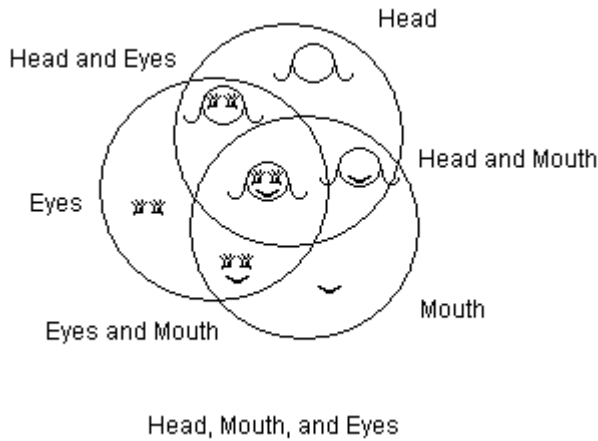
- The sections we are looking for is included by both the **%v{want1}** circle and the **%v{want2}** circle.

- Only %v{scaffold} is included by both the **%v{want1}** circle and the **%v{want2}** circle.

   Choose the option with only %v{scaffold}.

Scaffold:

   Now, we just have to add the two sections together to answer the question,

   "how many students participated in both **%v{want1}** and **%v{want2}**?"

%v{title}

%v{cat1}   %v{cat2}

   %v{v5}   %v{v1}   %v{v6}
              %v{v4}
           %v{v3}
             %v{v2}

343

%v{v7}

%v{cat3}

Algebra:

✓ %v{ans}

Hints:

- Remember we are only looking at the sections that includes both the **%v{want1}** circle and the **%v{want2}** circle.

- %v{title}

%v{cat1}   %v{cat2}

a

d

c   b

%v{cat3}

The highlighted regions shows the two numbers that we have to add.

- %v{num} + %v{v4} = %v{ans}

A total of %v{ans} students participated in both **%v{want1}** and **%v{want2}**.

Type in %v{ans}.

Assitment #31306 "31306 - Venn Diagram - Eyeballs w/Percents"

The Venn diagram below shows the **percent** of students who chose to take
Biology, Algebra, or Band. If **600** students signed up to take
courses, how many students will be taking Biology and Algebra.

Student Registration

Biology   Algebra

8%   5%   8%

3%

2%   2%

9%
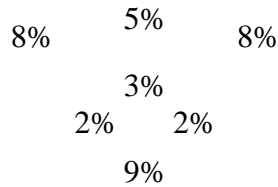
Band

Algebra:
✓ 48

Scaffold:

First, let's find the total **percent** of student who will be taking Biology and Algebra.

So, what is the **percent** of students taking Biology and Algebra?

Algebra:
✓ 8
✓ 8%
✓ 8 %

Hints:

-

Biology   Algebra

8%   5%   8%

3%

2%

345

2%

9%

The highlighted region shows the **percent** of students who will be taking Biology and Algebra.

- So now, we have to *sum up all the percents*.

- 5% + 3% = **8%**

The total **percent** of students who will be taking Biology and Algebra is **8%**.
Type in 8.

Scaffold:

Now that we know the percent of students who will be taking Biology and Algebra is **8%**, try the original problem again.

The Venn diagram below shows the **percent** of students who chose to take Biology, Algebra, or Band. If **600** students signed up to take courses, how many students will be taking Biology and Algebra.

Student Registration

Biology   Algebra

8%   5%   8%

3%

2%   2%

9%

Band

Algebra:
✓ 48

Hints:

- We need to find **8%** of **600**.

- First, convert **8%** into a **decimal**, and then multiply it to **600**.

- In order to convert **8%** into a **decimal**, we have to divide it by 100.

8% ÷ 100 = **0.08**

- Now we have to multiply **0.08** with **600**.

0.08 x **600** = 48

The number of students who will be taking Biology and Algebra is 48.
Type in 48.

Assistment #30328 "30328 - Venn Diagram - Eyeballs w/Percents"

The Venn diagram below shows the **percent** of students who chose to take %v{cat1}, %v{cat2}, or %v{cat3}. If **%v{total}** students signed up to take courses, how many students will be taking %v{clas}.

Student Registration

%v{cat1}   %v{cat2}

%v{v5}%   %v{v1}%   %v{v6}%

%v{v4}%
%v{v3}%
%v{v2}%

%v{v7}%
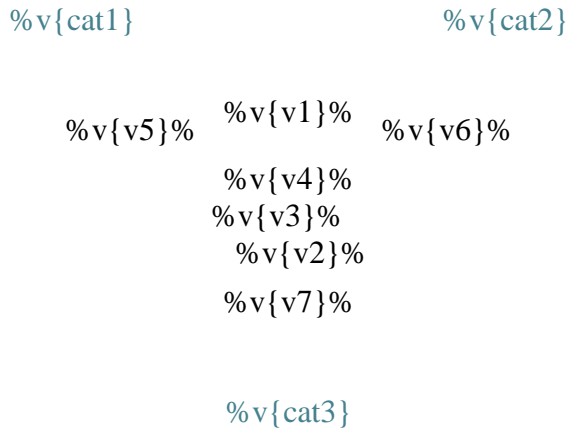
%v{cat3}

Algebra:

✓ %v{ans}

Scaffold:

First, let's find the total **percent** of student who will be taking %v{clas}.

So, what is the **percent** of students taking %v{clas}?

Algebra:

✓ %v{percent}

✓ %v{percent}%

✓ %v{percent} %

Hints:

●

%v{cat1}   %v{cat2}

%v{v5}%   %v{v1}%   %v{v6}%

%v{v4}%
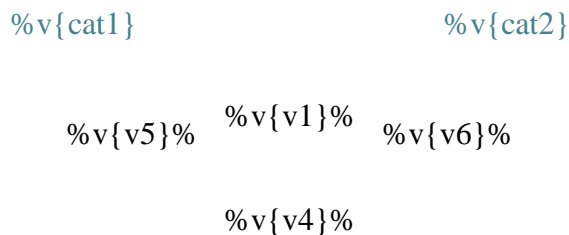
%v{v3}%

%v{v2}%
%v{v7}%

%v{cat3}

The highlighted region shows the **percent** of students who will be taking %v{clas}.

- So now, we have to *sum up all the percents*.

- %v{sum2}% + %v{sum3}% = **%v{percent}%**

The total **percent** of students who will be taking %v{clas} is **%v{percent}%**.
Type in %v{percent}.

Scaffold:

Now that we know the percent of students who will be taking %v{clas}
is **%v{percent}%**, try the original problem again.

The Venn diagram below shows the **percent** of students who chose to take
%v{cat1}, %v{cat2}, or %v{cat3}. If **%v{total}** students signed up to take
courses, how many students will be taking %v{clas}.

Student Registration

%v{cat1}   %v{cat2}

%v{v5}%   %v{v1}%   %v{v6}%

%v{v4}%
%v{v3}%

%v{v2}%
%v{v7}%

%v{cat3}

349

Algebra:

✓ %v{ans}

Hints:

- We need to find **%v{percent}%** of **%v{total}**.

- First, convert **%v{percent}%** into a **decimal**, and then multiply it to **%v{total}**.

- In order to convert **%v{percent}%** into a **decimal**, we have to divide it by 100.

%v{percent}% ÷ 100 = **%v{percent/100}**

- Now we have to multiply **%v{percent/100}** with **%v{total}**.

%v{percent/100} x **%v{total}** = %v{ans}

The number of students who will be taking %v{clas} is %v{ans}.
    Type in %v{ans}.

Assistment #36820 "36820 - Circle Graph - Hard - Proportions"

Billy took a survey of the students in his school to find
each student's favorite winter sport. He recorded the results in order to
make the circle graph below.

Favorite Winter Sport

Ice Skating

Skiing

20%

30%

Sledding
25%

Snowboarding

25%
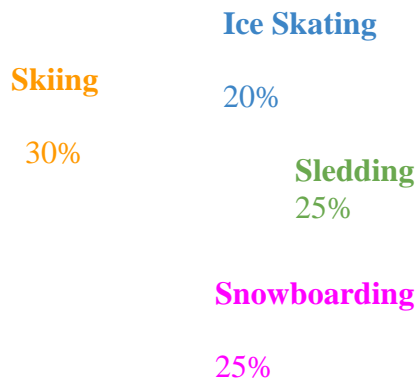
According to this graph, if 180 students have Skiing as their
favorite winter sport, then how many students in total did Billy survey?

Algebra:

✓ 600

Scaffold:

You can solve this problem by setting up a **proportion**.

Choose the correct proportion for this problem.

Multiple choice:

✓ 180/X = 30/100

✗ 180/30 = X/100

✗ X/180 = 30/100

✗ 30/X = 180/100

Hints:

- Remember, the percentage of students who had Skiing as their favorite winter sport is 30%.

   30   is another way of saying 30%.

$$\frac{}{100}$$

- We are looking for the total number of students that Billy surveyed.

Call the total, **X**.

- This means that 180 out of **X** had Skiing as their favorite winter sport.

- So, $\dfrac{180}{X} = \dfrac{30}{100}$

Choose the option that shows 180/x = 30/100.

Scaffold:

Okay, so $\dfrac{30}{100}$ is equal to $\dfrac{180}{X}$

Now solve for **X** to find the total number of students that Billy surveyed.

Algebra:

✓ 600

Hints:

- Since 180 is 6 times as much as 30,
X should be 6 times as much as 100.

- So now we have to solve,

6 x 100 = **X**

- **X** is equal to 600.
Billy surveyed a total of 600 students.
Type in 600.

Assistment #30397 "30397 - Circle Graph - Hard - Proportions"

%v{name} took a survey of the students in his school to find each student's %v{sub}. He recorded the results in order to make the circle graph below.

%v{title}

%v{cat4}

%v{v1}%

%v{cat1}

%v{v4}%

%v{cat3}

%v{v2}%

%v{cat2}

%v{v3}%
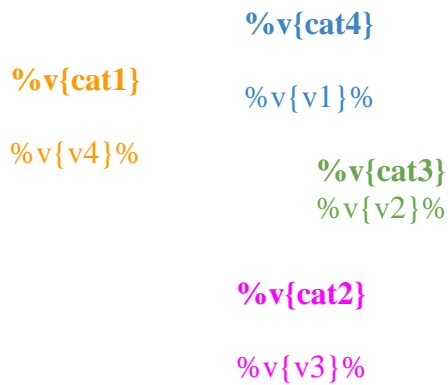
According to this graph, if %v{ans} students have %v{want1} as their %v{sub}, then how many students in total did %v{name} survey?

Algebra:

✓ %v{total}

Scaffold:

You can solve this problem by setting up a **proportion**.

Choose the correct proportion for this problem.

Multiple choice:

✓ %v{ans}/X = %v{want2}/100

✗ %v{ans}/%v{want2} = X/100

✗ X/%v{ans} = %v{want2}/100

✗ %v{want2}/X = %v{ans}/100

Hints:

- Remember, the percentage of students who had %v{want1} as their %v{sub} is %v{want2}%.

  %v{want2} is another way of saying %v{want2}%.

$$\frac{\quad}{100}$$

- We are looking for the total number of students that %v{name} surveyed.

Call the total, **X**.

- This means that %v{ans} out of **X** had %v{want1} as their %v{sub}.

- So, $\dfrac{\%v\{ans\}}{X} = \dfrac{\%v\{want2\}}{100}$

Choose the option that shows %v{ans}/x = %v{want2}/100.

Scaffold:

Okay, so $\dfrac{\%v\{want2\}}{100}$ is equal to $\dfrac{\%v\{ans\}}{X}$

Now solve for **X** to find the total number of students that %v{name} surveyed.

Algebra:

✓ %v{total}

Hints:

- Since %v{ans} is %v{ans/want2} times as much as %v{want2},
X should be %v{ans/want2} times as much as 100.

- So now we have to solve,

%v{ans/want2} x 100 = **X**

- **X** is equal to %v{total}.
%v{name} surveyed a total of %v{total} students.
Type in %v{total}.

Chris asked 50 students in his math class to choose their
favorite food. The chart below shows the results.

Food	Number of Students
Tacos	10
Pizza	10
Hot Dogs	10
French Fries	20

With these results, Chris decided to make a circle graph.
For this circle graph, what should be the measure of the **angle** in
the **Tacos** section?

Algebra:

✓ 72

Scaffold:

First, we know that 10 students had **Tacos** as their favorite food.
We also know that a circle has **360°**.

Using this information, choose the correct proportion that can get you
the measure of **angle** in the **Tacos** section of the circle graph.

Multiple choice:

✗ $10/50 = 360/X$

✗ $10/360 = 50/X$

✗ $X/50 = 10/360$

✓ $10/50 = X/360$

Hints:

- Remember, 10 students out of 50 had **Tacos** as their favorite food.

  As a fraction, we can represent this as $\dfrac{10}{50}$.

- Since we do not know the measure of **angle** in the **Tacos** section, we
  represent this unknown with X.

  So the second portion of our ratio is $\dfrac{X}{360°}$.

355

- So if $\dfrac{10}{50}$ has **Tacos** as their favorite food, and

$\dfrac{X}{360°}$ is the portion of the circle graph that we have to find,

then the proportion looks like this $\dfrac{10}{50} = \dfrac{X}{360°}$.

Choose the option that shows, 10/50 = X/360.

Scaffold:

Okay, so $\dfrac{10}{50}$ is equal to $\dfrac{X}{360°}$

Now solve for **X** to find the **angle** of the **Tacos** section of the circle graph.

Algebra:

✔️ 72

Hints:

- Remember, we found that the ratio is $\dfrac{10}{50} = \dfrac{X}{360°}$.

To get the correct answer, we have to find the **scale factor**.

- $\dfrac{10 \times \Delta}{50 \times \Delta} = \dfrac{X}{360°}$

We can find the **scale factor**, **Δ** by dividing **360°** by 50.

- $360° \div 50 = 7.2$

Now that we know 7.2 is the **scale factor**. We have to multiply 10 by 7.2 to get the **angle**.

- $X = 10 \times \Delta$
  $X = 10 \times 7.2$

356

$X = 72°$

Type in 72.

%v{name} asked %v{total} students in his math class to choose their
favorite food. The chart below shows the results.

Food	Number of Students
Tacos	%v{v1}
Pizza	%v{v2}
Hot Dogs	%v{v3}
French Fries	%v{v4}

With these results, %v{name} decided to make a circle graph.
For this circle graph, what should be the measure of the **angle** in
the **%v{want}** section?

Algebra:

✔ %v{ans}

Scaffold:

First, we know that %v{v6} students had **%v{want}** as their favorite food.
We also know that a circle has **360°**.

Using this information, choose the correct proportion that can get you
the measure of **angle** in the **%v{want}** section of the circle graph.

Multiple choice:

✘ %v{v6}/%v{total} = 360/X

✘ %v{v6}/360 = %v{total}/X

✘ X/%v{total} = %v{v6}/360

✔ %v{v6}/%v{total} = X/360

Hints:

- Remember, %v{v6} students out of %v{total} had **%v{want}** as their favorite food.

As a fraction, we can represent this as $\dfrac{\%v\{v6\}}{\%v\{total\}}$.

- Since we do not know the measure of **angle** in the **%v{want}** section, we
represent this unknown with X.

So the second portion of our ratio is $\dfrac{X}{360°}$.

358

- So if $\dfrac{\%v\{v6\}}{\%v\{total\}}$ has **%v{want}** as their favorite food, and

$\dfrac{X}{\mathbf{360°}}$ is the portion of the circle graph that we have to find,

then the proportion looks like this $\dfrac{\%v\{v6\}}{\%v\{total\}} = \dfrac{X}{\mathbf{360°}}$.

Choose the option that shows, %v{v6}/%v{total} = X/360.

Scaffold:

Okay, so $\dfrac{\%v\{v6\}}{\%v\{total\}}$ is equal to $\dfrac{X}{\mathbf{360°}}$

Now solve for X to find the **angle** of the **%v{want}** section of the circle graph.

Algebra:

✓ %v{ans}

Hints:

- Remember, we found that the ratio is $\dfrac{\%v\{v6\}}{\%v\{total\}} = \dfrac{X}{\mathbf{360°}}$.

To get the correct answer, we have to find the **scale factor**.

- $\dfrac{\%v\{v6\} \text{ x } \mathbf{\Delta}}{\%v\{total\} \text{ x } \mathbf{\Delta}} = \dfrac{X}{\mathbf{360°}}$

We can find the **scale factor**, $\mathbf{\Delta}$ by dividing **360°** by %v{total}.

- $\mathbf{360°} \div \%v\{total\} = \%v\{360/total\}$

Now that we know %v{360/total} is the **scale factor**. We have to multiply %v{v6} by %v{360/total} to get the **angle**.

- $X = \%v\{v6\} \text{ x } \mathbf{\Delta}$
  $X = \%v\{v6\} \text{ x } \%v\{360/total\}$

359

$X = \%v\{ans\}°$

Type in $\%v\{ans\}$.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **median** number of clothes sold each week?

Clothes Sold Each Week

Stem	Leaf
3	1, 1, 2, 4, 5, 5, 5, 8
4	2, 3, 5, 8
5	6, 8
6	2, 2, 3, 3, 3

Algebra:

✓ 43

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	Leaf
6	1, 5

Multiple choice:

✘ 6, and 15

✘ 6, 1, and 5

✔ 61 and 65

✘ 615

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

- The **stem** is 6 and the **leafs** are 1, and 5
- So, the two numbers are **61** and **65**.

    Choose the option with only 61 and 65.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **median** is.

So, what is the **median**?

Multiple choice:

✘ The number seen most often in a set of numbers.

No, that is the Mode.

✔ The middle number in a set of ordered numbers.

✘ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

✘ The difference between the largest value and the smallest value of the set of numbers.

Incorrect, that is the Range.

Hints:

- Give the definition of the **median**.
- The **median** is the middle number in a set of ordered numbers.

So, choose the option that says the middle number in a set of ordered numbers.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **median**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **median** number of clothes sold each week?

Clothes Sold Each Week

Stem	Leaf
3	1, 1, 2, 4, 5, 5, 5, 8
4	2, 3, 5, 8
5	6, 8
6	2, 2, 3, 3, 3

Algebra:

✔ 43

Hints:

- **Stem** and **leaf** plots are already ordered from smallest to largest.
Take a look at the following animation on how **stem** and **leaf** plots are ordered and how we get the median.

- In the plot that we were given, there are a total of **19** numbers. So, the *middle number is the 10th number*.

- The 10th number is 43.

Thus, the **median** number of clothes sold each week is 43.

Type in 43.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold each week at a store. According to this plot, what is the **median** number of %v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

Algebra:

✓ %v{ans}

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	**Leaf**
%v{v1+3}	%v{v2}, %v{v3 + 1}

Multiple choice:

✖ %v{v1 + 3}, and %v{v2}%v{v3 + 1}

✖ %v{v1 + 3}, %v{v2}, and %v{v3 + 1}

✔ %v{scaff1} and %v{scaff2}

✖ %v{v1+3}%v{v2}%v{v3 + 1}

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

- The **stem** is %v{v1 + 3} and the **leafs** are %v{v2}, and %v{v3 + 1}

- So, the two numbers are **%v{scaff1}** and **%v{scaff2}**.

  Choose the option with only %v{scaff1} and %v{scaff2}.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **median** is.

So, what is the **median**?

Multiple choice:

✖ The number seen most often in a set of numbers.

No, that is the Mode.

✔ The middle number in a set of ordered numbers.

✖ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

✖ The difference between the largest value and the smallest value of the set of numbers.

Incorrect, that is the Range.

Hints:

- Give the definition of the **median**.
- The **median** is the middle number in a set of ordered numbers.

366

So, choose the option that says the middle number in a set of ordered numbers.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **median**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold each week at a store. According to this plot, what is the **median** number of %v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

Algebra:

✓ %v{ans}

Hints:

- **Stem** and **leaf** plots are already ordered from smallest to largest.
  Take a look at the following animation on how **stem** and **leaf** plots are ordered and how we get the median.

367
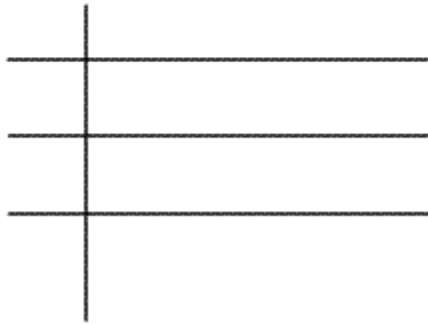
- In the plot that we were given, there are a total of **19** numbers. So, the *middle number is the 10th number*.

- The 10th number is %v{ans}.

Thus, the **median** number of %v{stuff} sold each week is %v{ans}.

Type in %v{ans}.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **median** number of clothes sold each week?

Clothes Sold Each Week

Stem	Leaf
3	1, 1, 2, 4, 5, 5, 5, 8
4	2, 3, 5, 8
5	6, 8
6	2, 2, 3, 3, 3

Algebra:

✓ 43

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	Leaf
6	1, 5

Multiple choice:

✗ 6, and 15

✗ 6, 1, and 5

✓ 61 and 65

✗ 615

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

- The **stem** is 6 and the **leafs** are 1, and 5
- So, the two numbers are **61** and **65**.

  Choose the option with only 61 and 65.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **median** is.

So, what is the **median**?

Multiple choice:

✗ The number seen most often in a set of numbers.

No, that is the Mode.

✓ The middle number in a set of ordered numbers.

✗ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

✗ The difference between the largest value and the smallest value of the set of numbers.

Incorrect, that is the Range.

Hints:

- Give the definition of the **median**.
- The **median** is the middle number in a set of ordered numbers.

370

So, choose the option that says the middle number in a set of ordered numbers.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **median**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **median** number of clothes sold each week?

Clothes Sold Each Week

Stem	Leaf
3	1, 1, 2, 4, 5, 5, 5, 8
4	2, 3, 5, 8
5	6, 8
6	2, 2, 3, 3, 3

Algebra:

✓ 43

Hints:

- **Stem** and **leaf** plots are already ordered from smallest to largest.
Take a look at the following animation on how **stem** and **leaf** plots are ordered and how we get the median.

371

- In the plot that we were given, there are a total of **19** numbers. So, the *middle number is the 10th number*.

- The 10th number is 43.

Thus, the **median** number of clothes sold each week is 43.

Type in 43.

Assistment #30048 "30048 - Stem and Leaf - Range"

The following **stem** and **leaf** plot shows the number of %v{stuff} sold
each week at a store. According to this plot, what is the **range** of
%v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

Algebra:

✓ %v{ans}

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**",
where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	**Leaf**

%v{v1+3} %v{v2}, %v{v3 + 1}

Multiple choice:

✖ %v{v1 + 3}, and %v{v2}%v{v3 + 1}

✖ %v{v1 + 3}, %v{v2}, and %v{v3 + 1}

✔ %v{scaff1} and %v{scaff2}

✖ %v{v1+3}%v{v2}%v{v3 + 1}

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

  11

Stem	Leaf

- The **stem** is %v{v1 + 3} and the **leafs** are %v{v2}, and %v{v3 + 1}

- So, the two numbers are **%v{scaff1}** and **%v{scaff2}**.

  Choose the option with only %v{scaff1} and %v{scaff2}.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **range** is.

So, what is the **range**?

Multiple choice:

✖ The number seen most often in a set of numbers.

No, that is the Mode.

✖ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✖ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

374

✓ The difference between the largest value and the smallest value in a set of numbers.

Hints:

- Give the definition of the **range**.
- The **range** is the difference between the largest value and the smallest value in a set of numbers.

  So, choose the option that says the difference between the largest value and the smallest value in a set of numbers.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **range**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold each week at a store. According to this plot, what is the **range** of %v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

Algebra:

✓ %v{ans}

Hints:

- The largest number in the list is %v{(v1+3)*10 + v10 + 1}, and the smallest number is %v{v1*10 + v2}.

- So, all we have to do is *subtract the largest number, %v{(v1+3)*10 + v10 + 1} from the smallest number, %v{v1*10 + v2}*.

- %v{(v1+3)*10 + v10 + 1} - %v{v1*10 + v2} = %v{ans}.

Thus, the **range** of %v{stuff} sold each week is %v{ans}.

Type in %v{ans}.

The following **stem** and **leaf** plot shows the number of glasses sold each week at a store. According to this plot, what is the **mode** of glasses sold each week?

Glasses Sold Each Week

Stem	Leaf
3	1, 1, 2, 3, 4, 6, 6, 8
4	1, 2, 5, 7
5	6, 7
6	2, 2, 3, 3, 3, 3

Algebra:

✓ 63

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	Leaf
6	1, 4

Multiple choice:

✖ 6, and 14

✖ 6, 1, and 4

✔ 61 and 64

✖ 614

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

  11

Stem	Leaf

- The **stem** is 6 and the **leafs** are 1, and 4
- So, the two numbers are **61** and **64**.

  Choose the option with only 61 and 64.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **mode** is.

So, what is the **mode**?

Multiple choice:

✔ The number seen most often in a set of numbers.

✖ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✖ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

✖ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Give the definition of the **mode**.

- The **mode** is the number seen most often in a set of numbers

  So, choose the option that says the number seen most often
  in a set of numbers

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **mode**, lets try
the original problem again.

The following **stem** and **leaf** plot shows the number of glasses sold
each week at a store. According to this plot, what is the **mode** of
glasses sold each week?

Glasses Sold Each Week

Stem	Leaf
3	1, 1, 2, 3, 4, 6, 6, 8
4	1, 2, 5, 7
5	6, 7
6	2, 2, 3, 3, 3, 3

Algebra:

✓ 63

Hints:

- Remember, the **mode** is the number that occurs the most.

- From the list, we can see that 63 occurred four times, which is the most.

- Thus, the **mode** of glasses sold each week is 63.

  Type in 63.

Assistment #30049 "30049 - Stem and Leaf - Mode"

The following **stem** and **leaf** plot shows the number of %v{stuff} sold
each week at a store. According to this plot, what is the **mode** of
%v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem   **Leaf**

%v{v1}   %v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}

%v{v1+1} %v{v6}, %v{v6 +1}, %v{v8}, %v{v9}

%v{v1+2} %v{v8 + 1}, %v{v9}

%v{v1+3} %v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}, %v{v10 + 1}

Algebra:

✓ %v{ans}

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**",
where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

| **Stem** | **Leaf** |

%v{v1+3} %v{v2}, %v{v3 + 1}

Multiple choice:

✗ %v{v1 + 3}, and %v{v2}%v{v3 + 1}

✗ %v{v1 + 3}, %v{v2}, and %v{v3 + 1}

✓ %v{scaff1} and %v{scaff2}

✗ %v{v1+3}%v{v2}%v{v3 + 1}

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

11

Stem	Leaf

- The **stem** is %v{v1 + 3} and the **leafs** are %v{v2}, and %v{v3 + 1}

- So, the two numbers are **%v{scaff1}** and **%v{scaff2}**.

Choose the option with only %v{scaff1} and %v{scaff2}.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **mode** is.

So, what is the **mode**?

Multiple choice:

✓ The number seen most often in a set of numbers.

✗ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✗ The sum of the numbers divided by the number of numbers.

Wrong, that is the Mean.

✗ The difference between the largest value and the smallest value in a set of numbers.

382

No, that is the Range.

Hints:

- Give the definition of the **mode**.
- The **mode** is the number seen most often in a set of numbers

  So, choose the option that says the number seen most often
  in a set of numbers

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **mode**, lets try
the original problem again.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold
each week at a store. According to this plot, what is the **mode** of
%v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}, %v{v10 +1}

Algebra:

✓ %v{ans}

Hints:

- Remember, the **mode** is the number that occurs the most.

- From the list, we can see that %v{ans} occurred four times, which is the most.

- Thus, the **mode** of %v{stuff} sold each week is %v{ans}.

    Type in %v{ans}.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **mean** of clothes sold each week?

Clothes Sold Each Week

Stem	Leaf
1	2, 2, 3, 4, 5, 6, 6, 8
2	2, 3, 6, 7
3	7, 7
4	1, 1, 2, 2, 2

(Round to the nearest hundredths place)

Algebra:

✓ 26.11

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem	Leaf
4	2, 5

Multiple choice:

✖ 4, and 25

✖ 4, 2, and 5

✔ 42 and 45

✖ 425

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

11

Stem	Leaf

- The **stem** is 4 and the **leafs** are 2, and 5
- So, the two numbers are **42** and **45**.

Choose the option with only 42 and 45.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **mean** is.

So, what is the **mean**?

Multiple choice:

✖ The number seen most often in a set of numbers.

Wrong, that is the Mode.

✖ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✔ The sum of the numbers divided by the number of numbers.

✖ The difference between the largest value and the smallest value in a set of numbers.

386

No, that is the Range.

Hints:

- Give the definition of the **mean**.
- The **mean** is the sum of the numbers divided by the number of numbers.

  So, choose the option that says the sum of the numbers divided by the number of numbers.

Scaffold:

Since part of finding the **mean** is finding the sum of all of the numbers what is the sum of all the numbers in the **stem** and **leaf** plot?

Stem	Leaf
1	2, 2, 3, 4, 5, 6, 6, 8
2	2, 3, 6, 7
3	7, 7
4	1, 1, 2, 2, 2

Algebra:

✓ 496

Hints:

- First, write out all of the numbers in this plot on a piece of paper.
- Your list of numbers should look something like this:

12, 12, 13, 14, 15, 16, 16, 18, 22, 23, 26, 27, 37, 37, 41, 41, 42, 42, 42

Now we have to add all the numbers in this list up.

- 12
  12
  13
  14
  15
  16
  16
  18
  22
  23
  26
  27
  37
  37
  41
  41
  42
  42
  + 42
  _____
  496

The sum of the numbers is 496. Type in 496.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **mean**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of clothes sold each week at a store. According to this plot, what is the **mean** of clothes sold each week?

Clothes Sold Each Week

Stem   **Leaf**

1	2, 2, 3, 4, 5, 6, 6, 8
2	2, 3, 6, 7
3	7, 7
4	1, 1, 2, 2, 2

(Round to the nearest hundredths place)

Algebra:

✓ 26.11

Hints:

- Remember, the sum of all the numbers is 496.
Now find the number of numbers and divide.

- There are 19 numbers in the **stem** and **leaf** plot.

The mean is 496 ÷ 19 = 26.105263 Now round to the nearest hundredths.

- 26.105263 rounded to the nearest hundredths place is 26.11.

Thus, the **mean** of clothes sold each week is 26.11.

Type in 26.11.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold each week at a store. According to this plot, what is the **mean** of %v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

(Round to the nearest hundredths place)

Algebra:

✓ %v{ans}

Scaffold:

In a **stem** and **leaf** plots, each data number is separated into a "**stem**" and a "**leaf**", where the "**stem**" is the **tens** digit and the "**leaf**" is the **ones** digit.

Which of the following numbers does the **stem** and **leaf** plot below represents?

Stem   **Leaf**

%v{v1+3} %v{v2}, %v{v3 + 1}

Multiple choice:

✖ %v{v1 + 3}, and %v{v2}%v{v3 + 1}

✖ %v{v1 + 3}, %v{v2}, and %v{v3 + 1}

✔ %v{scaff1} and %v{scaff2}

✖ %v{v1+3}%v{v2}%v{v3 + 1}

Hints:

- Use the **stem** as the tens digit. Use the **leaf** as the ones digit.

11

Stem	Leaf

- The **stem** is %v{v1 + 3} and the **leafs** are %v{v2}, and %v{v3 + 1}

- So, the two numbers are **%v{scaff1}** and **%v{scaff2}**.

Choose the option with only %v{scaff1} and %v{scaff2}.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot, we have to figure out what the **mean** is.

So, what is the **mean**?

Multiple choice:

✖ The number seen most often in a set of numbers.

Wrong, that is the Mode.

✖ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✔ The sum of the numbers divided by the number of numbers.

✖ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Give the definition of the **mean**.
- The **mean** is the sum of the numbers divided by the number of numbers.

  So, choose the option that says the sum of the numbers divided by the number of numbers.

Scaffold:

Since part of finding the **mean** is finding the sum of all of the numbers what is the sum of all the numbers in the **stem** and **leaf** plot?

Stem	**Leaf**
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

Algebra:

✓ %v{total}

Hints:

- First, write out all of the numbers in this plot on a piece of paper.
- Your list of numbers should look something like this:

%v{v1*10 + v2}, %v{v1*10 + v2}, %v{v1*10 + v2 + 1}, %v{v1*10 + v3}, %v{v1*10 + v3 + 1}, %v{v1*10 + v4}, %v{v1*10 + v4}, %v{v1*10 + v5}, %v{(v1+1)*10 + v6}, %v{(v1+1)*10 + v6 + 1}, %v{(v1+1)*10 + v8}, %v{(v1+1)*10 + v9}, %v{(v1+2)*10 + v8 + 1}, %v{(v1+2)*10 + v9}, %v{(v1+3)*10 + v10}, %v{(v1+3)*10 + v10}, %v{(v1+3)*10 + v10 + 1}, %v{(v1+3)*10 + v10 + 1}, %v{(v1+3)*10 + v10 + 1}

Now we have to add all the numbers in this list up.

- %v{v1*10 + v2}
  %v{v1*10 + v2}
  %v{v1*10 + v2 + 1}
  %v{v1*10 + v3}
  %v{v1*10 + v3 + 1}
  %v{v1*10 + v4}
  %v{v1*10 + v4}
  %v{v1*10 + v5}
  %v{(v1+1)*10 + v6}
  %v{(v1+1)*10 + v6 + 1}
  %v{(v1+1)*10 + v8}
  %v{(v1+1)*10 + v9}
  %v{(v1+2)*10 + v8 + 1}
  %v{(v1+2)*10 + v9}
  %v{(v1+3)*10 + v10}
  %v{(v1+3)*10 + v10}
  %v{(v1+3)*10 + v10 + 1}
  %v{(v1+3)*10 + v10 + 1}
+ %v{(v1+3)*10 + v10 + 1}
  %v{total}

The sum of the numbers is %v{total}. Type in %v{total}.

Scaffold:

Now that we know the definition of a **stem** and **leaf** plot and the **mean**, lets try the original problem again.

The following **stem** and **leaf** plot shows the number of %v{stuff} sold each week at a store. According to this plot, what is the **mean** of %v{stuff} sold each week?

%v{stuff.capitalize} Sold Each Week

Stem	Leaf
%v{v1}	%v{v2}, %v{v2}, %v{v2 + 1}, %v{v3}, %v{v3 + 1}, %v{v4}, %v{v4}, %v{v5}
%v{v1+1}	%v{v6}, %v{v6 +1}, %v{v8}, %v{v9}
%v{v1+2}	%v{v8 + 1}, %v{v9}
%v{v1+3}	%v{v10}, %v{v10}, %v{v10 +1}, %v{v10 +1}, %v{v10 + 1}

(Round to the nearest hundredths place)

Algebra:

✓ %v{ans}

Hints:

- Remember, the sum of all the numbers is %v{total}.
Now find the number of numbers and divide.

- There are 19 numbers in the **stem** and **leaf** plot.

The mean is %v{total} ÷ 19 = %v{ans2} Now round to the nearest hundredths.

- %v{ans2} rounded to the nearest hundredths place is %v{ans}.

Thus, the **mean** of %v{stuff} sold each week is %v{ans}.

Type in %v{ans}.

The table below shows the number of restaurants advertisement in a city directory. The telephone numbers of these restaurants are written on separate slips of paper and one is selected at random. What is the **probability** that the telephone number of %v{v5} **%v{select1}** restaurant is selected?

Type of Restaurant	Number
Chinese	%v{v1}
Mexican	%v{v2}
Italian	%v{v3}
French	%v{v4}

(Write your answer as a fraction, you can simplify if you want)

Algebra:

✓ %v{ans}

✓ %v{select2}/%v{total}

✓ %v{ans_1}

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

Multiple choice:

✗ The number of possible outcomes

✗ The number of outcomes for the event

✓ $\dfrac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$

✗ $\dfrac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Hints:

- Probablilty is how we represent the chance of something occuring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.
- Probability is

$$\frac{\text{The number of outcomes for the event}}{\text{The number of possible outcomes}}$$

Please select that choice.

Scaffold:

The **event** here is that %v{v5} **%v{select1}** restaurant will be chosen.

What is the number of **%v{select1}** restaurants in the city?

Type of Restaurant	Number
Chinese	%v{v1}
Mexican	%v{v2}
Italian	%v{v3}
French	%v{v4}

Algebra:

✓ %v{select2}

Hints:

- Use the table to get the number of **%v{select1}** restaurants.

Type of Restaurant	Number
Chinese	%v{v1}
Mexican	%v{v2}
Italian	%v{v3}
French	%v{v4}

- Look at the row with **%v{select1}** as the type of restaurant.

- The table shows that there are %v{select2} **%v{select1}** restaurants in this city.

Type in %v{select2}.

Scaffold:

Good, First lets find the number of possible outcomes That is the **total** number of restaurants in this city?

Type of Restaurant	Number
Chinese	%v{v1}
Mexican	%v{v2}
Italian	%v{v3}
French	%v{v4}

Algebra:

✔ %v{total}

Hints:

- In order to find the **total**, we have to add the numbers of each restaurant together.

- So, we have to add %v{v1}, %v{v2}, %v{v3}, and %v{v4} together.

- %v{v1} + %v{v2} + %v{v3} + %v{v4} = %v{total}

The **total** number of restaurants is %v{total}. Type in %v{total}.

Scaffold:

Now that we know the number of **%v{select1}** restaurants is %v{select2}, and that the total number of restaurants is **%v{total}**, we can solve the problem.

The table below shows the number of restaurants advertisement in a city directory. The telephone numbers of these restaurants are written on separate slips of paper and one is selected at random. What is the **probability** that the telephone number of %v{v5} **%v{select1}** restaurant is selected?

Type of Restaurant	Number
Chinese	%v{v1}
Mexican	%v{v2}
Italian	%v{v3}
French	%v{v4}

(Write your answer as a fraction, you can simplify if you want)

397

Algebra:

✓ %v{ans}

✓ %v{select2}/%v{total}

✓ %v{ans_1}

Hints:

- In order to get the required **probability**, we have to divide %v{select2} by %v{total}.

- %v{select2} ÷ %v{total} = $\dfrac{\%v\{select2\}}{\%v\{total\}}$

- The **probability** that the telephone number of %v{v5} **%v{select1}**

restaurant gets selected is $\dfrac{\%v\{select2\}}{\%v\{total\}}$ (this fraction may not be in simplified form)

Type in %v{select2}/%v{total}.

Assistment #37025 "37025 - 27767 - Table - Calculating Probability"

The table below shows the number of restaurants advertisement in a city directory. The telephone numbers of these restaurants are written on separate slips of paper and one is selected at random. What is the **probability** that the telephone number of a **Chinese** restaurant is selected?

Type of Restaurant	Number
Chinese	15
Mexican	9
Italian	8
French	6

(Write your answer as a fraction, you can simplify if you want)

Algebra:

✓ 0.39

✓ 15/38

✓ 0.394736842105263

Scaffold:

First lets understand that the problem is asking about probability. What is probability?

Multiple choice:

✗ The number of possible outcomes

✗ The number of outcomes for the event

✓ $\dfrac{\text{the number of outcomes for the event}}{\text{the number of possible outcomes}}$

✗ $\dfrac{\text{the number of possible outcomes}}{\text{the number of outcomes for the event}}$

Hints:

- Probablilty is how we represent the chance of something occuring. This is represented with a decimal or fraction, both of which will have a value between 0 and 1.
- Probability is

$$\frac{\text{The number of outcomes for the event}}{\text{The number of possible outcomes}}$$

Please select that choice.

Scaffold:

The **event** here is that a **Chinese** restaurant will be chosen.

What is the number of **Chinese** restaurants in the city?

Type of Restaurant	Number
Chinese	15
Mexican	9
Italian	8
French	6

Algebra:

✔ 15

Hints:

- Use the table to get the number of **Chinese** restaurants.

Type of Restaurant	Number
Chinese	15
Mexican	9
Italian	8
French	6

- Look at the row with **Chinese** as the type of restaurant.

- The table shows that there are 15 **Chinese** restaurants in this city.

Type in 15.

Scaffold:

Good, First lets find the number of possible outcomes That is the **total** number of restaurants in this city?

Type of Restaurant	Number
Chinese	15
Mexican	9
Italian	8
French	6

Algebra:

✓ 38

Hints:

- In order to find the **total**, we have to add the numbers of each restaurant together.

- So, we have to add 15, 9, 8, and 6 together.
- 15 + 9 + 8 + 6 = 38

The **total** number of restaurants is 38. Type in 38.

Scaffold:

Now that we know the number of **Chinese** restaurants is 15, and that the total number of restaurants is **38**, we can solve the problem.

The table below shows the number of restaurants advertisement in a city directory. The telephone numbers of these restaurants are written on separate slips of paper and one is selected at random. What is the **probability** that the telephone number of a **Chinese** restaurant is selected?

Type of Restaurant	Number
Chinese	15
Mexican	9
Italian	8
French	6

(Write your answer as a fraction, you can simplify if you want)

401

Algebra:

✓ 0.39

✓ 15/38

✓ 0.394736842105263

Hints:

- In order to get the required **probability**, we have to divide 15 by 38.

- $15 \div 38 = \dfrac{15}{38}$

- The **probability** that the telephone number of a **Chinese** restaurant gets selected is $\dfrac{15}{38}$ (this fraction may not be in simplified form)

   Type in 15/38.

Assistment #30551 "30551 - Chart - Varibilized 27905"

Three friends played a video game.
The chart below shows the results of the game.

Player	Number of Points
%v{name1}	%v{v1}
%v{name2}	%v{v2}
%v{name3}	%v{v3}

Type in the fraction that represents **%v{name1}'s score** out of the **total**.

Algebra:

✔️ %v{ans_num}/%v{ans_den}

✔️ %v{ans}

Scaffold:

How many points did %v{name1} score?

Algebra:

✔️ %v{v1}

Hints:

- Look at the table for the row that has **%v{name1}** in it.
- How many points are listed in **%v{name1}**'s row?

Player	Number of Points
%v{name1}	**%v{v1}**
%v{name2}	%v{v2}
%v{name3}	%v{v3}

- **%v{name1}** scored **%v{v1}** points.

  Type in %v{v1}.

Scaffold:

Now, how many points did all three players score in **total**?

Algebra:

✔️ %v{total}

Hints:

- Remember, we are looking for the **total** number of points scored by all three players.

403

So we have to sum up all of the points.

• Player	Number of Points
%v{name1}	%v{v1}
%v{name2}	+ %v{v2}
%v{name3}	+ %v{v3}

$$\overline{}$$

%v{total}

- The sum of all the points is %v{total}.

  Type in %v{total}.

Scaffold:

Finally, type in the fraction that represents **%v{name1}'s score** out of the **total** points.

Player	Number of Points
%v{name1}	**%v{v1}**
%v{name2}	%v{v2}
%v{name3}	%v{v3}

Algebra:

✓ %v{ans_num}/%v{ans_den}

✓ %v{ans}

Hints:

- Remember, **%v{name1}** scored **%v{v1}** points, and all three players scored a **total** of **%v{total}** points.

- **%v{name1}** scored **%v{v1}** points out of **%v{total}**, so **%v{name1}'s score** belongs on the **numerator** and **%v{total}** belongs on the **denominator**.

- The fraction is $\dfrac{\textbf{\%v\{v1\}}}{\textbf{\%v\{total\}}}$ or $\dfrac{\textbf{\%v\{ans\_num\}}}{\textbf{\%v\{ans\_den\}}}$ (Fraction may not be reduced to its simplest form)

  Type in %v{ans_num}/%v{ans_den}.

Three friends played a video game.
The chart below shows the results of the game.

Player	Number of Points
Jessica	8000
Isaac	2000
Chuck	1000

Type in the fraction that represents **Jessica's score** out of the **total**.

Algebra:

✓ 8/11

✓ 0.727272727272727

Scaffold:

How many points did Jessica score?

Algebra:

✓ 8000

Hints:

- Look at the table for the row that has **Jessica** in it.
- How many points are listed in **Jessica**'s row?

Player	Number of Points
Jessica	**8000**
Isaac	2000
Chuck	1000

- **Jessica** scored **8000** points.

    Type in 8000.

Scaffold:

Now, how many points did all three players score in **total**?

Algebra:

✓ 11000

Hints:

- Remember, we are looking for the **total** number of points scored by all three players.

So we have to sum up all of the points.

• Player	Number of Points
Jessica	8000
Isaac	+ 2000
Chuck	+ 1000

11000

- The sum of all the points is 11000.

Type in 11000.

Scaffold:

Finally, type in the fraction that represents **Jessica's score** out of the **total** points.

Player	Number of Points
Jessica	**8000**
Isaac	2000
Chuck	1000

Algebra:

✔ 8/11

✔ 0.727272727272727

Hints:

- Remember, **Jessica** scored **8000** points, and all three players scored a **total** of **11000** points.

- **Jessica** scored **8000** points out of **11000**, so **Jessica's score** belongs on the **numerator** and **11000** belongs on the **denominator**.

- The fraction is $\dfrac{8000}{11000}$ or $\dfrac{8}{11}$ (Fraction may not be reduced to its simplest form)

Type in 8/11.

406

 In the scatter plot below, each dot represents one student who
participated in a 50 meter race. The winner of the race was %v{name}.

 According to the scatter plot, how old is %v{name}?

Ages of Students and Times in 50-Meter Race

%v{v2 + 3}

%v{v2 + 2}

%v{v2 + 1}

%v{v2}

%v{v1}   %v{v1 + 1}   %v{v1 + 2}   %v{v1 + 3}   %v{v1 + 4}   %v{v1 + 5}

Algebra:

✓ %v{ans}

Hints:

- Remember, the winner of the 50 meter race *must have the lowest time*.
- From the scatter plot, we know that only person have the lowest time.

%v{v2
+ 3}

%v{v2
+ 2}

%v{v2
+ 1}

%v{v2}

| %v{v1} | %v{v1 + 1} | %v{v1 + 2} | %v{v1 + 3} | %v{v1 + 4} | %v{v1 + 5} |

- This person's age corresponds to %v{ans}.

%v{v2
+ 3}

%v{v2
+ 2}

%v{v2
+ 1}

%v{v2}

%v{v1}	%v{v1 + 1}	%v{v1 + 2}	%v{v1 + 3}	%v{v1 + 4}	%v{v1 + 5}

- This means that %v{name} is %v{ans} years old.

  Type in %v{ans}.

In the scatter plot below, each dot represents one student who participated in a 50 meter race. The winner of the race was Tim.

According to the scatter plot, how old is Tim?

Ages of Students and Times in 50-Meter Race

14

13

12

11

        21   22   23   24   25   26

Algebra:

✓ 24

Hints:

- Remember, the winner of the 50 meter race *must have the lowest time*.
- From the scatter plot, we know that only person have the lowest time.

14

13

12

11

21   22   23   24   25   26

- This person's age corresponds to 24.

14

13

12

11

411

21   22   23   24   25   26

- This means that Tim is 24 years old.

  Type in 24.

In the scatter plot below, each dot represents one student who participated in a 50 meter race. The winner of the race was Jason, and he was the **youngest** ever to win the race.

According to the scatter plot, how old is Jason?

Ages of Students and Times in 50-Meter Race

12

11

10

9
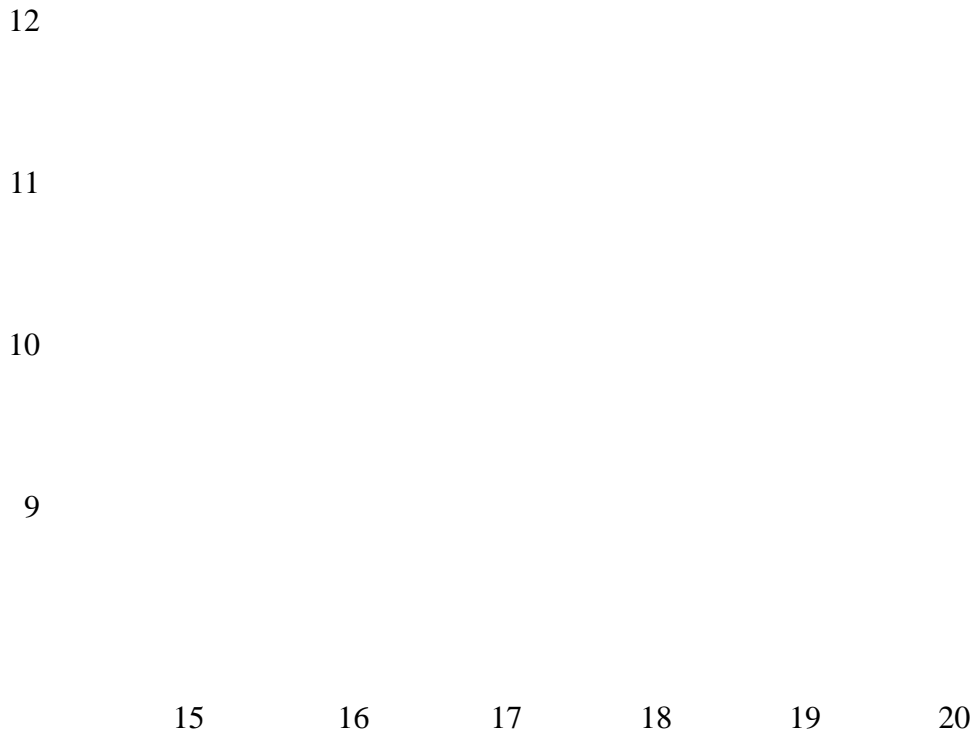
15   16   17   18   19   20

Algebra:

✓ 18

Hints:

- Remember, the winner of the 50 meter race *must have the lowest time*.
- From the scatter plot, we know that there are two people who have the lowest time.

413

12

11

10

 9

15   16   17   18   19   20

From these two people's ages, we know that the winner of the race is the **younger** one.

• One of the dots corresponds to 18 years old, while the other corresponds to 20 years old.

12

11

10

414

9

15   16   17   18   19   20

- So the **youngest** person to win the race is 18 years old.
This means that Jason is 18 years old.

    Type in 18.

In the scatter plot below, each dot represents one student who participated in a 50 meter race. The winner of the race was %v{name}, and he was the **youngest** ever to win the race.

According to the scatter plot, how old is %v{name}?

Ages of Students and Times in 50-Meter Race

%v{v2 + 3}

%v{v2 + 2}

%v{v2 + 1}

%v{v2}

%v{v1}   %v{v1 + 1}   %v{v1 + 2}   %v{v1 + 3}   %v{v1 + 4}   %v{v1 + 5}

Algebra:

✓ %v{ans}

Hints:

- Remember, the winner of the 50 meter race *must have the lowest time*.
- From the scatter plot, we know that there are two people who have

the lowest time.

%v{v2
+ 3}

%v{v2
+ 2}

%v{v2
+ 1}

%v{v2}

%v{v1}   %v{v1 +   %v{v1 +   %v{v1 +   %v{v1 +   %v{v1 +
1}   2}   3}   4}   5}

From these two people's ages, we know that the winner of the race
is the **younger** one.

• One of the dots corresponds to %v{age1} years old, while the other
corresponds to %v{age2} years old.

%v{v2
+ 3}

%v{v2
+ 2}

%v{v2
  + 1}

%v{v2}

%v{v1}	%v{v1 + 1}	%v{v1 + 2}	%v{v1 + 3}	%v{v1 + 4}	%v{v1 + 5}

- So the **youngest** person to win the race is %v{ans} years old.
This means that %v{name} is %v{ans} years old.

Type in %v{ans}.

Assistment #32017 "32017 - mean table"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
Ricky	15,10,16,16,20,15,14,2,24,13
Carol	21,20,8,11,12,5,15,26,17,11

What is the **mean** (average)number of points scored by Ricky ?

Algebra:

✓ 14.5

✗

Scaffold:

Let's start with the definition. Which of the following is the right definition for the **mean**?

Multiple choice:

✗ The number seen most often in a set of numbers.

Wrong, That is the mode.

✗ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✓ The sum of the numbers divided by the number of numbers.

✗ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Mean is the same as an average.
- An average of the numbers is the correct answer.

Scaffold:

Since part of finding the **mean** is finding the sum of all of the numbers what is the sum of scores that Ricky scored?

Ricky 15,10,16,16,20,15,14,2,24,13

Algebra:

✓ 145

Hints:

- First, write out all of the numbers in this plot on a piece of paper.
- Your list of numbers should look something like this:
15,10,16,16,20,15,14,2,24,13

- Now we have to add all the numbers in this list up.

```
    15
    10
    16
    16
    20
    15
    14
     2
    24
+   13
───────
   145
```

Scaffold:

Now that we know the definition of the **mean**, lets try
the original problem again.
The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
Ricky	15,10,16,16,20,15,14,2,24,13
Carol	21,20,8,11,12,5,15,26,17,11

What is the **mean** (average)number of points scored by Ricky ?

Algebra:

✓ 14.5

Hints:

- Remember, the sum of all the numbers is 145.
Now find the number of numbers and divide.

- There are 10 different scores on the chart.

The mean is $145 \div 10 = 14.5$
Type in 14.5.

- The mean equals to $145/ 10 = 14.5$. The correct answer is 14.5.

420

Assistment #30244 "30244 - mean table"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10},%v{v11},%v{v12},%v{v13},%v{v14},%v{v15},%v{v16},%v{v17},%v{v18},%v{v19}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

What is the **mean** (average)number of points scored by %v{malename} ?

Algebra:

✓ %v{ans1}

✗

Scaffold:

Let's start with the definition. Which of the following is the right definition for the **mean**?

Multiple choice:

✗ The number seen most often in a set of numbers.

Wrong, That is the mode.

✗ The middle number in a set of ordered numbers.

Incorrect, that is the Median.

✓ The sum of the numbers divided by the number of numbers.

✗ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Mean is the same as an average.
- An average of the numbers is the correct answer.

Scaffold:

Since part of finding the **mean** is finding the sum of all of the numbers
what is the sum of scores that %v{malename} scored?

%v{malename}	%v{v10},%v{v11},%v{v12},%v{v13},%v{v14},%v{v15},%v{v16},%v{v17},%v{v18},%v{v19}

Algebra:

✓ %v{sum}

Hints:

421

- First, write out all of the numbers in this plot on a piece of paper.

- Your list of numbers should look something like this:
%v{v10},%v{v11},%v{v12},%v{v13},%v{v14},%v{v15},%v{v16},%v{v17},%v{v18},%v{v19}

  - Now we have to add all the numbers in this list up.

    %v{v10}
    %v{v11}
    %v{v12}
    %v{v13}
    %v{v14}
    %v{v15}
    %v{v16}
    %v{v17}
    %v{v18}
  + %v{v19}
    %v{sum}

Scaffold:

Now that we know the definition of the **mean**, lets try
the original problem again.

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10},%v{v11},%v{v12},%v{v13},%v{v14},%v{v15},%v{v16},%v{v17}, %v{v18},%v{v19}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27}, %v{v28},%v{v29}

What is the **mean** (average)number of points scored by %v{malename} ?

Algebra:

✓ %v{ans1}

Hints:

- Remember, the sum of all the numbers is %v{sum}.
Now find the number of numbers and divide.

- There are 10 different scores on the chart.

The mean is %v{sum} ÷ 10 = %v{ans1}
Type in %v{ans1}.

- The mean equals to %v{sum}/ 10 = %v{ans1} . The correct answer is %v{ans1}.

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in their last 11 games.

Name of player	Number of points scored on the last eleven games
John	41,65,25,80,14,78,61,2,72,24,53
Cristina	18,22,6,15,40,14,7,16,26,18,8

What is the median number of points scored by John ?

Algebra:

✓ 53

✗

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

Multiple choice:

✗ The number seen most often in a set of numbers.

✓ The middle number in a set of ordered numbers.

✗ The sum of the numbers divided by the number of numbers.

✗ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Median is the same as the middle.
- The middle number is the correct answer.

Scaffold:

Now that we know what the median is,
Let's try the original problem again.

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in their last 11 games.

Name of player	Number of points scored on the last eleven games
John	41,65,25,80,14,78,61,2,72,24,53
Cristina	18,22,6,15,40,14,7,16,26,18,8

What is the median number of points scored by John ?

Algebra:

✓ 53

Hints:

- First we need to order the list from least to greatest.
It should look like this,
2, 14, 24, 25, 41, 53, 61, 65, 72, 78, 80

- Now we need to find the middle number in this list.

- The median(middle) number in the list is 53

- Type in 53

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 11 games.

Name of player	Number of points scored on the last eleven games
%v{malename}	%v{v14},%v{v17},%v{v13},%v{v111},%v{v11},%v{v19},%v{v16},%v{v10},%v{v18},%v{v12},%v{v15}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v222},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

What is the median number of points scored by %v{malename} ?

Algebra:

✔ %v{ans1}

✘

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

Multiple choice:

✘ The number seen most often in a set of numbers.

✔ The middle number in a set of ordered numbers.

✘ The sum of the numbers divided by the number of numbers.

✘ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Median is the same as the middle.

- The middle number is the correct answer.

Scaffold:

Now that we know what the median is,
Let's try the original problem again.
The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 11 games.

Name of player	Number of points scored on the last eleven games
%v{malename}	%v{v14},%v{v17},%v{v13},%v{v111},%v{v11},%v{v19},%v{v16},%v{v10},%v{v18},%v{v12},%v{v15}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v222},%v{v24},%v{v25},%v{v26},%v

me}	{v27},%v{v28},%v{v29}

What is the median number of points scored by %v{malename} ?

Algebra:

✓ %v{ans1}

Hints:

- First we need to order the list from least to greatest.
  It should look like this,
  %v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}, %v{v111}

- Now we need to find the middle number in this list.

- The median(middle) number in the list is %v{v15}

- Type in %v{v15}

The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	31,66,27,17,76,57,8,71,24,47
Cristina	17,19,9,13,6,5,16,24,21,9

What is the median number of points scored by John ?

Algebra:
✓ 39

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

Multiple choice:

✗ The number seen most often in a set of numbers.

✓ The middle number in a set of ordered numbers.

✗ The sum of the numbers divided by the number of numbers.

✗ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Median is the same as the middle.
- The middle number is the correct answer.

Scaffold:

Now that we know what the median is,
Let's try the original problem again.
The coach for the All-Star Basketball Game needs to pick one of the two players for the team. The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	31,66,27,17,76,57,8,71,24,47
Cristina	17,19,9,13,6,5,16,24,21,9

What is the median number of points scored by John ?

Algebra:
✓ 39

427

Hints:

- First we need to order the list from least to greatest.
It should look like this,
8, 17, 24, 27, 31, 47, 57, 66, 71, 76

- Since there is an even number of numbers in this set, there are two middle numbers.

To find the median, we have to average these two numbers.

- The two middle numbers are 31 and 47.

Sum these two numbers up and divide the total by 2 to get the median.

- $31 + 47 = 78$
$78 \div 2 = 39$.

Type in 39.

Assistment #36483 "36483 - median table"

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v14},%v{v17},%v{v13},%v{v11},%v{v19},%v{v16},%v{v10},%v{v18},%v{v12},%v{v15}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

What is the median number of points scored by %v{malename} ?

Algebra:

✓ %v{ans1}

Scaffold:

Let's start with the definition. Which of the following is the right definition of the median?

Multiple choice:

✗ The number seen most often in a set of numbers.

✓ The middle number in a set of ordered numbers.

✗ The sum of the numbers divided by the number of numbers.

✗ The difference between the largest value and the smallest value in a set of numbers.

No, that is the Range.

Hints:

- Median is the same as the middle.
- The middle number is the correct answer.

Scaffold:

Now that we know what the median is,
Let's try the original problem again.
The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v14},%v{v17},%v{v13},%v{v11},%v{v19},%v{v16},%v{v10},%v{v18},%v{v12},%v{v15}
%v{femalename}	%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

What is the median number of points scored by %v{malename} ?

Algebra:

✓ %v{ans1}

Hints:

- First we need to order the list from least to greatest.
It should look like this,
%v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}

- Since there is an even number of numbers in this set, there are two middle numbers.

To find the median, we have to average these two numbers.

- The two middle numbers are %v{v14} and %v{v15}.

Sum these two numbers up and divide the total by 2 to get the median.

- %v{v14} + %v{v15} = %v{v14 + v15}
%v{v14 + v15} ÷ 2 = %v{ans1}.

Type in %v{ans1}.

The coach for the volleyball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	13, 9, 15, 18, 21, 18, 14, 3, 22, 6
Cristina	22, 22, 11, 10, 10, 2, 23, 31, 14, 8

What is the **range** number of points scored by Cristina?

Algebra:

✓ 29
✗

Scaffold:

To understand this problem, you must understand what **range** is.
Which of the following defines **range** the best?

Multiple choice:

✓ The diffrence between the highest value and the lowest value.

✗ The highest value in the set.

✗ The lowest value in the set.

✗ The sum of all values in the set.

Hints:

- The **range** is the difference between the highest number and the lowest number.

Scaffold:

Now that we know the definition of **range**, Let's try the main problem again.

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	13, 9, 15, 18, 21, 18, 14, 3, 22, 6
Cristina	22, 22, 11, 10, 10, 2, 23, 31, 14, 8

What is the **range** number of points scored by Cristina?

Algebra:

✓ 29

Hints:

- Remember, we are only looking at the numbers on Cristina's list which is:

22,22,11,10,10,2,23,31,14,8

- From this list:
22,22,11,10,10,2,23,31,14,8

The highest number is 31 and the lowest number is 2.
Now we have to subtract the lowest number from the highest number.

- 31 - 2 = 29

So, the **range** of Luna's points scored is 29.
Type in 29.

Hints:

- The **range** is the difference between the highest number and the lowest number.
- Remember, we are only looking at the numbers on Luna's list which is:

22,22,11,10,10,2,23,31,14,8

- From this list:
22,22,11,10,10,2,23,31,14,8

The highest number is 31 and the lowest number is 2.
Now we have to subtract the lowest number from the highest number.

- 31 - 2 = 29

So, the **range** of Luna's points scored is 29.
Type in 29.

The coach for the %v{game} Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}
%v{femalename}	%v{v20}, %v{v21}, %v{v22}, %v{v23}, %v{v24}, %v{v25}, %v{v26}, %v{v27}, %v{v28}, %v{v29}

What is the **range** number of points scored by %v{femalename}?

Algebra:

✓ %v{ans1}

✗

Scaffold:

To understand this problem, you must understand what **range** is.
Which of the following defines **range** the best?

Multiple choice:

✓ The diffrence between the highest value and the lowest value.

✗ The highest value in the set.

✗ The lowest value in the set.

✗ The sum of all values in the set.

Hints:

- The **range** is the difference between the highest number and the lowest number.

Scaffold:

Now that we know the definition of **range**, Let's try the main problem again.

The coach for the All-Star Basketball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}
%v{femalename}	%v{v20}, %v{v21}, %v{v22}, %v{v23}, %v{v24}, %v{v25}, %v{v26}, %v{v27}, %v{v28}, %v{v29}

What is the **range** number of points scored by %v{femalename}?

Algebra:

✓ %v{ans1}

Hints:

- Remember, we are only looking at the numbers on %v{femalename}'s list which is:

%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

- From this list:
%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

The highest number is %v{v27} and the lowest number is %v{v25}.
Now we have to subtract the lowest number from the highest number.

- %v{v27} - %v{v25} = %v{ans1}

So, the **range** of Luna's points scored is %v{ans1}.
Type in %v{ans1}.

Hints:

- The **range** is the difference between the highest number and the lowest number.
- Remember, we are only looking at the numbers on Luna's list which is:

%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

- From this list:
%v{v20},%v{v21},%v{v22},%v{v23},%v{v24},%v{v25},%v{v26},%v{v27},%v{v28},%v{v29}

The highest number is %v{v27} and the lowest number is %v{v25}.
Now we have to subtract the lowest number from the highest number.

- %v{v27} - %v{v25} = %v{ans1}

So, the **range** of Luna's points scored is %v{ans1}.
Type in %v{ans1}.

The coach for the volleyball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	15, 10, 20, 14, 19, 21, 6, 1, 24, 8
Cristina	33, 0, 15, 22, 18, 0, 31, 38, 0, 25

What is the **mode** number of points scored by Cristina?

Algebra:

✓ 0

✗

Hints:

- The **mode** is the number that appears the most.
- Remember, we are only looking at the numbers on Luna's list which is:

33,0,15,22,18,0,31,38,0,25

- From this list:

33,0,15,22,18,0,31,38,0,25
The number that appeared the most in this list is 0, so the **mode** is 0.

Type in 0.

Scaffold:
To solve this problem, you need to know what **mode** means.
Which one of the following definitions describes **mode** the best?
Multiple choice:

✗ The highest number in the set.

✗ The middle number in the set.

✓ The number with the most occurrences.

✗ The number with the least occurrences.

Scaffold:
Now that we know what the definition of **mode** is,
Let's try the original problem again.

435

The coach for the volleyball Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
John	15, 10, 20, 14, 19, 21, 6, 1, 24, 8
Cristina	33, 0, 15, 22, 18, 0, 31, 38, 0, 25

What is the **mode** number of points scored by Cristina?

Algebra:

✓ 0

Hints:

- Remember the **mode** is the number that appears most often in a set of numbers.
- We are only looking at the numbers on Cristina's list which is:
33,0,15,22,18,0,31,38,0,25
- From this list:

 33,0,15,22,18,0,31,38,0,25
The number that appeared the most in this list is 0, so the **mode** is 0.

Type in 0.

The coach for the %v{game} Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}
%v{femalename}	%v{v20}, %v{rp}, %v{v22}, %v{v23}, %v{v24}, %v{rp}, %v{v26}, %v{v27}, %v{rp}, %v{v29}

What is the **mode** number of points scored by %v{femalename}?

Algebra:

✓ %v{rp}

✗

Scaffold:

To solve this problem, you need to know what **mode** means.
Which one of the following definitions describes **mode** the best?

Multiple choice:

✗ The highest number in the set.

✗ The middle number in the set.

✓ The number with the most occurrences.

✗ The number with the least occurrences.

Scaffold:

Now that we know what the definition of **mode** is,
Let's try the original problem again.

The coach for the %v{game} Game needs to pick one of the two players for the team.
The table below shows the number of points each of the players scored in their last 10 games.

Name of player	Number of points scored on the last ten games
%v{malename}	%v{v10}, %v{v11}, %v{v12}, %v{v13}, %v{v14}, %v{v15}, %v{v16}, %v{v17}, %v{v18}, %v{v19}
%v{femalename}	%v{v20}, %v{rp}, %v{v22}, %v{v23}, %v{v24}, %v{rp}, %v{v26}, %v{v27}, %v{rp}, %v{v29}

What is the **mode** number of points scored by %v{femalename}?

Algebra:

✓ %v{rp}

Hints:

- Remember the **mode** is the number that appears most often in a set of numbers.
- We are only looking at the numbers on %v{femalename}'s list which is:
%v{v20},%v{rp},%v{v22},%v{v23},%v{v24},%v{rp},%v{v26},%v{v27},%v{rp},%v{v29}
- From this list:

  %v{v20},%v{rp},%v{v22},%v{v23},%v{v24},%v{rp},%v{v26},%v{v27},%v{rp},%v{v29}
  The number that appeared the most in this list is %v{rp}, so the **mode** is %v{rp}.

  Type in %v{rp}.

Hints:

- The **mode** is the number that appears the most.
- Remember, we are only looking at the numbers on Luna's list which is:

%v{v20},%v{rp},%v{v22},%v{v23},%v{v24},%v{rp},%v{v26},%v{v27},%v{rp},%v{v29}

- From this list:

  %v{v20},%v{rp},%v{v22},%v{v23},%v{v24},%v{rp},%v{v26},%v{v27},%v{rp},%v{v29}
  The number that appeared the most in this list is %v{rp}, so the **mode** is %v{rp}.

  Type in %v{rp}.

Abe tested 85 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs
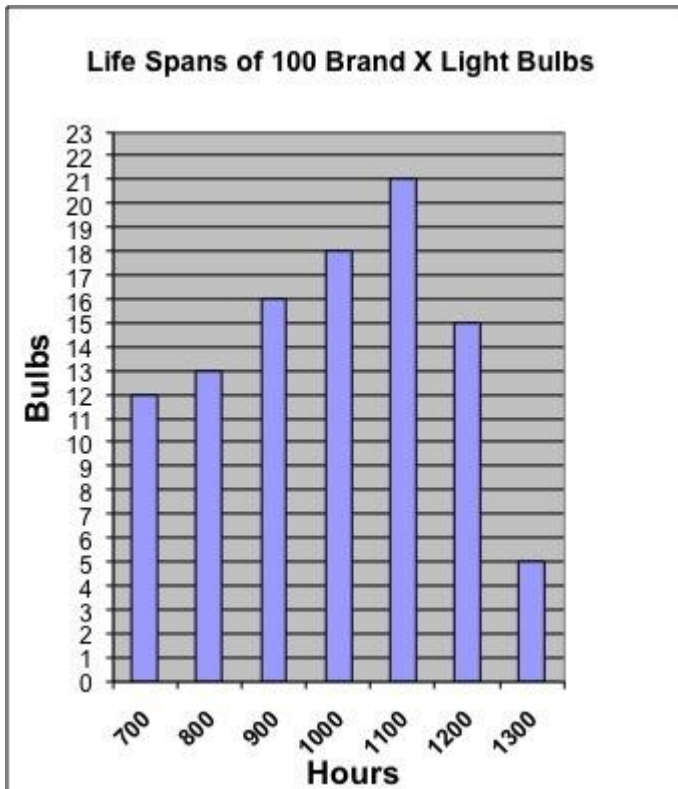
What was the total number of Brand X light bulbs that had life spans less than or equal to 800 hours?

Fill in:

✓ 25

Hints:

- In this problem it is important to pay attention to the wording of the question.

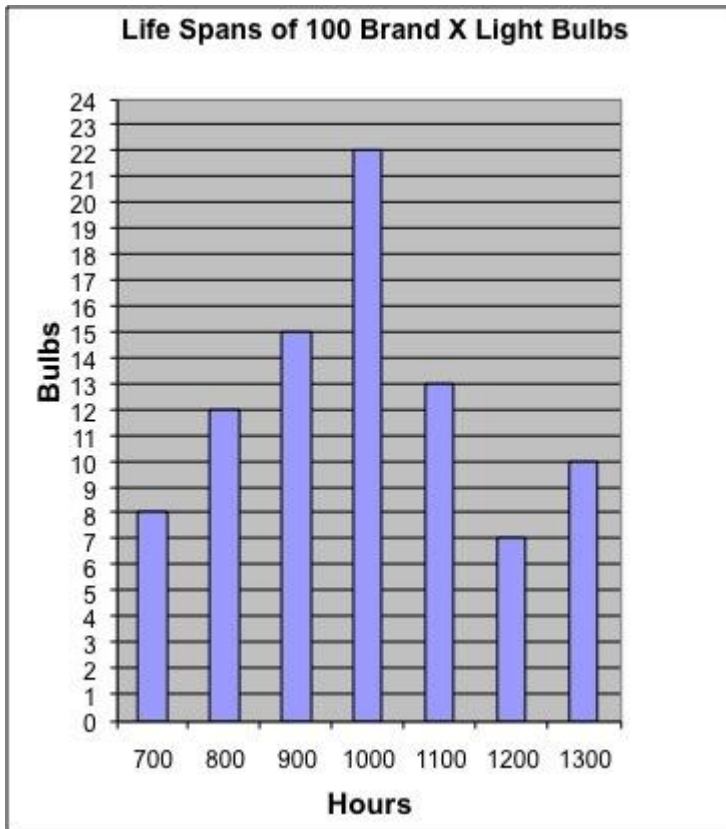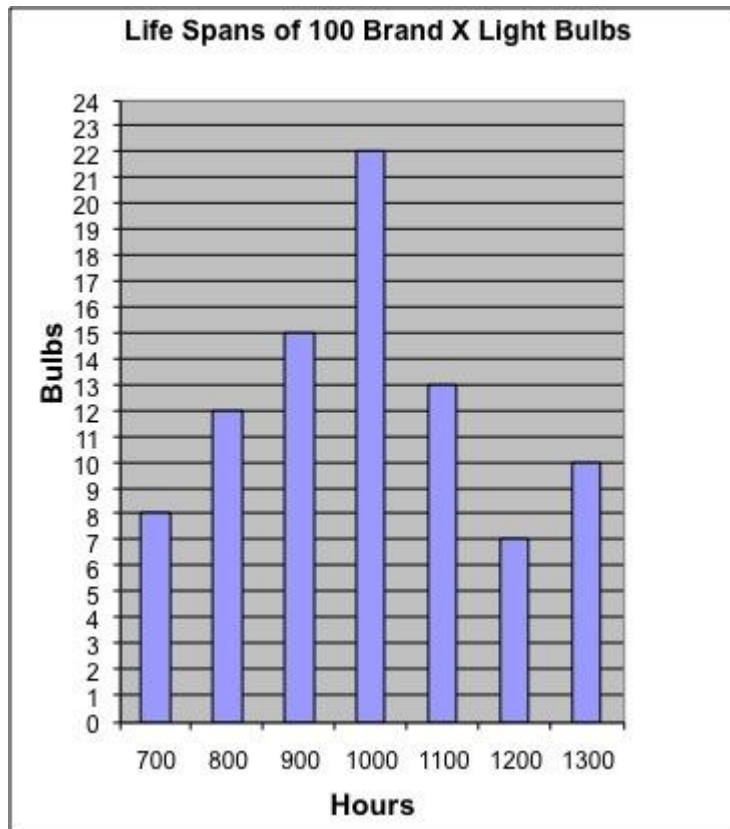What was the total number of Brand X light bulbs that had life spans less than or equal to 800 hours?

- Now, locate the number 800 on the chart.

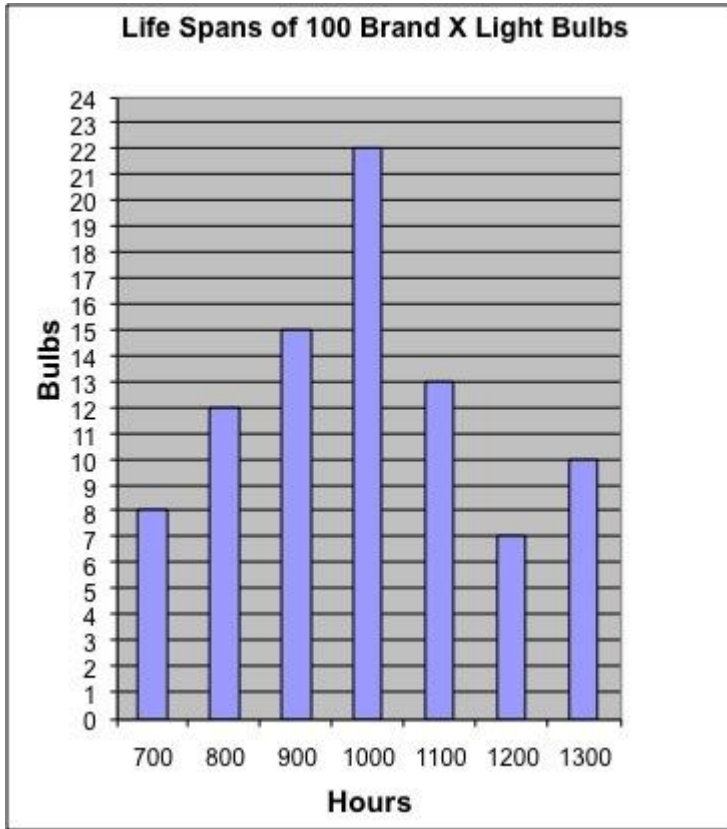439

Life Spans of 100 Brand X Light Bulbs
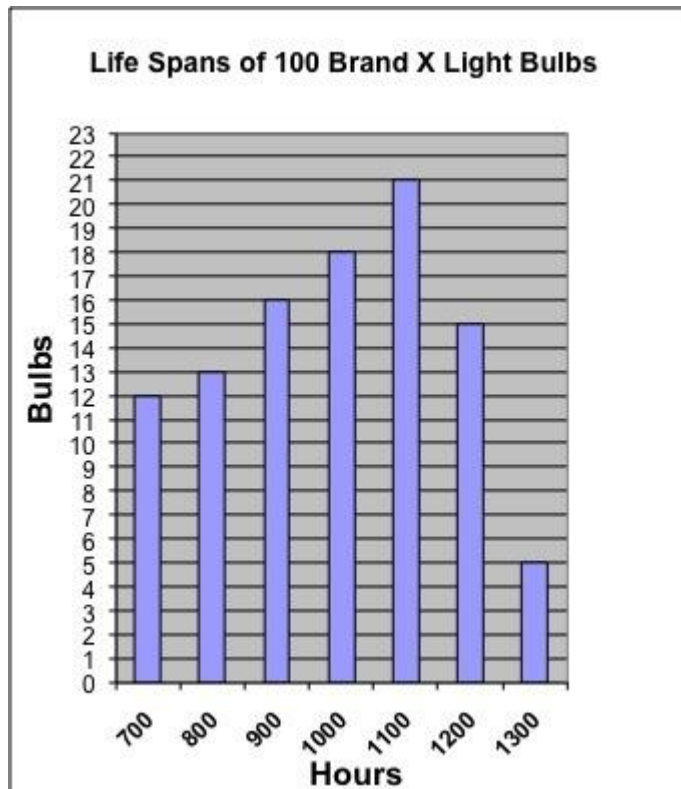
- Since we are looking for the sum of all the light bulbs with the duration "less than or equal to" 800, we need to include every column from the beginning (700) until 800.

12+13

So the sum of the light bulbs is: 25

- Type ins 25

440

%v{person} tested 85 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?
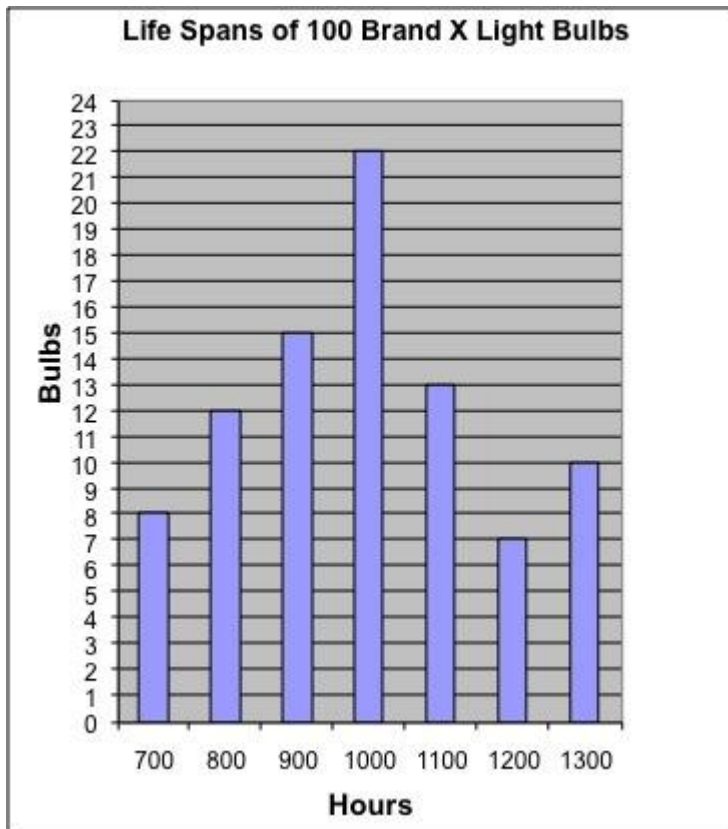
Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

441

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column from the beginning (700) until %v{duration}. %v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type ins %v{hint1sum}

442

%v{person} tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

443

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column starting from the duration given above (%v{duration}) until the end (1300).
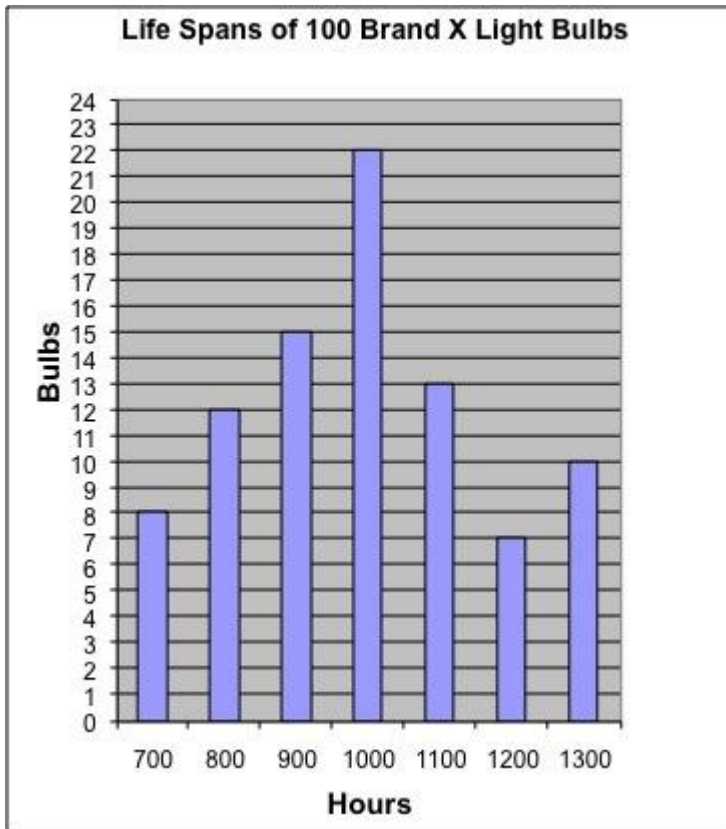%v{hint1}
So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

444

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

What was the total number of Brand X light bulbs that had life spans greater than or equal to 800 hours?
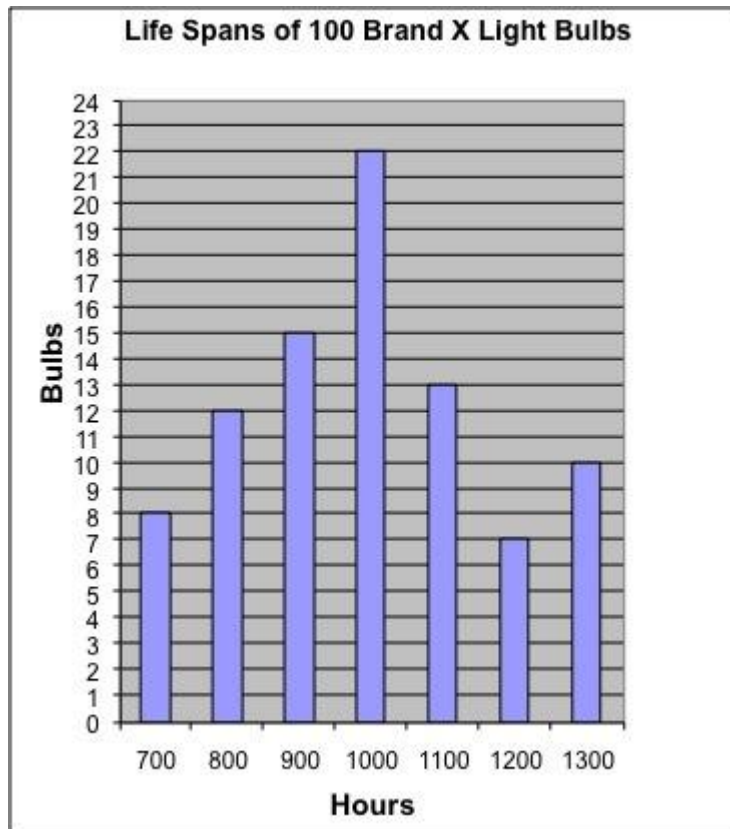
Fill in:

✓ 88

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans greater than or equal to 800 hours?

- Now, locate the number 800 on the chart.

445

Life Spans of 100 Brand X Light Bulbs

Bulbs (y-axis: 0–23)

Hours (x-axis): 700, 800, 900, 1000, 1100, 1200, 1300

- 700: 12
- 800: 13
- 900: 16
- 1000: 18
- 1100: 21
- 1200: 15
- 1300: 5
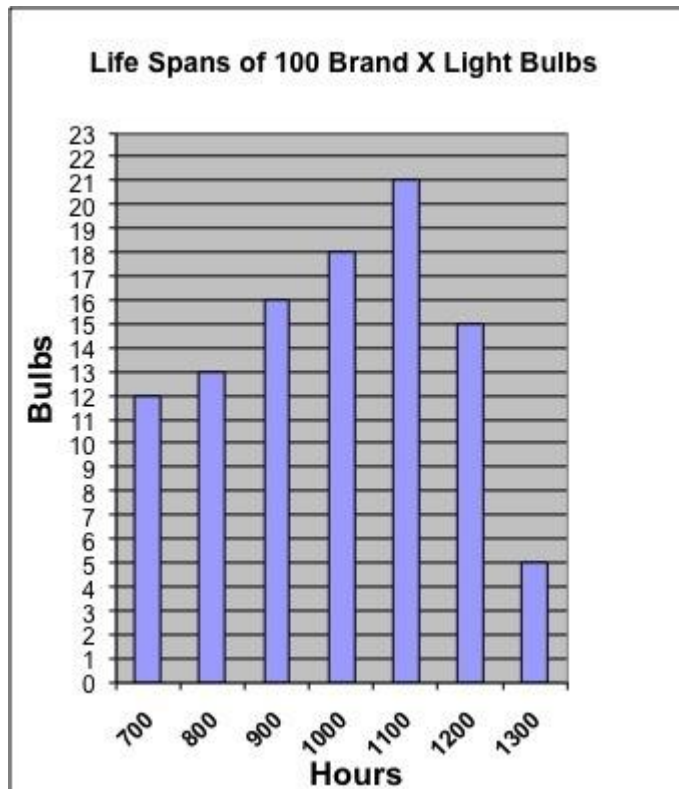
- Since we are looking for the sum of all the light bulbs with the duration "greater than or equal to" 800, we need to include every column starting from the duration given above (800) until the end (1300).
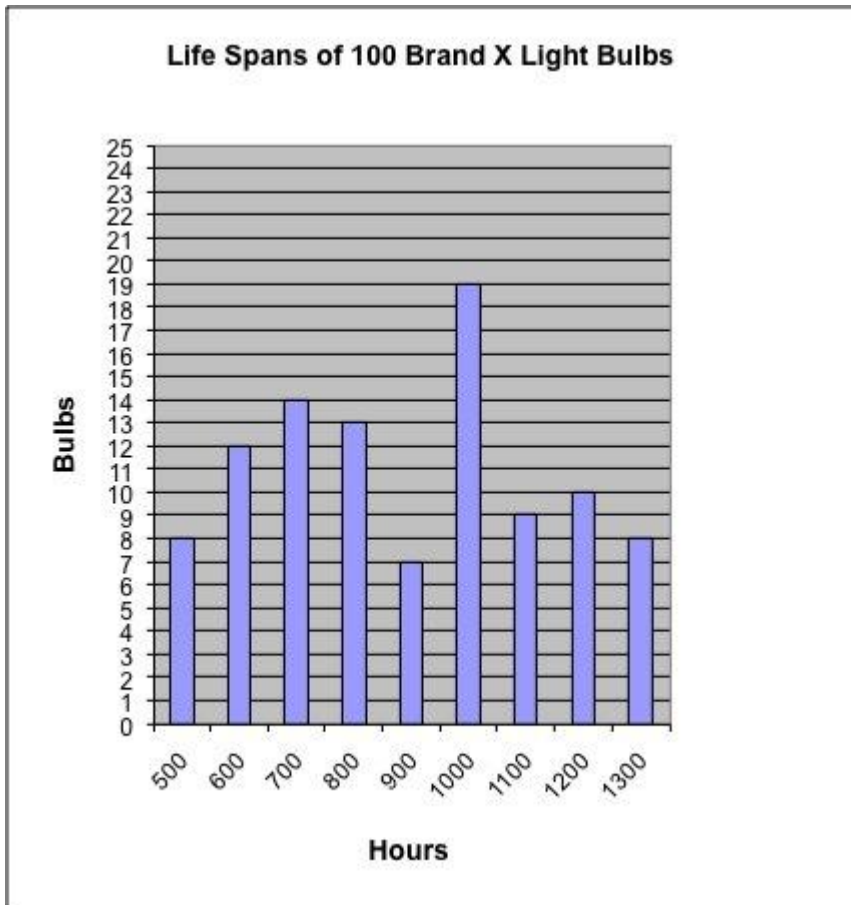
13+16+18+21+15+5

So the sum of the light bulbs is: 88

- Type in 88

Assistment #32360 "32360 - Gr.8 2007 - #13 - Histogram (<=) (Morph) - 27832"
 %v{person} tested 100 Brand X light bulbs to determine their life spans.
 The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?
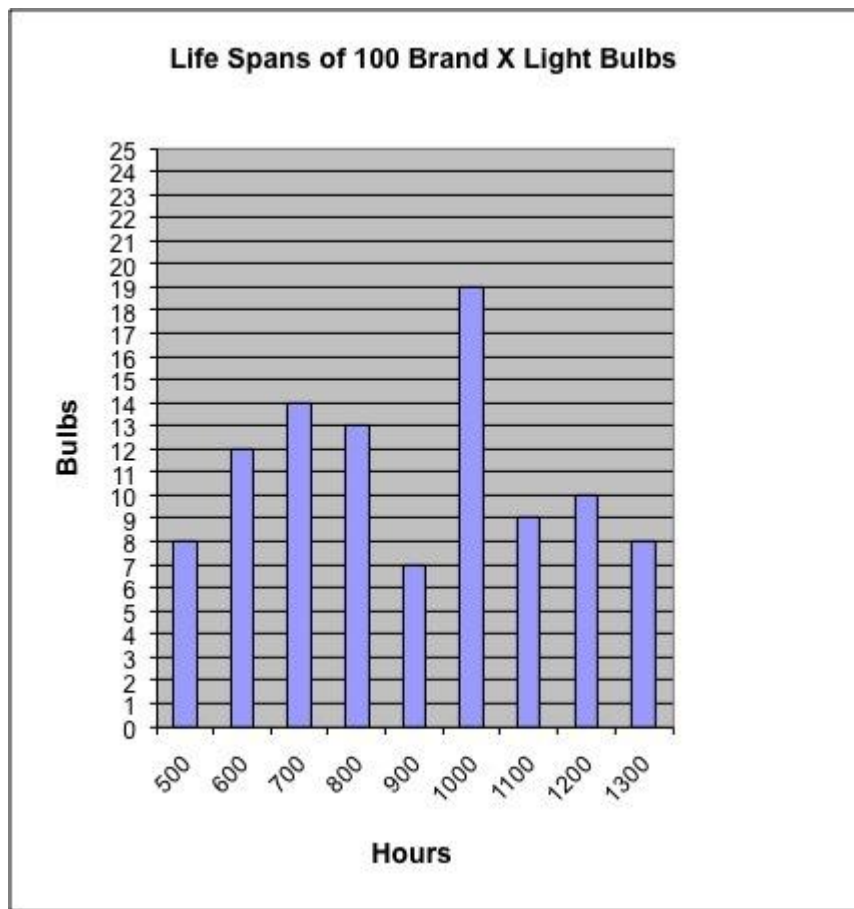
Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

  What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?
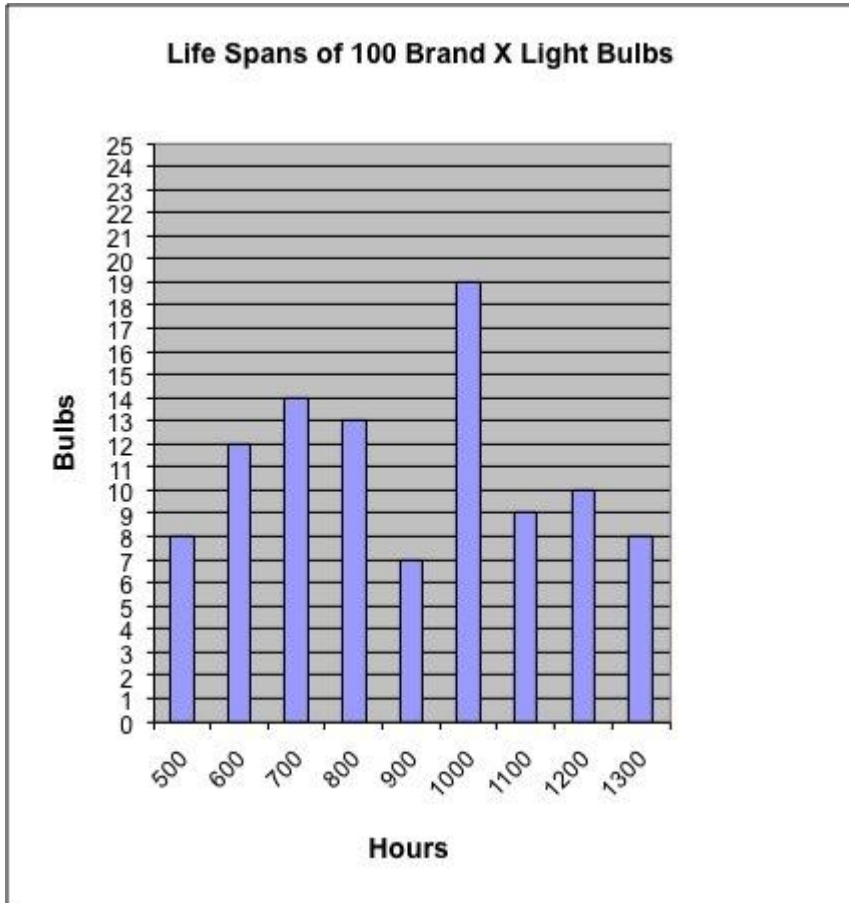
- Now, locate the number %v{duration} on the chart.

447

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column from the beginning (700) until %v{duration}. %v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans less than or equal to 800 hours?
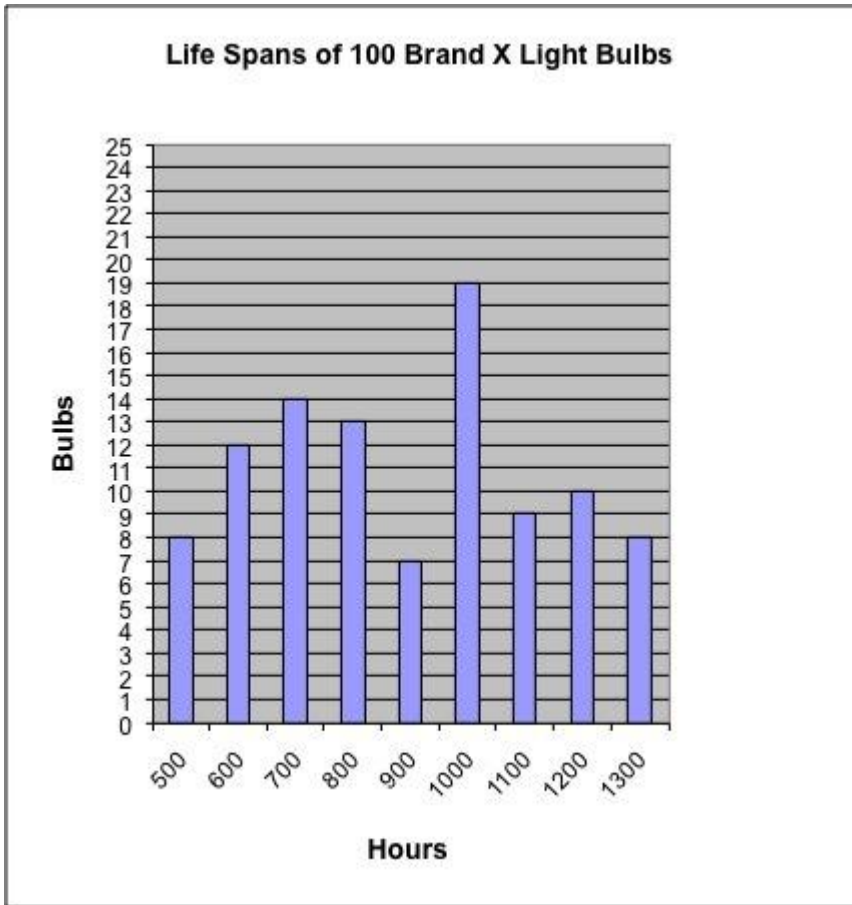
Fill in:

✔ 20

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans less than or equal to 800 hours?

- Now, locate the number 800 on the chart.
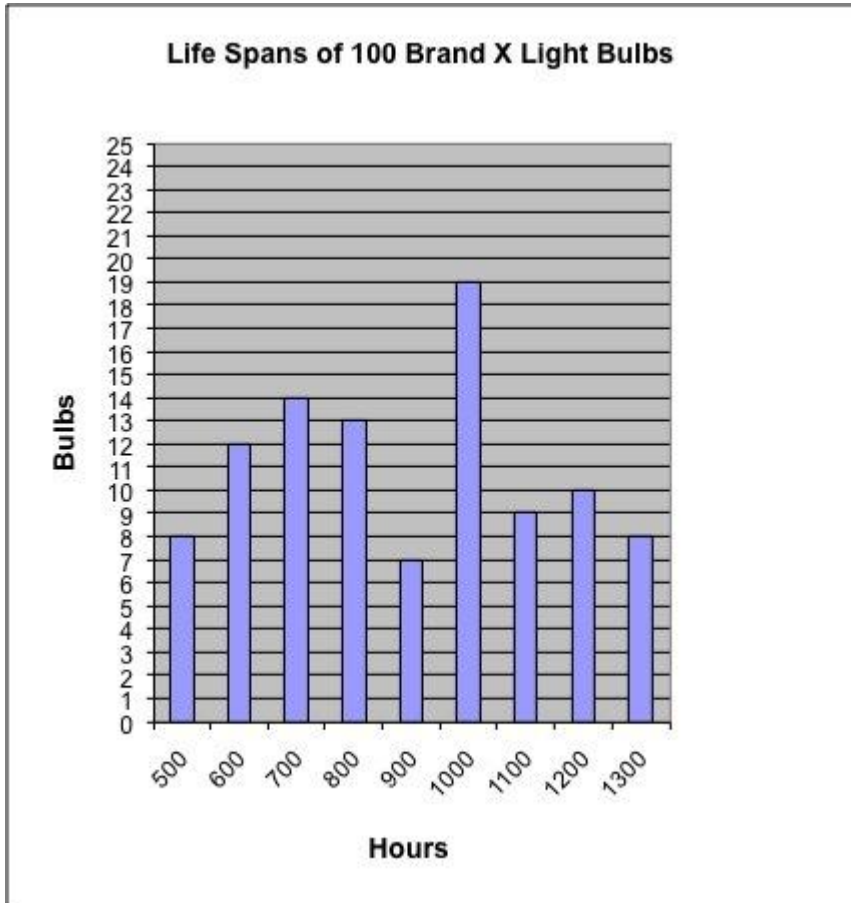
Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "less than or equal to" 800, we need to include every column from the beginning (700) until 800.

8+12

So the sum of the light bulbs is: 20

- Type in 20

%v{person} tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

451

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column starting from the duration given above (%v{duration}) until the end (1300).

%v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans greater than or equal to 800 hours?

Fill in:

✓ 79

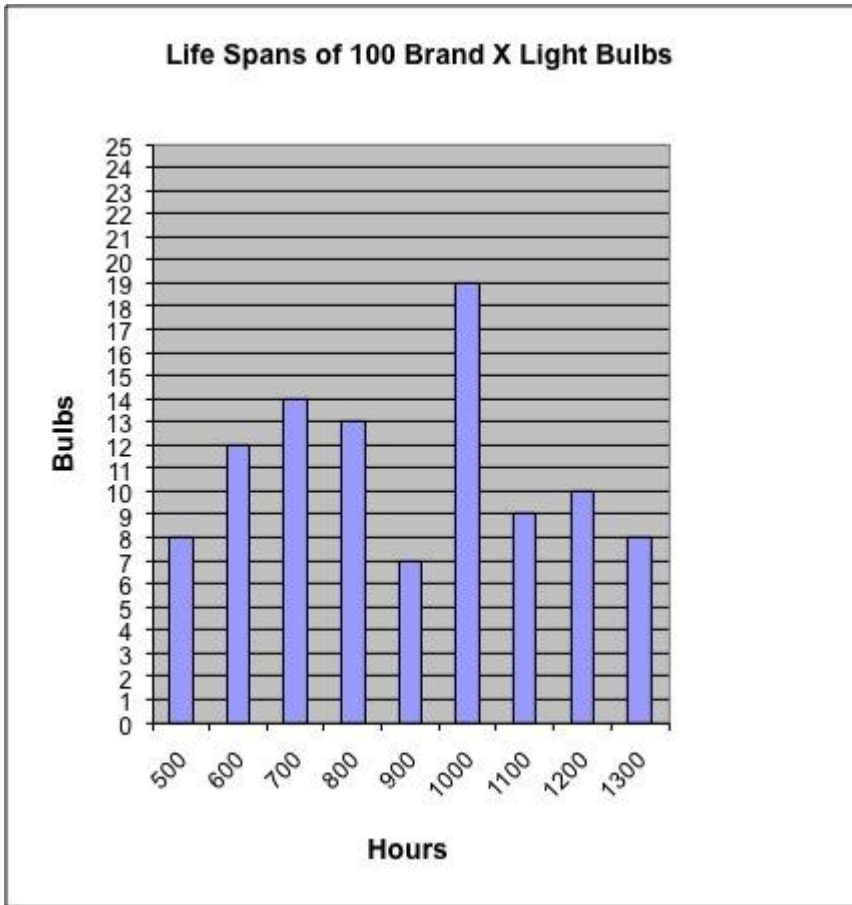**Hints:**

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans greater than or equal to 800 hours?

- Now, locate the number 800 on the chart.

453

Life Spans of 100 Brand X Light Bulbs

A bar graph titled "Life Spans of 100 Brand X Light Bulbs" with the vertical axis labeled "Bulbs" (0 to 24) and the horizontal axis labeled "Hours". The bars show:
- 700: 8
- 800: 12
- 900: 15
- 1000: 22
- 1100: 13
- 1200: 7
- 1300: 10

- Since we are looking for the sum of all the light bulbs with the duration "greater than or equal to" 800, we need to include every column starting from the duration given above (800) until the end (1300).

12+15+22+13+7+10

So the sum of the light bulbs is: 79

- Type in 79

454

%v{person} tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?
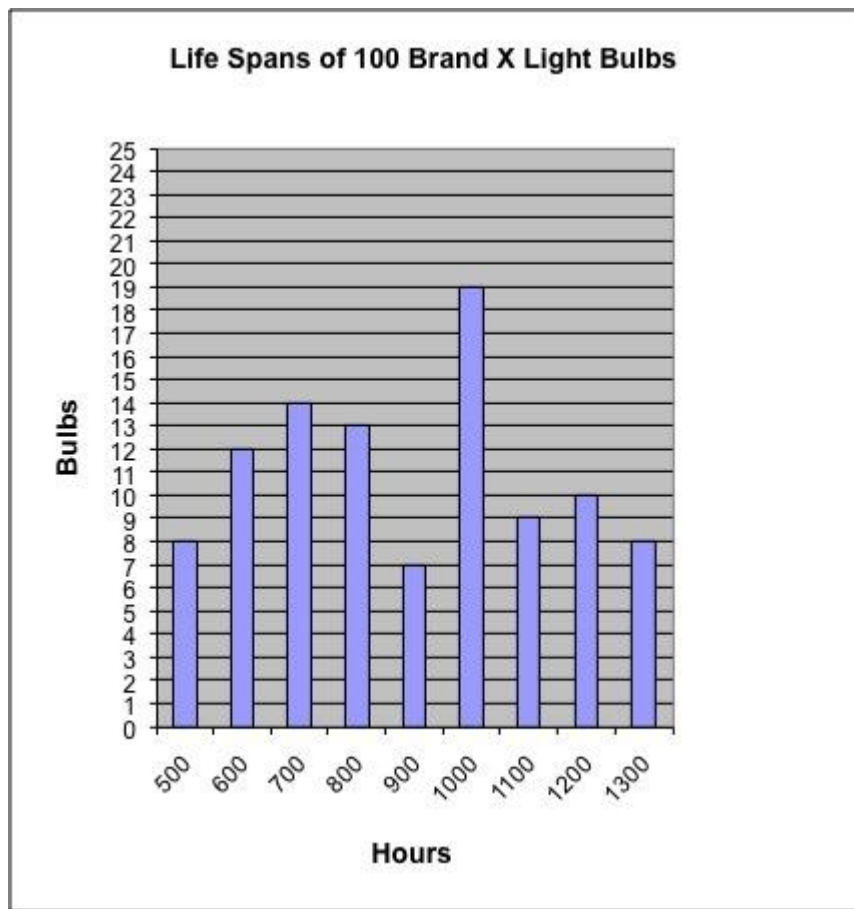
Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column from the beginning (500) until %v{duration}. %v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

456

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans less than or equal to 600 hours?

Fill in:

✓ 20

Hints:

• In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans less than or equal to 600 hours?

• Now, locate the number 600 on the chart.

Life Spans of 100 Brand X Light Bulbs

Bulbs

Hours

- Since we are looking for the sum of all the light bulbs with the duration "less than or equal to" 600, we need to include every column from the beginning (500) until 600.
8+12
So the sum of the light bulbs is: 20

- Type in 20

%v{person} tested 100 Brand X light bulbs to determine their life spans. The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?
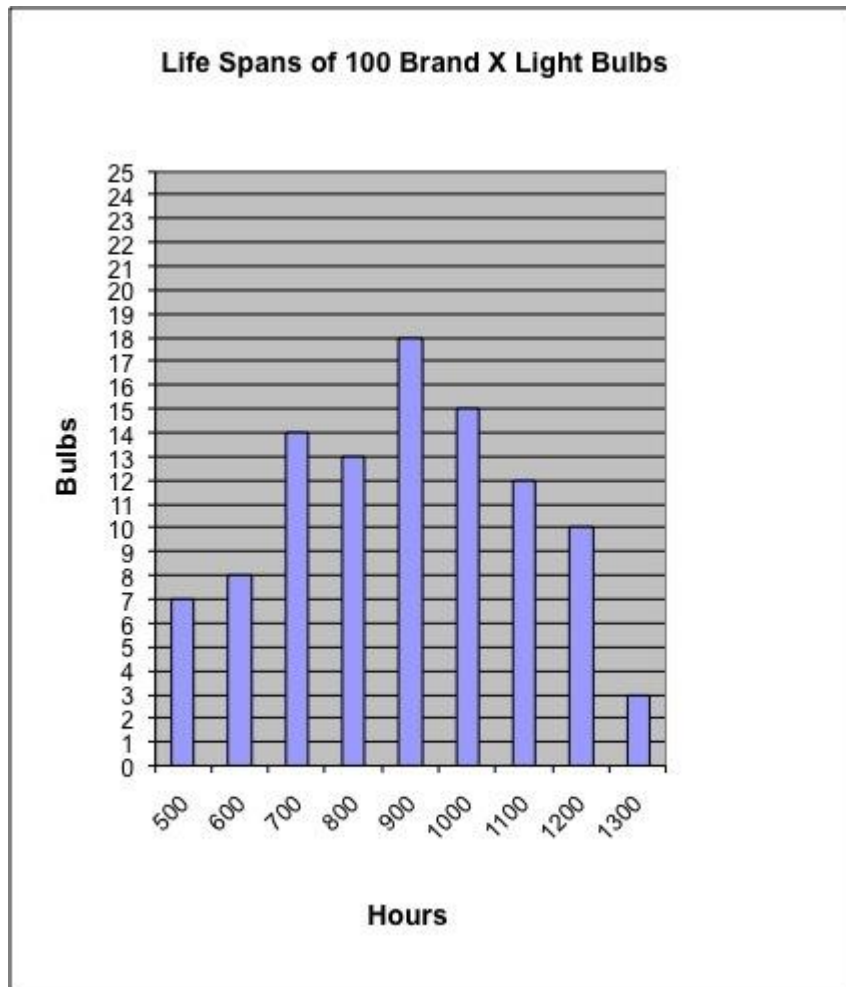
Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

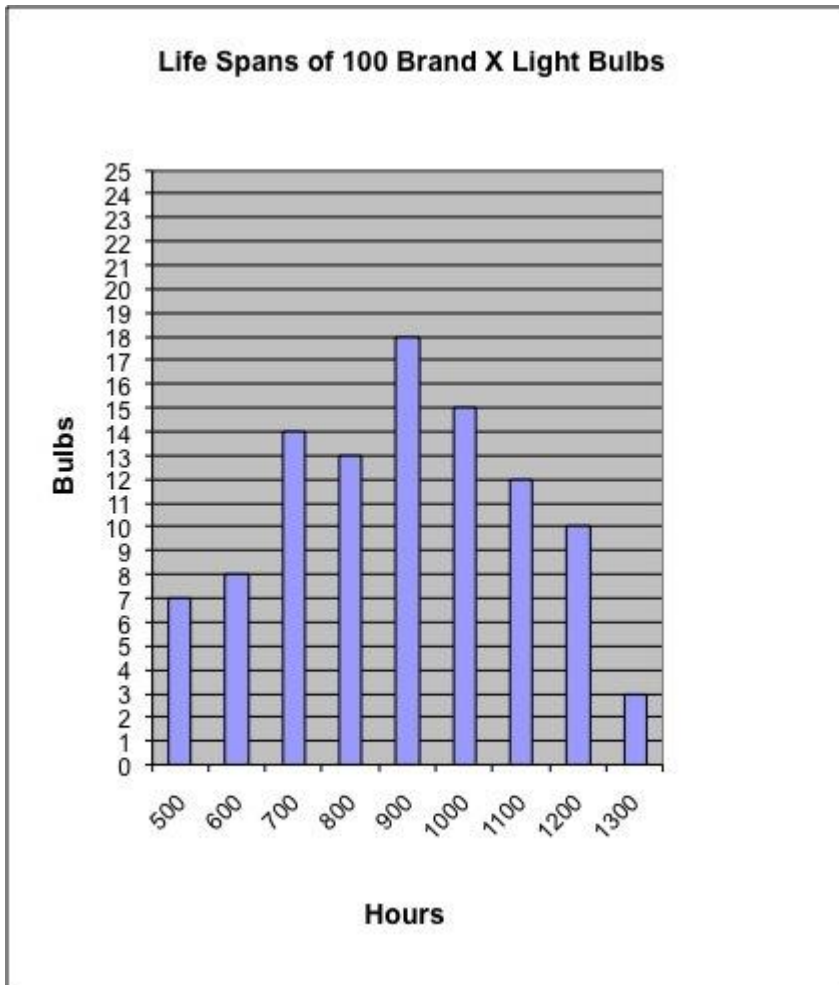What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

459

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column starting from the duration given above (%v{duration}) until the end (1300).
%v{hint1}
So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

460

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans greater than or equal to 600 hours?
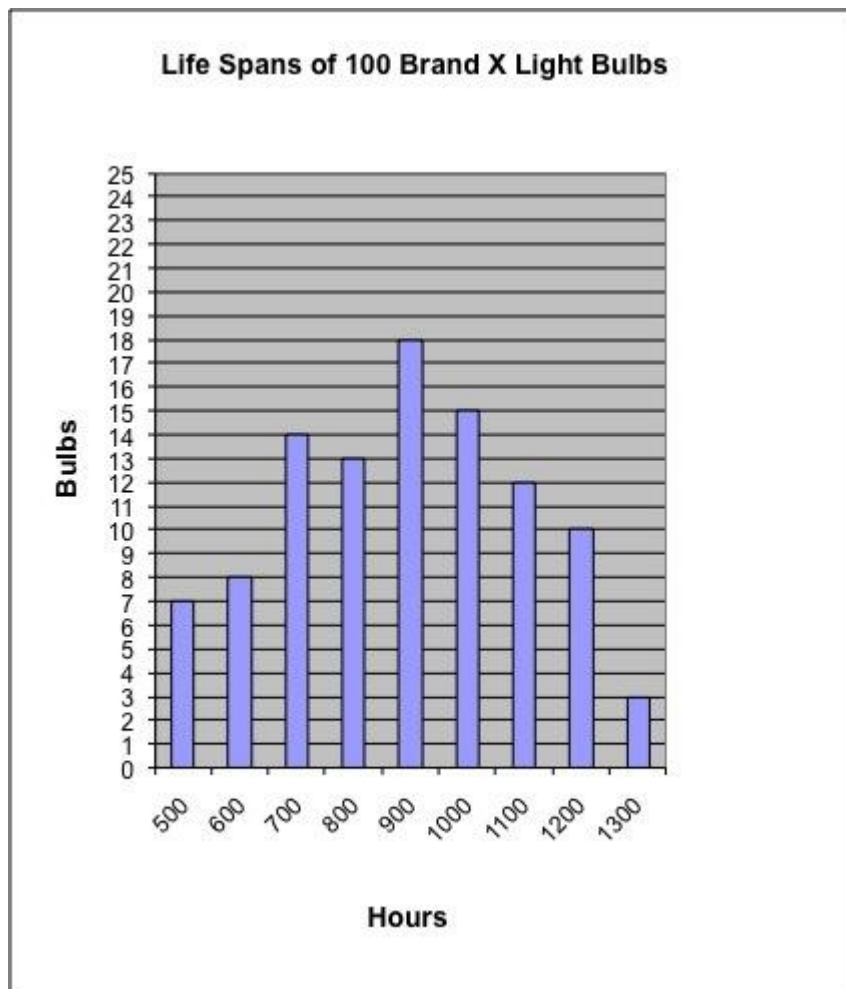
Fill in:

✓ 92

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans greater than or equal to 600 hours?

- Now, locate the number 600 on the chart.

461

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "greater than or equal to" 600, we need to include every column starting from the duration given above (600) until the end (1300).
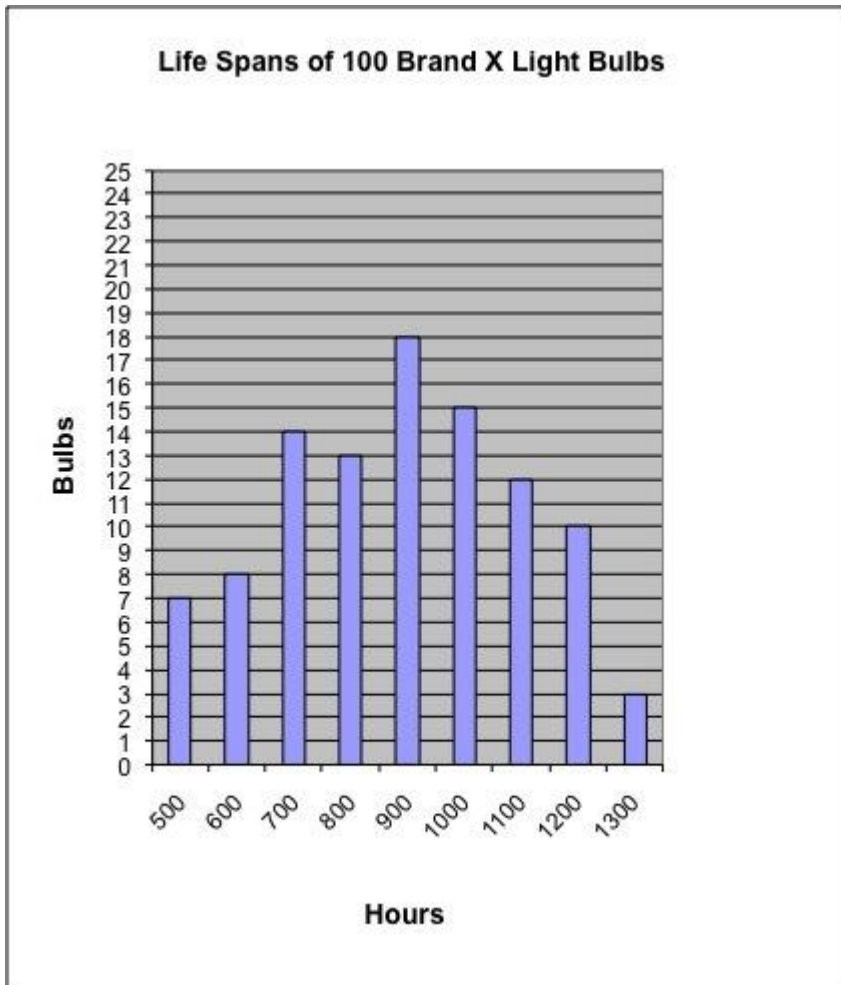
12+14+13+7+19+9+10+8

So the sum of the light bulbs is: 92

- Type in 92

Assistment #32452 "32452 - Gr.8 2007 - #13 - Histogram (<=) (Morph) - 27832"
 %v{person} tested 100 Brand X light bulbs to determine their life spans.
 The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

  What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

463

Life Spans of 100 Brand X Light Bulbs

Bulbs

25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0

500 600 700 800 900 1000 1100 1200 1300

Hours

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column from the beginning (500) until %v{duration}. %v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

What was the total number of Brand X light bulbs that had life spans less than or equal to 600 hours?
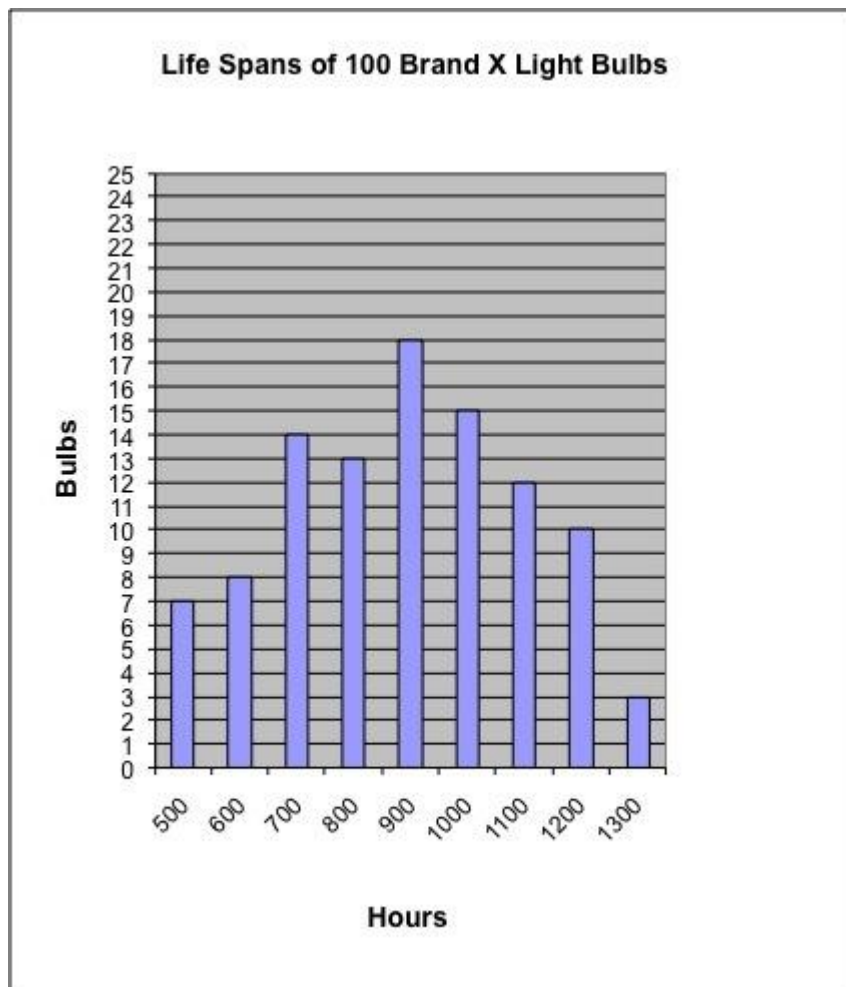
Fill in:

✓ 15

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans less than or equal to 600 hours?
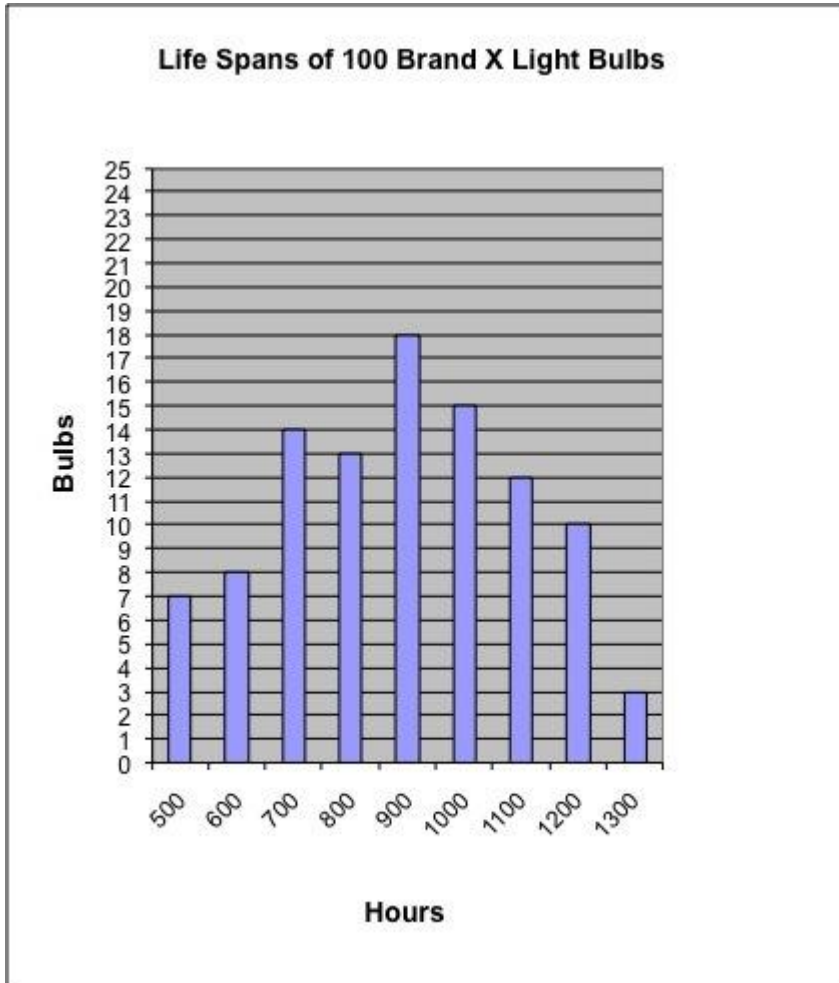
- Now, locate the number 600 on the chart.

465

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "less than or equal to" 600, we need to include every column from the beginning (500) until 600.

7+8

So the sum of the light bulbs is: 15

- Type in 15

Assistment #32454 "32454 - Gr.8 2007 - #13 - Histogram (>=) (Morph) - 27832"
%v{person} tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

Fill in:

✓ %v{hint1sum}

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans %v{type2} %v{duration} hours?

- Now, locate the number %v{duration} on the chart.

467

Life Spans of 100 Brand X Light Bulbs

- Since we are looking for the sum of all the light bulbs with the duration "%v{type2}" %v{duration}, we need to include every column starting from the duration given above (%v{duration}) until the end (1300).

%v{hint1}

So the sum of the light bulbs is: %v{hint1sum}

- Type in %v{hint1sum}

468

Abe tested 100 Brand X light bulbs to determine their life spans.
The histogram below shows the results of his test.

Life Spans of 100 Brand X Light Bulbs

What was the total number of Brand X light bulbs that had life spans greater than or equal to 600 hours?

Fill in:

✓ 93

Hints:

- In this problem it is important to pay attention to the wording of the question.

What was the total number of Brand X light bulbs that had life spans greater than or equal to 600 hours?

- Now, locate the number 600 on the chart.

Life Spans of 100 Brand X Light Bulbs
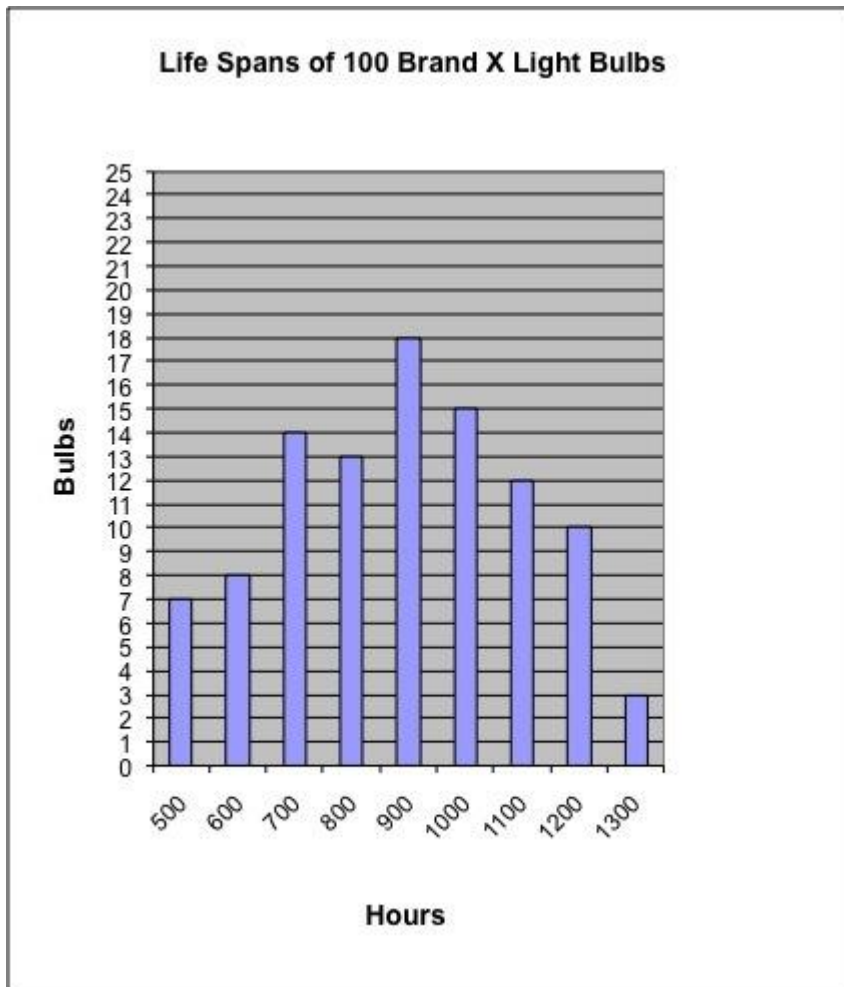
- Since we are looking for the sum of all the light bulbs with the duration "greater than or equal to" 600, we need to include every column starting from the duration given above (600) until the end (1300).
8+14+13+18+15+12+10+3
So the sum of the light bulbs is: 93

- Type in 93

470

John made a **box-and-whisker plot** on the number of chocolate bars
that he sold per week in a year.

34	36	38	40	42	44	46	48	50	52

From this plot, what is the **median** number of chocolate bars sold per week?

Algebra:

✓ 43

Hints:

- Remember, the **median** is the middle number in a set of numbers.
  And, in a **box-and-whisker plot**, the **median** is the line in the middle of the box.

- From this plot, we know that this line is between **42** and **44** on the number line.

- The **median** must be 43. So, the **median** number of chocolate bars

that John sold per week is 43.

Type in 43.

Assistment #30059 "30059 - 27763 - Box and Whisker - Median - Between 2 Numbers"

%v{name} made a **box-and-whisker plot** on the number of %v{candy}
that he sold per week in a year.

%v{v1}   %v{v1 +2}   %v{v1 +4}   %v{v1 +6}   %v{v1 +8}   %v{v1 +10}   %v{v1 +12}   %v{v1 +14}   %v{v1 +16}   %v{v1 +18}

From this plot, what is the **median** number of %v{candy} sold per week?

Algebra:

✓ %v{ans}

Hints:

- Remember, the **median** is the middle number in a set of numbers.
  And, in a **box-and-whisker plot**, the **median** is the line in the middle of the box.
- From this plot, we know that this line is between **%v{v1+8}** and **%v{v1+10}** on the number line.
- The **median** must be %v{ans}. So, the **median** number of %v{candy}

that %v{name} sold per week is %v{ans}.

Type in %v{ans}.

John made a **box-and-whisker plot** on the number of chocolate chip cookies
that he sold per week in a year.

28   30   32   34   36   38   40   42   44   46

From this plot, what is the **median** number of chocolate chip cookies sold per week?

Algebra:

✓ 36

Hints:

- Remember, the **median** is the middle number in a set of numbers.
  And, in a **box-and-whisker plot**, the **median** is the line in the middle of the box.

- From this plot, we know that this line points to **36** on the number line.

- The **median** must be 36. So, the **median** number of chocolate chip cookies

  that John sold per week is 36.

    Type in 36.

Assistment #30799 "30799 - Box and Whisker - Median - Points to 1 Number"

%v{name} made a **box-and-whisker plot** on the number of %v{candy}
that he sold per week in a year.

%v{v1}   %v{v1 +2}   %v{v1 +4}   %v{v1 +6}   %v{v1 +8}   %v{v1 +10}   %v{v1 +12}   %v{v1 +14}   %v{v1 +16}   %v{v1 +18}

From this plot, what is the **median** number of %v{candy} sold per week?

Algebra:

✓ %v{num}

Hints:

- Remember, the **median** is the middle number in a set of numbers.
  And, in a **box-and-whisker plot**, the **median** is the line in the middle of the box.
- From this plot, we know that this line points to **%v{num}** on the number line.

- The **median** must be %v{num}. So, the **median** number of %v{candy}

  that %v{name} sold per week is %v{num}.

  Type in %v{num}.

John made a **box-and-whisker plot** on the number of chocolate bars
that he sold per week in a year.

| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |

From this plot, what is the **range** of the chocolate bars sold per week?

Algebra:

✔ 8

Hints:

- Remember, the **range** is the difference between the highest number and the lowest number.
- In a **box-and-whisker plot**, the two endpoints represent the lowest number and the highest number.

The first point is the lowest number, and the last point is the highest number.

- From this plot, we know that the lowest number is **42**, and the highest number is **50**.

Now we just have to find the difference between these two numbers to get the **range**.

- **50** - **42** = 8

So, the **range** of the chocolate bars that John sold per week is 8.

Type in 8.

Assistment #30060 "30060 - 27764 - Box and Whisker - Range"

%v{name} made a **box-and-whisker plot** on the %v{candy1}
that he sold per week in a year.

$$\%v\{v1\} \quad \begin{matrix} \%v\{v1 \\ +v2\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*2\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*3\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*4\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*5\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*6\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*7\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*8\} \end{matrix} \quad \begin{matrix} \%v\{v1 \\ +v2*9\} \end{matrix}$$

From this plot, what is the **range** of the %v{candy2} sold per week?

Algebra:

✔️ %v{ans}

Hints:

- Remember, the **range** is the difference between the highest number and the lowest number.
- In a **box-and-whisker plot**, the two endpoints represent the lowest number and the highest number.

The first point is the lowest number, and the last point is the highest number.

- From this plot, we know that the lowest number is **%v{low}**, and the highest number is **%v{high}**.

Now we just have to find the difference between these two numbers to get the **range**.

- **%v{high}** - **%v{low}** = %v{ans}

So, the **range** of the %v{candy2} that %v{name} sold per week is %v{ans}.

Type in %v{ans}.

8.7 Variables and Patterns

8.7.1 Variables and Patterns Problem sets

Problem Set "7th Grade Variables and Patterns Test v1.0 With Tutoring(8 items)"

id:[5548]

1) Assistment #28817 "28817 - #3 Variables and Patterns, Investigation 1 morph"

Mr. Gamache's 8th grade class is collecting canned food for the homeless.

This table shows how many cans were brought in each day.

What was the total number of cans at the end of the 6th day?

Day	Canned food donated that day
0	0
1	23
2	18
3	29
4	32
5	12
6	45
7	27

Hints:

- You need to add up the number of canned food brought in each day until the end of the 6th day.

Day	Canned food donated that day
0	0
1	23
2	18
3	29
4	32
5	12
6	45
7	27

- $0 + 23 + 18 + 29 + 32 + 12 + 45 = ?$
- The correct answer is 159. Enter 159

2) Assistment #28818 "28818 - Variables and Patterns 12335 Morph"

Mr. Gamache's 8th grade class is collecting canned food for the homeless.

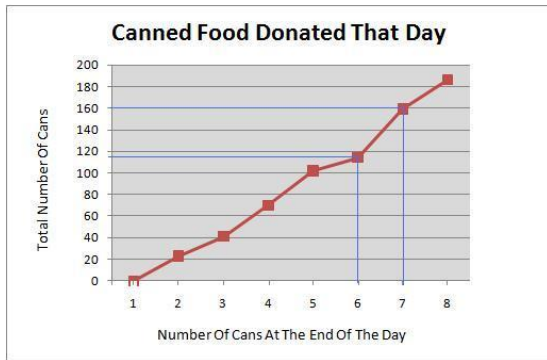What day were the most cans brought in?
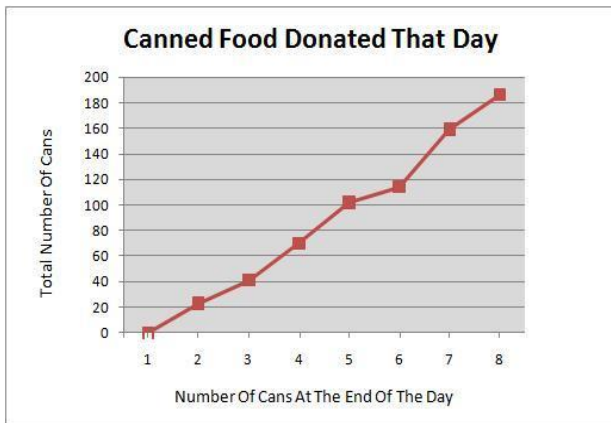
Hints:

- Look to see which day, the largest change happened.

- Here is a hint. Look at this figure. Between the beginning of Day 6 and end of Day 6 there was a very small changed in the number of cans. So between the beginning and end of which day did the largest change happen?
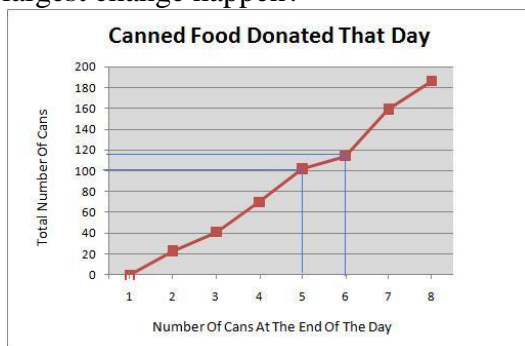
- Which portion of the line is the steepest? That represents the day in which there was the largest change in the number of cans.

- The difference between the number of cans from the end of Day 6 to the end of Day 7 is over 40. You can tell this by looking at how steep the line is.

Canned Food Donated That Day

- The most cans were brought in on Day 7. Select Day 7.

---

3) Assistment #28816 "28816 - Variables and Patterns 12430 Morph"

Mr. Gamache's class is going to sell Candy bars at the school football game. They used this table to decide how much to sell their candy bars for. What price would give them the most income?

	Projected Candy Bar Sale Income				
Price per candy bar ($)	0.5	1	1.5	2	2.5
Number of candy bars they would sell	200	165	100	60	30
Projected income ($)	100	165	150	120	75

Hints:

- Look at the row for Projected Income. What is the largest value?
- The largest value is 165.

	Projected Candy Bar Sale Income				
Price per candy bar ($)	0.5	1	1.5	2	2.5
Number of candy bars they would sell	200	165	100	60	30
Projected income ($)	100	165	150	120	75

- Look up the **column** with 165 and find the **row** with the price per candy bar.

	Projected Candy Bar Sale Income				
Price per candy bar ($)	0.5	1	1.5	2	2.5
Number of candy bars they would sell	200	165	100	60	30
Projected income ($)	100	165	150	120	75

- The answer is 1, because 1 dollar per candy bar generates 165 dollars total. Enter 1

---

4) Assistment #28815 "28815 - Variables and Patterns 12372 Morph"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?

479

y = 5x + 25

x		2	5	10	15	32	64
y					■		

Hints:

- Substitute 15 for x in the equation

y = 5X+ 25

- **y = 5X+ 25**

y=5*15 +25

Multiply 5 by 15 and add 25 to the product

- **y = 5X+ 25**

y=5*15 +25

y=75 +25   Solve for Y by adding all terms to the right of the equal sign

y=100
The missing value in the table is 100

---

5) Assistment #28865 "28865 - Variables and Patterns 27897 Morph"

A) John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

```
[                    ]
```

Hints:

- John starts out with 75 dollars. So the expression should start with 75.

- Every week he adds 8 dollars. So you should multiply the number of weeks, w, by 8: 8w
- Now put the 2 expressions together: 75 + 8w
- The correct answer is t = 75 + 8w. Please enter 75 + 8w .

B) John wants to buy a new toy car. He has $75 already saved up.
In order to save enough for the new toy car he is going to add $8 a week to
his savings. How many dollars will he have in total after 4 weeks?

B) John wants to buy a new toy car. He has $75 already saved up.
In order to save enough for the new toy car he is going to add $8 a week to
his savings. How many dollars will he have in total after 4 weeks?

```
[                    ]
```

Hints:

- Use the equation t = 75 + 8w, where t is the total in dollars and w is the number of weeks.
- Substitute 4 in for w, since you need the total after 4 weeks.

t = 75 + 8 * 4

- First multiply 8 * 4, then add the answer to 75, to find the total.
t = 75 + 8 * 4
t = 75 + 32
- The total is 107 dollars. Enter 107.

6) Assistment #28811 "28811 - Variables and Patterns Make a graph from a table Morph"

This problem is to be done on paper and will be graded by your teacher.

The table below shows the price of DvDs and the number of DvDs sold

481

at a movie store. Make and label a coordinate graph of the data.

Total Cost ($)	7	14	21	28	35
Number of DvDs	1	2	3	4	5

<input box>

7) Assistment #28810 "28810 - Variables and Patterns 12374 Morph"

John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

<input box>

Hints:

- John starts out with 75 dollars. So the expression should start with 75.
- Every week he adds 8 dollars. So you should multiply the number of weeks, w, by 8: 8w
- Now put the 2 expressions together: 75 + 8w
- The correct answer is t = 75 + 8w. Please enter 75 + 8w .

8) Assistment #28808 "28808 - Variables and Patterns Inv3 #2 morph"

John wants to buy a new toy car. He has $75 already saved up.

482

In order to save enough for the new toy car he is going to add $8 a week to his savings. How many dollars will he have in total after 4 weeks?

Hints:

- First let's find out how much money he will accumulate over 4 weeks

$8 per week * 4 weeks = $32

- Now let's add the money he accumulated to that he already has.
$32 + $75 =?

- $32 + $75 = $107
John will have $107 after 4 weeks. Please enter 107.

Problem Set "7th Grade Variables and Patterns Test v1.0 Without Tutoring(8 items)"

id:[5549]

1) Assistment #28817 "28817 - #3 Variables and Patterns, Investigation 1 morph"

Mr. Gamache's 8th grade class is collecting canned food for the homeless.

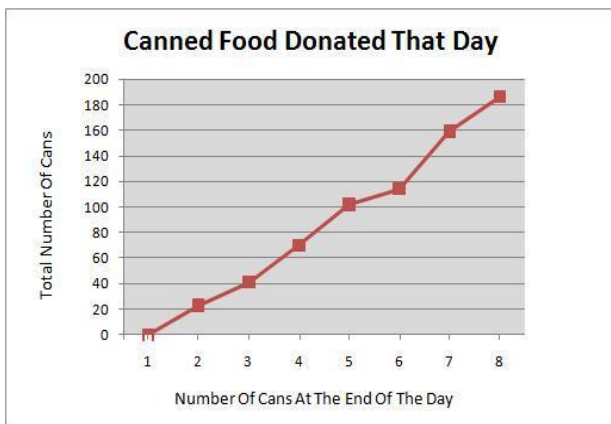This table shows how many cans were brought in each day.

What was the total number of cans at the end of the 6th day?

Day	Canned food donated that day
0	0
1	23
2	18
3	29
4	32
5	12
6	45
7	27

2) Assistment #28818 "28818 - Variables and Patterns 12335 Morph"

Mr. Gamache's 8th grade class is collecting canned food for the homeless.

What day were the most cans brought in?

484

3) Assistment #28816 "28816 - Variables and Patterns 12430 Morph"

Mr. Gamache's class is going to sell Candy bars at the school football game. They used this table to decide how much to sell their candy bars for. What price would give them the most income?

Projected Candy Bar Sale Income					
Price per candy bar ($)	0.5	1	1.5	2	2.5
Number of candy bars they would sell	200	165	100	60	30
Projected income ($)	100	165	150	120	75

4) Assistment #28815 "28815 - Variables and Patterns 12372 Morph"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 5x + 25

x	2	5	10	15	32	64
y				⬛		

5) Assistment #28865 "28865 - Variables and Patterns 27897 Morph"

A) John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

485

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

[ ]

B) John wants to buy a new toy car. He has $75 already saved up.
In order to save enough for the new toy car he is going to add $8 a week to his savings. How many dollars will he have in total after 4 weeks?

[ ]

---

6) Assistment #28811 "28811 - Variables and Patterns Make a graph from a table Morph"

This problem is to be done on paper and will be graded by your teacher.

The table below shows the price of DvDs and the number of DvDs sold at a movie store. Make and label a coordinate graph of the data.

Total Cost ($)	7	14	21	28	35
Number of DvDs	1	2	3	4	5

7) Assistment #28810 "28810 - Variables and Patterns 12374 Morph"

John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

486

8) Assistment #28808 "28808 - Variables and Patterns Inv3 #2 morph"

John wants to buy a new toy car. He has $75 already saved up.

In order to save enough for the new toy car he is going to add $8 a week to

his savings. How many dollars will he have in total after 4 weeks?

Problem Set "7th Grade Variables and Patterns Post-Test v1.1 With Tutoring(8 items)"

id:[5871]

1) Assistment #31055 "31055 - 28808 - Variables and Patterns Inv3 #2 morph"

Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to

his savings. How many dollars will he have in total after 5 weeks?

[   ]

Hints:

- First let's find out how much money he will accumulate over 5 weeks

$13 per week * 5 weeks = $65

- Now let's add the money he accumulated to that he already has.
$65 + $97 =?

- $65 + $97 = $162
Mike will have $162 after 5 weeks. Type in 162.

---

2) Assistment #31056 "31056 - 28810 - Variables and Patterns 12374 Morph"

Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

488

it.

[ ]

Hints:

- Mike starts out with 97 dollars. So the expression should start with 97.
- Every week he adds 13 dollars. So you should multiply the number of weeks, w, by 13: 13w
- Now put the 2 expressions together: 97 + 13w
- The correct answer is t = 97 + 13w. Type in 97 + 13w .

---

3) Assistment #31057 "31057 - 28811 - Variables and Patterns Make a graph from a table

Morph"

This problem is to be done on paper and will be graded by your teacher.

The table below shows the price of DvDs and the number of DvDs sold at a movie store. Make and label a coordinate graph of the data.

Total Cost($)	16	34	52	67	103
Number of DvDs	1	3	5	7	10

[ ]

---

4) Assistment #31058 "31058 - 28815 - Variables and Patterns 12372 Morph"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 4x + 56

x	4	9	18	34	58	64
y						

[ ]

Hints:

- Substitute 34 for x in the equation

y = 4X+ 56

- **y = 4X+ 56**

489

y=4*34 +56

Multiply 4 by 34 and add 56 to the product

- **y = 4X+ 56**

y=4*34 +56

y=136 +56   Solve for Y by adding all terms to the right of the equal sign

y=192
The missing value in the table is 192

---

5) Assistment #31059 "31059 - 28816 - Variables and Patterns 12430 Morph"

Mr. Moto's class is going to sell burgers at the school soccer game. They used this table to decide how much to sell their burgers for. What price would give them the most income?

Price per burger ($)		.75	1.25	1.75	2.25	2.75
Number of burgers they would sell		150	120	95	75	40
Projected income ($)		112.5	150	166.25	168.75	110

Hints:

- Look at the row for Projected Income. What is the largest value?
- The largest value is 168.75.

Price per burger ($)	.75	1.25	1.75	2.25	2.75
Number of burgers they would sell	150	120	95	75	40
Projected income ($)	112.5	150	166.25	168.75	110

- Look up the **column** with 168.75 and find the **row** with the price per burger.

Price per burger ($)		.75	1.25	1.75	2.25	2.75
Number of burgers they would sell		150	120	95	75	40
Projected income ($)		112.5	150	166.25	168.75	110

- The answer is 2.25, because 2.25 dollar per burger generates 168.75 dollars total. Enter 2.25

490

6) Assistment #31060 "31060 - 28817 - #3 Variables and Patterns, Investigation 1 morph"

Mrs. Miller's 8th grade class is collecting clothes for the Salvation Army.

This table shows how many clothes were brought in each day.
What was the total number of clothes at the end of the 7th day?

Day	Clothes donated that day
1	6
2	13
3	9
4	28
5	32
6	12
7	3

Hints:

- You need to add up the number of canned food brought in each day until the end of the 7th day.

Day	Clothes donated that day
1	6
2	13
3	9
4	28
5	32
6	12
7	3

- 6 + 13 + 9 + 28 + 32 + 12 + 3 = ?
- The correct answer is 103. Enter 103

7) Assistment #31180 "31180 - 28818 - Variables and Patterns 12335 Morph"

491

Mrs. Miller's 8th grade class is collecting clothes for the Salvation Army.

What day were the most clothes brought in?

[   ]

Hints:

- Look to see which day, the largest change happened.
- Here is a hint. Look at this figure. Between the end of Day 5 and end of Day 6 there was a very small changed in the number of clothes. So on which day did the largest change happen?

- Which portion of the line is the steepest? That represents the day in which there was the largest change in the number of clothes.
- The greatest difference between the number of clothes is from the end of Day 1 to the end of Day 2. You can tell this by looking at how steep the line is.

492

- The most cans were brought in on Day 7. Select Day 7.

---

8) Assistment #31181 "31181 - 28865 - Variables and Patterns 27897 Morph"

A) Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

[ ]

Hints:
- Mike starts out with 97 dollars. So the expression should start with 97.
- Every week he adds 13 dollars. So you should multiply the number of weeks, w, by 13: 13w
- Now put the 2 expressions together: 97 + 13w
- The correct answer is t = 97 + 13w. Type in 97 + 13w .

B) Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to

his savings. How many dollars will he have in total after 5 weeks?

[ ]

493

Hints:

- Use the equation t = 97 + 13w, where t is the total in dollars and w is the number of weeks.
- Substitute 5 in for w, since you need the total after 5 weeks.

t = 97 + 13 *5

- First multiply 13 * 5, then add the answer to 97, to find the total.

t = 97 + 13 *5

t = 97 + 65

- The total is 162 dollars. Enter 162.

Problem Set "7th Grade Variables and Patterns Post-Test v1.1 With Tutoring(8 items)"

id:[5872]

1) Assistment #31055 "31055 - 28808 - Variables and Patterns Inv3 #2 morph"

Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to

his savings. How many dollars will he have in total after 5 weeks?

[   ]

2) Assistment #31056 "31056 - 28810 - Variables and Patterns 12374 Morph"

Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

[   ]

3) Assistment #31057 "31057 - 28811 - Variables and Patterns Make a graph from a table

Morph"

  This problem is to be done on paper and will be graded by your teacher.

495

The table below shows the price of DvDs and the number of DvDs sold
at a movie store. Make and label a coordinate graph of the data.

Total Cost($)	16	34	52	67	103
Number of DvDs	1	3	5	7	10

4) Assistment #31058 "31058 - 28815 - Variables and Patterns 12372 Morph"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 4x + 56

x	4	9	18	34	58	64
y						

5) Assistment #31059 "31059 - 28816 - Variables and Patterns 12430 Morph"

Mr. Moto's class is going to sell burgers at the school soccer game. They used this table to decide how
much to sell their burgers for. What price would give them the most income?

Price per burger ($)	.75	1.25	1.75	2.25	2.75
Number of burgers they would sell	150	120	95	75	40
Projected income ($)	112.5	150	166.25	168.75	110

6) Assistment #31060 "31060 - 28817 - #3 Variables and Patterns, Investigation 1 morph"

Mrs. Miller's 8th grade class is collecting clothes for the Salvation Army.

This table shows how many clothes were brought in each day.
What was the total number of clothes at the end of the 7th day?

Day	Clothes donated that day

496

1	6
2	13
3	9
4	28
5	32
6	12
7	3

[   ]

---

7) Assistment #31180 "31180 - 28818 - Variables and Patterns 12335 Morph"

Mrs. Miller's 8th grade class is collecting clothes for the Salvation Army.

What day were the most clothes brought in?

[   ]

8) Assistment #31181 "31181 - 28865 - Variables and Patterns 27897 Morph"

A) Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

497

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

[   ]

B) Mike wants to buy a new computer. He has $97 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings. How many dollars will he have in total after 5 weeks?

[   ]

8.7.2 Variables and Patterns Mastery Learning

Mastery Learning 28817 Variables and Patterns Table

id:[5915]

1) Assistment #31715 "31715 - Pattern Finding - Annual Salary"

John wants to work for a company near his hometown. However before he does that, John wants to first find out how much he will make once he completes **4 years** of service.

Below is a table showing annual salaries of employees of this company based on the number of years that person has been working there. So according to this table, how much money would John make after working for **4 years**?

Years of Employment	Annual Salary
8	$68000
9	$70800
10	$73600
11	$76400
12	$79200

---

2) Assistment #31745 "31745 - 30797 - 28817 Variablized Morph(Version 1)"

Mr. Motta's 8th grade class is collecting cans for the Salvation Army.

This table shows how many cans were brought in each day.
What was the total number of cans at the end of the 6th day?

Day	Cans donated that day
0	0
1	14
2	23

499

3	53
4	57
5	24
6	26
7	23

3) Assistment #31835 "31835 - 30919 - 28817 Variablized Morph(Version 4)"

Mrs. Onweagba's 10th grade class is collecting cans for the Salvation Army.

This table shows how many cans were brought in each day.
What was the total number of cans brought in on the 6th day?

Day	Cans donated that day
0	0
1	9
2	25
3	46
4	54
5	10
6	33
7	36

Assistment #30036 "30036 - Pattern Finding - Annual Salary"

%v{name} wants to work for a company near his hometown. However before he does that, %v{name} wants to first find out how much he will make once he completes **%v{v4} years** of service.

Below is a table showing annual salaries of employees of this company based on the number of years that person has been working there. So according to this table, how much money would %v{name} make after working for **%v{v4} years**?

500

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

Algebra:

✓ %v{ans}

Scaffold:

First, let's start by looking at the difference in salary between **%v{v1} years** and **%v{v1 + 1} years**.

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

How much did the salary increase between **%v{v1} years** of employment and **%v{v1 + 1} years** of employment?

Algebra:

✓ %v{v6}

Hints:

- Remember, the annual salary for **%v{v1} years** of employment is $%v{v5} and the annual salary for **%v{v1 + 1}** years of employment is $%v{v5 + v6}.

- So, we have to subtract $%v{v5} from $%v{v5 + v6} to get the amount of salary increase between these two years.

- $%v{v5 + v6} - $%v{v5}
$%v{v5 + v6} - $%v{v5} = $%v{v6}

The amount of salary increase between **%v{v1} years** of employment and **%v{v1 + 1}** years of employment is $%v{v6}.

    Type in %v{v6}.

Scaffold:

Years of Employment	Annual Salary	
%v{v1}	$%v{v5}	+$%v{v6}
%v{v1 + 1}	$%v{v5 + v6}	+$%v{v6}
%v{v1 + 2}	$%v{v5 + v6*2}	+$%v{v6}
%v{v1 + 3}	$%v{v5 + v6*3}	+$%v{v6}
%v{v1 + 4}	$%v{v5 + v6*4}	

We can see that this pattern continues. Now use this pattern to determine the salary at **%v{v4} years**.

What is the salary at **%v{v4} years**?

Algebra:

✓ %v{ans}

Hints:

- The difference between **%v{v1} years** and **%v{v4} years** is **%v{v1 - v4} years**.

- We have to subtract $%v{v6} from $%v{v5} **%v{v1 - v4} times**.

- $%v{v5} - $%v{v6} (**%v{v1 - v4} times**) = $%v{ans}

So, %v{name} will get an annual salary of $%v{ans} once he completes **%v{v4} years** of employment.

    Type in %v{ans}.

Assistment #30797 "30797 - 28817 Variablized Morph(Version 1)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 6th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 6th day?
Remeber the question is asking for the total by the end of day 6.

- You need to add up the number of canned food brought in each day until the end of the 6th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} + %v{v6} = ?

- The sum is %v{answer}. Enter %v{answer}

Assistment #30800 "30800 - 28817 Variablized Morph(Version 3)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 7th day?

503

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Algebra:

✔ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 7th day?
Remember the question is asking for the total by the end of day 7.

- You need to add up the number of canned food brought in each day until the end of the 7th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} + %v{v6} +%v{v7} = ?

- The sum is %v{answer}. Enter %v{answer}

Assistment #30801 "30801 - 28817 Variablized Morph(Version 2)"

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 5th day?

Fill in:

✓ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 5th day?
Remeber the question is asking for the total by the end of day 5.

- You need to add up the number of canned food brought in each day until the end of the 5th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} = ?
- The correct answer is %v{answer}. Enter %v{answer}

Assistment #30919 "30919 - 28817 Variablized Morph(Version 4)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 6th day?

505

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓ %v{v6}

Hints:

- What was the total number of %v{items} brought in **on** the 6th day?
Remeber the question is asking for the total brought in on the 6th day.

- The 6th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v6} %v{items} were brought in on the 6th day. Type in %v{v6}

Assistment #30921 "30921 - 28817 Variablized Morph(Version 5)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

506

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 5th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓   %v{answer}

Hints:

- What was the total number of %v{items} brought in **on** the 5th day?
Remeber the question is asking for the total by the end of day 5.

- The 5th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v5} %v{items} were brought in on the 5th day. Type in %v{v5}

Assistment #30922 "30922 - 28817 Variablized Morph(Version 6)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

507

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 7th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Algebra:

✓ %v{answer}

Hints:

- What was the total number of %v{items} brought in **on** the 7th day?
Remeber the question is asking for the total brought in on day 7.

- The 7th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v7} %v{items} were brought in on the 7th day. Type in %v{v7}.

Mastery Learning 28817 Variables and Patterns Addition Whole Numbers

id:[5924]

1) Assistment #32118 "32118 - 30336 - Addition Of Whole Numbers"

What is 13 + 25 + 39 + 59 + 34 + 33?

2) Assistment #32119 "32119 - 30336 - Addition Of Whole Numbers"

What is 10 + 26 + 53 + 47 + 25 + 16?

3) Assistment #32120 "32120 - 30336 - Addition Of Whole Numbers"

What is 13 + 20 + 48 + 59 + 28 + 31?

Assistment #30336 "30336 - Addition Of Whole Numbers"

What is %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} + %v{v6}?

Fill in:

✓ %v{v1+v2+v3+v4+v5+v6}

Hints:

- Start by adding just two numbers at once.

In this example we will add the like colored numbers together, normally a better option is to add two numbers that go together well. Such as 7 + 3 =10.

%v{v1} + %v{v2} + %v{v3} +
%v{v4} + %v{v5} + %v{v6}   =

? + ? + ?   =

-

%v{v1} + %v{v2} + %v{v3} + =
%v{v4} + %v{v5} + %v{v6}

%v{v1+v2} +%v{v3+v4} +   =
        %v{v5+v6}

        ? + ?   =

Now you are left with three numbers add the first two together to make the equation easier.

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5}
+ %v{v6}   =

%v{v1+v2} + %v{v3+v4} + %v{v5+v6}   =

%v{v1+v2+v3+v4} + %v{v5+v6}   =?

-

    %v{v1} + %v{v2} +   =
    %v{v3} + %v{v4} +
     %v{v5} + %v{v6}
        %v{v1+v2} +   =
        %v{v3+v4} +
          %v{v5+v6}
   %v{v1+v2+v3+v4} +   = %v{v1+v2+v3+v4+v5+v6}
        %v{v5+v6}

The sum is %v{v1+v2+v3+v4+v5+v6}. Type in %v{v1+v2+v3+v4+v5+v6}.

510

Mastery Learning 28816 Variables and Patterns Table

id:[5925]

1) Assistment #32149 "32149 - Pattern Finding - Annual Salary"

Tony wants to work for a company near his hometown. However before

he does that, Tony wants to first find out how much he will make once

he completes **4 years** of service.

Below is a table showing annual salaries of employees of this company based on

the number of years that person has been working there. So according to this

table, how much money would Tony make after working for **4 years**?

Years of Employment	Annual Salary
5	$16000
6	$17600
7	$19200
8	$20800
9	$22400

2) Assistment #32150 "32150 - Pattern Finding - Annual Salary"

Jeff wants to work for a company near his hometown. However before
he does that, Jeff wants to first find out how much he will make once
he completes **3 years** of service.

Below is a table showing annual salaries of employees of this company based on
the number of years that person has been working there. So according to this
table, how much money would Jeff make after working for **3 years**?

Years of Employment	Annual Salary
7	$84000
8	$85200
9	$86400
10	$87600
11	$88800

Assistment #30036 "30036 - Pattern Finding - Annual Salary"

%v{name} wants to work for a company near his hometown. However before he does that, %v{name} wants to first find out how much he will make once he completes **%v{v4} years** of service.

Below is a table showing annual salaries of employees of this company based on the number of years that person has been working there. So according to this table, how much money would %v{name} make after working for **%v{v4} years**?

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

Algebra:

✔ %v{ans}

Scaffold:

First, let's start by looking at the difference in salary between **%v{v1} years** and **%v{v1 + 1} years**.

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

How much did the salary increase between **%v{v1} years** of employment and **%v{v1 + 1} years** of employment?

Algebra:

✔ %v{v6}

Hints:

- Remember, the annual salary for **%v{v1} years** of employment is $%v{v5}

513

and the annual salary for **%v{v1 + 1}** years of employment is $%v{v5 + v6}.

- So, we have to subtract $%v{v5} from $%v{v5 + v6} to get the amount of salary increase between these two years.

- $%v{v5 + v6} - $%v{v5}
$%v{v5 + v6} - $%v{v5} = $%v{v6}

The amount of salary increase between **%v{v1} years** of employment and **%v{v1 + 1}** years of employment is $%v{v6}.

Type in %v{v6}.

Scaffold:

Years of Employment	Annual Salary	
%v{v1}	$%v{v5}	+$%v{v6}
%v{v1 + 1}	$%v{v5 + v6}	+$%v{v6}
%v{v1 + 2}	$%v{v5 + v6*2}	+$%v{v6}
%v{v1 + 3}	$%v{v5 + v6*3}	+$%v{v6}
%v{v1 + 4}	$%v{v5 + v6*4}	

We can see that this pattern continues. Now use this pattern to determine the salary at **%v{v4} years**.

What is the salary at **%v{v4} years**?

Algebra:

✓ %v{ans}

Hints:

- The difference between **%v{v1} years** and **%v{v4} years** is **%v{v1 - v4} years**.

- We have to subtract $%v{v6} from $%v{v5} **%v{v1 - v4} times**.

- $%v{v5} - $%v{v6} (**%v{v1 - v4} times**) = $%v{ans}

So, %v{name} will get an annual salary of $%v{ans} once he completes **%v{v4} years** of employment.

Type in %v{ans}.

514

Mastery Learning 28865 Variables and Patterns Evaluating Functions

id:[5926]

1) Assistment #32179 "32179 - Pattern Finding - Selling Lemonades"

Jason wants to earn some money by selling cups of lemonade. On his first day, Jason

sold 12 cups. However, for each day after the first day, Jason only sold 4 cups.

So, at this rate, how many cups of lemonade in total would Jason have sold after

the 15th day?

<div>[   ]</div>

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2) Assistment #32180 "32180 - Pattern Finding - Selling Lemonades"

Jason wants to earn some money by selling cups of lemonade. On his first day, Jason

sold 14 cups. However, for each day after the first day, Jason only sold 3 cups.

So, at this rate, how many cups of lemonade in total would Jason have sold after

the 11th day?

<div>[   ]</div>

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3) Assistment #37244 "37244 - 27583 - Evaluating Functions - Medium - Multiplication Followed

By Addition"

Evaluate the following for x = 6:

515

$4x + 9$

4) Assistment #37245 "37245 - 27583 - Evaluating Functions - Medium - Multiplication Followed By Addition"

Evaluate the following for $x = 6$:

$6x + 6$

_____

---

5) Assistment #37274 "37274 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for $x = 1$:

$5x - 3$

_____

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6) Assistment #37275 "37275 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for $x = 4$:

$6x - 4$

_____

Mastery Learning 28865 Variables and Patterns Writing Equation Expressions

id:[5927]

1) Assistment #32269 "32269 - Writting Equation Expressions"

Andrew wants to buy a new computer. He has $60 already saved up.

In order to save enough for the new computer he is going to add $13 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

---

2) Assistment #32270 "32270 - Writting Equation Expressions"

Jim wants to buy a new toy car. He has $77 already saved up.

In order to save enough for the new toy car he is going to add $16 a week to his savings.

517

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

[   ]

---

3) Assistment #32299 "32299 - 30416 - Writting Equation Expression (reversed)"

Jose wants to buy a new toy car.

In order to save enough for the new toy car he is going to add $18 a week to his savings.

He has already saved up $40.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

[   ]

518

Assistment #30415 "30415 - Writting Equation Expressions"

%v{names} wants to buy a new %v{items}. He has $%v{saved} already saved up.
In order to save enough for the new %v{items} he is going to add $%v{perweek} a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

Algebra:

✓ %v{saved} +%v{perweek}*w

Hints:

- %v{names} starts out with %v{saved} dollars. So the expression should start with %v{saved}.

- Every week he adds %v{perweek} dollars. So you should multiply the number of weeks, w, by %v{perweek}: %v{perweek}w

- Now put the 2 expressions together: %v{saved} + %v{perweek}w

- The correct answer is t = %v{saved} + %v{perweek}w. Please enter %v{saved} + %v{perweek}w.

Assistment #30416 "30416 - Writting Equation Expression (reversed)"

%v{names} wants to buy a new %v{items}.
In order to save enough for the new %v{items} he is going to add $%v{perweek} a week to his savings.
He has already saved up $%v{saved}.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

Algebra:

✓ %v{saved} +%v{perweek}*w

Hints:

- %v{names} starts out with %v{saved} dollars. So the expression should start with

%v{saved}.

- Every week he adds %v{perweek} dollars. So you should multiply the number of weeks, w, by %v{perweek}: %v{perweek}w

- Now put the 2 expressions together: %v{saved} + %v{perweek}w

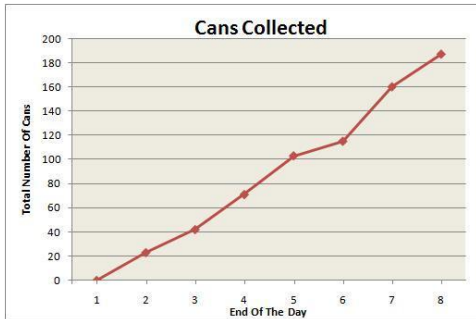- The correct answer is t = %v{saved} + %v{perweek}w. Please enter %v{saved} + %v{perweek}w.

Mastery Learning 28818 Variables and Patterns Graph-Shape

id:[5928]

1) Assistment #32330 "32330 - 30395 - Graph Slope"
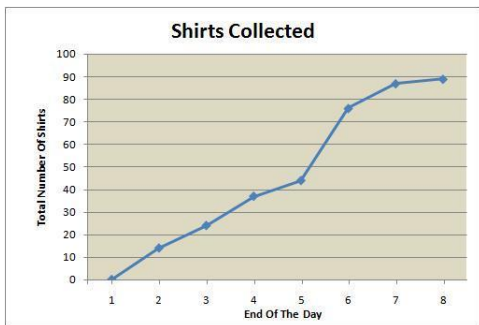
Mr. Motta's 8th grade class is collecting cans for the homeless.

What day were the most cans brought in?

---

2) Assistment #32331 "32331 - 30395 - Graph Slope"

Mrs. Miller's 7th grade class is collecting shirts for the Salvation Army.

What day were the most shirts brought in?

---

3) Assistment #32332 "32332 - 30395 - Graph Slope"
521

Mrs. Nemcoua's 9th grade class is collecting cds to raise money for their class trip.

What day were the most cds brought in?

_____
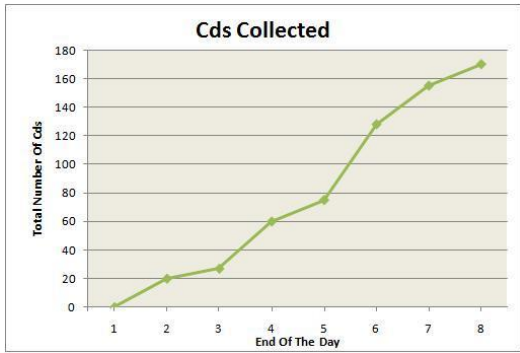
4) Assistment #32333 "32333 - 30395 - Graph Slope"

Mr. Snyder's 6th grade class is collecting clothes for the Salvation Army.

What day were the most clothes brought in?

_____

Assistment #30395 "30395 - Graph Slope"

522

%v{names} grade class is collecting %v{items} %v{forwhom}.
What day were the most %v{items} brought in?

Algebra:

✓ %v{answers}

Hints:

- Look to see which day, the largest change happened.

- Here is a hint. Look at this figure. Between the end of Day %v{smallchange-1} and end of Day %v{smallchange} there was a very small changed in the number of %v{items}. So on which day did the largest change happen?

- Which portion of the line is the steepest? That represents the day in which there was the largest change in the number of %v{items}.

- The greatest difference between the number of %v{items} is from the end of Day %v{answers-1} to the end of Day %v{answers}. You can tell this by looking at how steep the line is.

- The most %v{items} were brought in on Day %v{answers} . Enter %v{answers} .

Mastery Learning 28815 Variables and Patterns Evaluating Functions

id:[5929]

1) Assistment #32361 "32361 - Pattern Finding - Selling Lemonades"

Jason wants to earn some money by selling cups of lemonade. On his first day, Jason

sold 14 cups. However, for each day after the first day, Jason only sold 3 cups.

So, at this rate, how many cups of lemonade in total would Jason have sold after

the 13th day?

---

2) Assistment #37304 "37304 - 27583 - Evaluating Functions - Medium - Multiplication Followed

By Addition"

Assistment #37304 "37304 - 27583 - Evaluating Functions - Medium - Multiplication Followed By

Addition"

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3) Assistment #37305 "37305 - 27583 - Evaluating Functions - Medium - Multiplication Followed

By Addition"

Evaluate the following for $x = 4$:

$$10x + 7$$

---

4) Assistment #37334 "37334 - Evaluating Functions - Medium - Multiplication Followed By

Subtraction"

Evaluate the following for $x = 2$:

$$5x - 4$$

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5) Assistment #37335 "37335 - Evaluating Functions - Medium - Multiplication Followed By

Subtraction"

Evaluate the following for $x = 3$:

$$7x - 1$$

Assistment #30028 "30028 - Pattern Finding - Selling Lemonades"

%v{name} wants to earn some money by selling cups of lemonade. On his first day, %v{name} sold %v{v1} cups. However, for each day after the first day, %v{name} only sold %v{v2} cups.

So, at this rate, how many cups of lemonade in total would %v{name} have sold after the %v{v3}th day?

Algebra:

✓   %v{ans}

Scaffold:

First, let us figure out the number of days that %v{name} sold %v{v2} cups of lemonade.

So, for how many days did %v{name} sell %v{v2} cups of lemonade?

Algebra:

✓   %v{v5}

✗   %v{v3}

Hints:

- Remember, %v{name} sold lemonades for %v{v3} days, and on the first day %v{name} sold %v{v1} lemonades.

- We know that out of a total of %v{v3} days, %v{name} sold %v{v1} lemonades just once, and for the rest of days he sold %v{v2} lemonades.

  So we have to subtract 1 from %v{v3}.

- %v{v3} - 1 = **%v{v5}**

  So, %v{name} sold %v{v2} cups of lemonade for each of the **%v{v5}** days.

  Type in %v{v5}.

Scaffold:

So, we know that %v{name} sold %v{v2} cups of lemonade for each of the %v{v5} days after the first day. Now,....

How many cups of lemonade did %v{name} sell in total in these **%v{v5}** days?

Algebra:

✓ %v{v4}

Hints:

- Remember, %v{name} sold %v{v2} lemonades for each of the **%v{v5}** days after the first day,
  and %v{name} sold %v{v2} lemonades **%v{v5}** <u>times</u>.

- So, we have to multiply %v{v2} with **%v{v5}**.

- %v{v2} x **%v{v5}** = %v{v4}

  %v{name} sold a total of %v{v4} cups lemonade over a period of **%v{v5}** days after the first day.

  Type in %v{v4}.

Scaffold:
Now that we know %v{name} sold %v{v4} cups of lemonade total after the first day, let's try the original problem again.

%v{name} wants to earn some money by selling cups of lemonade. On his first day, %v{name} sold %v{v1} cups. However, for each day after the first day, %v{name} only sold %v{v2} cups.

So, at this rate, how many cups of lemonade in total would %v{name} have sold after the %v{v3}th day?

Algebra:
✓ %v{ans}

Hints:

- Remember, %v{name} sold %v{v1} cups of lemonade on the first day.

  Also, he sold %v{v4} cups of lemonade total for **%v{v5}** days.

- Since %v{name} sold %v{v1} cups of lemonade just once, we can find the number of cups sold
  in total by adding %v{v1} to %v{v4}.

- %v{v1} + %v{v4} = %v{ans}

So, after the %v{v3}th day %v{name} must have sold a total of %v{ans} cups of lemonade.

Type in %v{ans}.

Assistment #29995 "29995 - 27583 - Evaluating Functions - Medium - Multiplication Followed By Addition"

Evaluate the following for $x = \%v\{v3\}$:

$$\%v\{v1\}x + \%v\{v2\}$$

Algebra:

✓ $\%v\{ans\}$

Hints:

- **Functions** are made up of two parts.

$$\mathbf{f}(x)$$

1. The name, in this case **f**.
2. And the **variable**, x.

The whole idea of **functions** is that $\mathbf{f}(x)$ changes depending on the value of x.

- In order to evaluate a **function**, we have to

1. replace the **variable**, x in the **function** $\mathbf{f}(x)$ with the value we were given, $\%v\{v3\}$.
2. then replace the **variable** x in "$\%v\{v1\}x + \%v\{v2\}$" with $\%v\{v3\}$.
3. lastly, solve the **function**.

- So for step 1: *we replace x with %v{v3} in the **function** f(x)*

Like this,

$$\mathbf{f}(x) \qquad\qquad \rightarrow \mathbf{f}(\%v\{v3\})$$

We are now solving for $\mathbf{f}(\%v\{v3\})$.

- Next is step 2: *we replace the **variable** x in "%v{v1}x + %v{v2}" with %v{v3}*

Like so,

%v{v1}x - %v{v2}   → %v{v1}*%v{v3} + %v{v2}

Finally we can solve the **function**, **f**(%v{v3}).

- **f**(%v{v3}) = %v{v1}*%v{v3} + %v{v2}

                = **%v{v1*v3}** + %v{v2}

                = %v{ans}

So, **f**(%v{v3}) is equal to %v{ans}.

Type in %v{ans}.

Scaffold:
First, we have to replace the **variable** x with the value %v{v3}.

Which of the following is the correct representation of %v{v1}x + %v{v2} when x is replaced with %v{v3}?

Multiple choice:
✘ %v{v3} * %v{v2} + %v{v1*2}
✘ (%v{v3} + %v{v2})²
✘ %v{v1} * %v{v3}
✔ %v{v1}(%v{v3}) + %v{v2}

Hints:
- Try to replace the **variable** x in

        %v{v1}x + %v{v2}

with %v{v3}.

- Replacing the **variable** x will get us,

Select %v{v1}(%v{v3}) + %v{v2}.

Scaffold:
Now that we have replaced x with %v{v3},

529

%v{v1}(%v{v3}) + %v{v2}

Try the original problem again.

Evaluate the following for x = %v{v3}:

%v{v1}x + %v{v2}

Algebra:

✓ %v{ans}

Hints:

- So,

    %v{v1}x + %v{v2} → %v{v1}(%v{v3}) + %v{v2}

  We only need to evaluate

    %v{v1}(%v{v3}) + %v{v2}

- Remember the *Order of Operations*

    1. **P**arenthesis
    2. **E**xponents (powers, roots, etc)
    3. **M**ultiplication & **D**ivision (from left to right)
    4. **A**ddition & **S**ubtraction (from left to right)

    This can be remembered as **PEMDAS**.

- According to **PEMDAS**,

    %v{v1}(%v{v3}) +   We start by **M**ultiplying.
    %v{v2}

        ↓

- =   **%v{v4} + %v{v2}**   Next, we have to **A**dd.

        ↓

- =   %v{ans}

So for x = %v{v3}, the expression %v{v1}x + %v{v2} is equal to %v{ans}.

Type in %v{ans}.

Assistment #29996 "29996 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for x = %v{v3}:

%v{v1}x - %v{v2}

Algebra:

✓ %v{ans}

Hints:

- **Functions** are made up of two parts.

f(x)

1. The name, in this case **f**.
2. And the **variable**, x.

The whole idea of **functions** is that **f**(x) changes depending on the value of x.

- In order to evaluate a **function**, we have to

1. replace the **variable**, x in the **function f**(x) with the value we were given, %v{v3}.
2. then replace the **variable** x in "%v{v1}x - %v{v2}" with %v{v3}.
3. lastly, solve the **function**.

- So for step 1: *we replace x with %v{v3} in the **function f(x)***

Like this,

f(x)   → **f**(%v{v3})

We are now solving for **f**(%v{v3}).

- Next is step 2: *we replace the **variable** x in "%v{v1}x - %v{v2}" with %v{v3}*

Like so,

%v{v1}x - %v{v2}   → %v{v1}*%v{v3} - %v{v2}

531

Finally we can solve the **function**, **f**(%v{v3}).

- **f**(%v{v3}) = %v{v1}*%v{v3} - %v{v2}
  = **%v{v1*v3}** - %v{v2}
  = %v{ans}

So, **f**(%v{v3}) is equal to %v{ans}.

Type in %v{ans}.

Scaffold:

  Hints:

  - Try to replace the **variable** x in

    %v{v1}x - %v{v2}

  with %v{v3}.

  - Replacing the **variable** x will get us,

  Select %v{v1}(%v{v3}) - %v{v2}.

Scaffold:

  Now that we have replaced x with %v{v3},

    %v{v1}(%v{v3}) - %v{v2}

  Try the original problem again

  Evaluate the following for x = %v{v3}:

    %v{v1}x - %v{v2}

  Algebra:

  ✔ %v{ans}

  Hints:

  - So,
    %v{v1}x - %v{v2} → %v{v1}(%v{v3}) - %v{v2}

We only need to evaluate

%v{v1}(%v{v3}) - %v{v2}

- Remember the *Order of Operations*

    1. **P**arenthesis
    2. **E**xponents (powers, roots, etc)
    3. **M**ultiplication & **D**ivision (from left to right)
    4. **A**ddition & **S**ubtraction (from left to right)

    This can be remembered as **PEMDAS**.

- According to **PEMDAS**,

    %v{v1}(%v{v3}) - %v{v2} We start by **M**ultiplying.
    ↓

- =   **%v{v4} - %v{v2}**   Next, we have to **S**ubtract.
    ↓

- =   %v{ans}

So for x = %v{v3}, the expression %v{v1}x - %v{v2} is equal to %v{ans}.

Type in %v{ans}.

Mastery Learning 28815 Variables and Patterns Evaluating Functions(With Table)

id:[5930]

1) Assistment #32456 "32456 - Pattern Finding - Annual Salary"

Billy wants to work for a company near his hometown. However before
he does that, Billy wants to first find out how much he will make once
he completes **3 years** of service.

Below is a table showing annual salaries of employees of this company based on
the number of years that person has been working there. So according to this
table, how much money would Billy make after working for **3 years**?

Years of Employment	Annual Salary
5	$57000
6	$58700
7	$60400
8	$62100
9	$63800

_____

2) Assistment #32486 "32486 - 30617 - 28815 Variablized Morph(Version 1.0)"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 5x + 22

x	2	5	10	15	32	64
y						

_____

3) Assistment #32619 "32619 - 30621 - 28815 Variablized Morph(Version 4)"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 9x - 72

x	3	7	14	21	44	88
y						

---

4) Assistment #32645 "32645 - 30622 - 28815 Variablized Morph(Version 6)"

Use the equation below to fill out the missing value in the table below.
What value goes in the shaded box?
y = 10x - 10

x	1	3	6	9	20	40
y						

Assistment #30036 "30036 - Pattern Finding - Annual Salary"

%v{name} wants to work for a company near his hometown. However before he does that, %v{name} wants to first find out how much he will make once he completes **%v{v4} years** of service.

Below is a table showing annual salaries of employees of this company based on the number of years that person has been working there. So according to this table, how much money would %v{name} make after working for **%v{v4} years**?

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

Algebra:

✓ %v{ans}

Scaffold:

First, let's start by looking at the difference in salary between **%v{v1} years** and **%v{v1 + 1} years**.

Years of Employment	Annual Salary
%v{v1}	$%v{v5}
%v{v1 + 1}	$%v{v5 + v6}
%v{v1 + 2}	$%v{v5 + v6*2}
%v{v1 + 3}	$%v{v5 + v6*3}
%v{v1 + 4}	$%v{v5 + v6*4}

How much did the salary increase between **%v{v1} years** of employment and **%v{v1 + 1} years** of employment?

Algebra:

✓ %v{v6}

Hints:

- Remember, the annual salary for **%v{v1} years** of employment is $%v{v5} and the annual salary for **%v{v1 + 1}** years of employment is $%v{v5 + v6}.

- So, we have to subtract $%v{v5} from $%v{v5 + v6} to get the amount of salary increase between these two years.

- $%v{v5 + v6} - $%v{v5}
  $%v{v5 + v6} - $%v{v5} = $%v{v6}

The amount of salary increase between **%v{v1} years** of employment and **%v{v1 + 1}** years of employment is $%v{v6}.

   Type in %v{v6}.

Scaffold:

Years of Employment	Annual Salary	
%v{v1}	$%v{v5}	+$%v{v6}
%v{v1 + 1}	$%v{v5 + v6}	+$%v{v6}
%v{v1 + 2}	$%v{v5 + v6*2}	+$%v{v6}
%v{v1 + 3}	$%v{v5 + v6*3}	+$%v{v6}
%v{v1 + 4}	$%v{v5 + v6*4}	

We can see that this pattern continues. Now use this pattern to determine the salary at **%v{v4} years**.

What is the salary at **%v{v4} years**?

Algebra:

✓ %v{ans}

Hints:

- The difference between **%v{v1} years** and **%v{v4} years** is **%v{v1 - v4} years**.

- We have to subtract $%v{v6} from $%v{v5} **%v{v1 - v4} times**.

- $%v{v5} - $%v{v6} (**%v{v1 - v4} times**) = $%v{ans}

So, %v{name} will get an annual salary of $%v{ans} once he completes **%v{v4} years** of employment.

Type in %v{ans}.

Assistment #30797 "30797 - 28817 Variablized Morph(Version 1)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 6th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 6th day?
Remeber the question is asking for the total by the end of day 6.

- You need to add up the number of canned food brought in each day until the end of the 6th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} + %v{v6} = ?

538

- The sum is %v{answer}. Enter %v{answer}

Assistment #30800 "30800 - 28817 Variablized Morph(Version 3)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 7th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Algebra:

✓ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 7th day?
Remember the question is asking for the total by the end of day 7.

- You need to add up the number of canned food brought in each day until the end of the 7th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

539

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} + %v{v6} +%v{v7} = ?

- The sum is %v{answer}. Enter %v{answer}

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Assistment #30801 "30801 - 28817 Variablized Morph(Version 2)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} at the end of the 5th day?

Fill in:

✔ %v{answer}

Hints:

- What was the total number of %v{items} at the end of the 5th day?
Remeber the question is asking for the total by the end of day 5.

- You need to add up the number of canned food brought in each day until the end of the 5th day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v1} + %v{v2} + %v{v3} + %v{v4} + %v{v5} = ?

540

- The correct answer is %v{answer}. Enter %v{answer}

Assistment #30919 "30919 - 28817 Variablized Morph(Version 4)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 6th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓ %v{v6}

Hints:

- What was the total number of %v{items} brought in **on** the 6th day?
Remeber the question is asking for the total brought in on the 6th day.

- The 6th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v6} %v{items} were brought in on the 6th day. Type in %v{v6}

541

Assistment #30921 "30921 - 28817 Variablized Morph(Version 5)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 5th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Fill in:

✓   %v{answer}

Hints:

- What was the total number of %v{items} brought in **on** the 5th day?
  Remeber the question is asking for the total by the end of day 5.

- The 5th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}

542

5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v5} %v{items} were brought in on the 5th day. Type in %v{v5}

Assistment #30922 "30922 - 28817 Variablized Morph(Version 6)"

%v{names} grade class is collecting %v{items} %v{forwhom}.

This table shows how many %v{items} were brought in each day.
What was the total number of %v{items} brought in on the 7th day?

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}
5	%v{v5}
6	%v{v6}
7	%v{v7}

Algebra:

✓ %v{answer}

Hints:

- What was the total number of %v{items} brought in **on** the 7th day?
Remeber the question is asking for the total brought in on day 7.

- The 7th day is highlighted in red how many %v{items} were brought in that day.

Day	%v{items2} donated that day
0	0
1	%v{v1}
2	%v{v2}
3	%v{v3}
4	%v{v4}

543

5	%v{v5}
6	%v{v6}
7	%v{v7}

- %v{v7} %v{items} were brought in on the 7th day. Type in %v{v7}.

Mastery Learning 28810 Variables and Patterns Writing Equation Expressions

id:[5931]

1) Assistment #32666 "32666 - Writting Equation Expressions"

Mike wants to buy a new skateboard. He has $20 already saved up.
In order to save enough for the new skateboard he is going to add $14 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

---

2) Assistment #32667 "32667 - Writting Equation Expressions"

Jose wants to buy a new basketball. He has $35 already saved up.
In order to save enough for the new basketball he is going to add $11 a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**

3) Assistment #32713 "32713 - 30416 - Writting Equation Expression (reversed)"

Jose wants to buy a new skateboard.

In order to save enough for the new skateboard he is going to add $10 a week to his savings.

He has already saved up $48.

Use w to stand for the number of weeks and t for the total amount of money he has.

Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after**

it.

_____

Assistment #30415 "30415 - Writting Equation Expressions"

%v{names} wants to buy a new %v{items}. He has $%v{saved} already saved up.
In order to save enough for the new %v{items} he is going to add $%v{perweek} a week to his savings.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**
Algebra:
✓ %v{saved} +%v{perweek}*w

Hints:

- %v{names} starts out with %v{saved} dollars. So the expression should start with %v{saved}.
- Every week he adds %v{perweek} dollars. So you should multiply the number of weeks, w, by %v{perweek}: %v{perweek}w
- Now put the 2 expressions together: %v{saved} + %v{perweek}w
- The correct answer is t = %v{saved} + %v{perweek}w. Please enter %v{saved} + %v{perweek}w.

Assistment #30416 "30416 - Writting Equation Expression (reversed)"

%v{names} wants to buy a new %v{items}.
In order to save enough for the new %v{items} he is going to add $%v{perweek} a week to his savings.
He has already saved up $%v{saved}.

Use w to stand for the number of weeks and t for the total amount of money he has.
Write an equation for calculating the total (t) for any number of weeks (w).

Fill in the blank: t = _____ . **You do not need to type "t=" in your answer, just what comes after it.**
Algebra:
✓ %v{saved} +%v{perweek}*w

Hints:

- %v{names} starts out with %v{saved} dollars. So the expression should start with

%v{saved}.

- Every week he adds %v{perweek} dollars. So you should multiply the number of weeks, w, by %v{perweek}: %v{perweek}w

- Now put the 2 expressions together: %v{saved} + %v{perweek}w

- The correct answer is t = %v{saved} + %v{perweek}w. Please enter %v{saved} + %v{perweek}w.

Mastery Learning 28808 Variables and Patterns Evaluating Functions

id:[5932]

1) Assistment #32726 "32726 - Pattern Finding - Selling Lemonades"

Tony wants to earn some money by selling cups of lemonade. On his first day, Tony sold 12 cups. However, for each day after the first day, Tony only sold 6 cups.

So, at this rate, how many cups of lemonade in total would Tony have sold after the 12th day?

_____

2) Assistment #32755 "32755 - Pattern Finding - Selling Lemonades"

Billy wants to earn some money by selling cups of lemonade. On his first day, Billy

sold 10 cups. However, for each day after the first day, Billy only sold 2 cups.

So, at this rate, how many cups of lemonade in total would Billy have sold after

the 15th day?

_____

3) Assistment #37364 "37364 - 27583 - Evaluating Functions - Medium - Multiplication Followed

By Addition"

Evaluate the following for x = 1:

$$8x + 6$$

4) Assistment #37365 "37365 - 27583 - Evaluating Functions - Medium - Multiplication Followed By Addition"

Evaluate the following for $x = 2$:

$$10x + 9$$

_____

---

5) Assistment #37445 "37445 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for $x = 1$:

$$6x - 1$$

_____

---

6) Assistment #37446 "37446 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for $x = 3$:

$$8x - 1$$

_____

Assistment #30028 "30028 - Pattern Finding - Selling Lemonades"

549

%v{name} wants to earn some money by selling cups of lemonade. On his first day, %v{name} sold %v{v1} cups. However, for each day after the first day, %v{name} only sold %v{v2} cups.

So, at this rate, how many cups of lemonade in total would %v{name} have sold after the %v{v3}th day?

Algebra:

✓ %v{ans}

Scaffold:

First, let us figure out the number of days that %v{name} sold %v{v2} cups of lemonade.

So, for how many days did %v{name} sell %v{v2} cups of lemonade?

Algebra:

✓ %v{v5}

✗ %v{v3}

Hints:

- Remember, %v{name} sold lemonades for %v{v3} days, and on the first day %v{name} sold %v{v1} lemonades.

- We know that out of a total of %v{v3} days, %v{name} sold %v{v1} lemonades just once, and for the rest of days he sold %v{v2} lemonades.

  So we have to subtract 1 from %v{v3}.

- %v{v3} - 1 = **%v{v5}**

  So, %v{name} sold %v{v2} cups of lemonade for each of the **%v{v5}** days.

  Type in %v{v5}.

Scaffold:

So, we know that %v{name} sold %v{v2} cups of lemonade for each of the %v{v5} days after the first day. Now,....

How many cups of lemonade did %v{name} sell in total in these **%v{v5}** days?

Algebra:

550

✓ %v{v4}

Hints:

- Remember, %v{name} sold %v{v2} lemonades for each of the **%v{v5}** days after the first day,

  and %v{name} sold %v{v2} lemonades **%v{v5}** <u>times</u>.

- So, we have to multiply %v{v2} with **%v{v5}**.

- %v{v2} x **%v{v5}** = %v{v4}

  %v{name} sold a total of %v{v4} cups lemonade over a period of **%v{v5}** days after the first day.

  Type in %v{v4}.

Scaffold:

Now that we know %v{name} sold %v{v4} cups of lemonade total after the first day, let's try the original problem again.

%v{name} wants to earn some money by selling cups of lemonade. On his first day, %v{name} sold %v{v1} cups. However, for each day after the first day, %v{name} only sold %v{v2} cups.

So, at this rate, how many cups of lemonade in total would %v{name} have sold after the %v{v3}th day?

Algebra:

✓ %v{ans}

Hints:

- Remember, %v{name} sold %v{v1} cups of lemonade on the first day.

  Also, he sold %v{v4} cups of lemonade total for **%v{v5}** days.

- Since %v{name} sold %v{v1} cups of lemonade just once, we can find the number of cups sold
  in total by adding %v{v1} to %v{v4}.

- %v{v1} + %v{v4} = %v{ans}

So, after the %v{v3}th day %v{name} must have sold a total of %v{ans} cups of lemonade.

Type in %v{ans}.

Assistment #29995 "29995 - 27583 - Evaluating Functions - Medium - Multiplication Followed By Addition"

Evaluate the following for $x = \%v\{v3\}$:

$$\%v\{v1\}x + \%v\{v2\}$$

Algebra:

✓ $\%v\{ans\}$

Hints:

- **Functions** are made up of two parts.

$$\mathbf{f}(x)$$

1. The name, in this case **f**.
2. And the **variable**, x.

The whole idea of **functions** is that $\mathbf{f}(x)$ changes depending on the value of x.

- In order to evaluate a **function**, we have to

1. replace the **variable**, x in the **function** $\mathbf{f}(x)$ with the value we were given, $\%v\{v3\}$.
2. then replace the **variable** x in "$\%v\{v1\}x + \%v\{v2\}$" with $\%v\{v3\}$.
3. lastly, solve the **function**.

- So for step 1: *we replace x with %v{v3} in the **function** f(x)*

Like this,

$\mathbf{f}(x)$ $\rightarrow \mathbf{f}(\%v\{v3\})$

We are now solving for $\mathbf{f}(\%v\{v3\})$.

- Next is step 2: *we replace the **variable** x in "%v{v1}x + %v{v2}" with %v{v3}*

Like so,

%v{v1}x - %v{v2}   → %v{v1}*%v{v3} + %v{v2}

Finally we can solve the **function**, **f**(%v{v3}).

- **f**(%v{v3}) = %v{v1}*%v{v3} + %v{v2}
  - = **%v{v1*v3}** + %v{v2}
  - = %v{ans}

So, **f**(%v{v3}) is equal to %v{ans}.

Type in %v{ans}.

Scaffold:
First, we have to replace the **variable** x with the value %v{v3}.

Which of the following is the correct representation of %v{v1}x + %v{v2} when x is replaced with %v{v3}?

Multiple choice:
✗ %v{v3} * %v{v2} + %v{v1*2}
✗ (%v{v3} + %v{v2})^2
✗ %v{v1} * %v{v3}
✓ %v{v1}(%v{v3}) + %v{v2}

Hints:
- Try to replace the **variable** x in

%v{v1}x + %v{v2}

with %v{v3}.

- Replacing the **variable** x will get us,

Select %v{v1}(%v{v3}) + %v{v2}.

Scaffold:

Now that we have replaced x with %v{v3},

$$\%v\{v1\}(\%v\{v3\}) + \%v\{v2\}$$

Try the original problem again.

Evaluate the following for $x = \%v\{v3\}$:

$$\%v\{v1\}x + \%v\{v2\}$$

Algebra:

✓ %v{ans}

Hints:

- So,

  $$\%v\{v1\}x + \%v\{v2\} \rightarrow \%v\{v1\}(\%v\{v3\}) + \%v\{v2\}$$

We only need to evaluate

$$\%v\{v1\}(\%v\{v3\}) + \%v\{v2\}$$

- Remember the *Order of Operations*

  1. **P**arenthesis
  2. **E**xponents (powers, roots, etc)
  3. **M**ultiplication & **D**ivision (from left to right)
  4. **A**ddition & **S**ubtraction (from left to right)

  This can be remembered as **PEMDAS**.

- According to **PEMDAS**,

	%v{v1}(%v{v3}) + **%v{v2}**	We start by **Multiplying**.
	↓	
=	**%v{v4} + %v{v2}**	Next, we have to **Add**.
	↓	
=	%v{ans}	

554

So for x = %v{v3}, the expression %v{v1}x + %v{v2} is equal to %v{ans}.

Type in %v{ans}.

Assistment #29996 "29996 - Evaluating Functions - Medium - Multiplication Followed By Subtraction"

Evaluate the following for x = %v{v3}:

%v{v1}x - %v{v2}

Algebra:

✓ %v{ans}

Hints:

- **Functions** are made up of two parts.

$$f(x)$$

1. The name, in this case **f**.
2. And the **variable**, x.

The whole idea of **functions** is that **f**(x) changes depending on the value of x.

- In order to evaluate a **function**, we have to

1. replace the **variable**, x in the **function f**(x) with the value we were given, %v{v3}.
2. then replace the **variable** x in "%v{v1}x - %v{v2}" with %v{v3}.
3. lastly, solve the **function**.

- So for step 1: *we replace x with %v{v3} in the **function f(x)***

Like this,

f(x)   → **f**(%v{v3})

We are now solving for **f**(%v{v3}).

- Next is step 2: *we replace the **variable** x in "%v{v1}x - %v{v2}" with %v{v3}*

Like so,

555

%v{v1}x - %v{v2} → %v{v1}*%v{v3} - %v{v2}

Finally we can solve the **function**, **f**(%v{v3}).

- **f**(%v{v3}) = %v{v1}*%v{v3} - %v{v2}

  = **%v{v1*v3}** - %v{v2}

  = %v{ans}

So, **f**(%v{v3}) is equal to %v{ans}.

Type in %v{ans}.

Scaffold:

Hints:

- Try to replace the **variable** x in

  %v{v1}x - %v{v2}

with %v{v3}.

- Replacing the **variable** x will get us,

Select %v{v1}(%v{v3}) - %v{v2}.

Scaffold:

Now that we have replaced x with %v{v3},

  %v{v1}(%v{v3}) - %v{v2}

Try the original problem again

Evaluate the following for x = %v{v3}:

  %v{v1}x - %v{v2}

Algebra:

✔ %v{ans}

Hints:

- So,

%v{v1}x - %v{v2} → %v{v1}(%v{v3}) - %v{v2}

We only need to evaluate

%v{v1}(%v{v3}) - %v{v2}

- Remember the *Order of Operations*

  1. **P**arenthesis
  2. **E**xponents (powers, roots, etc)
  3. **M**ultiplication & **D**ivision (from left to right)
  4. **A**ddition & **S**ubtraction (from left to right)

  This can be remembered as **PEMDAS**.

- According to **PEMDAS**,

  %v{v1}(%v{v3}) - %v{v2} We start by **Multiplying**.

  ↓

- = **%v{v4} - %v{v2}**   Next, we have to **Subtract**.

  ↓

- =   %v{ans}

So for x = %v{v3}, the expression %v{v1}x - %v{v2} is equal to %v{ans}.

Type in %v{ans}.

8.8 Polynomials Competency

Assistment #44591 "44591 - AlgGeo Test Assistment 3B"

Multiply the following:
$(3xy^2)(-5x^2y)$

In order to type your answer in you must use the ^ to show exponents just like you do with a graphing calculator.
For example: $6 + x^2 - 4x^3 - 2x$ is 6+x^2-4x^3-2x
ALSO in order to get the answer right do not put any spaces between the numbers and signs
Fill in:

✓ -15x^3y^3

✓ -15y^3x^3

Hints:

- Start by multiplying the front two numbers.
$(3xy^2)(-5x^2y)$

- $3 * -5 = -15$
$(-15xy^2)(x^2y)$

Next multiply the x variables together.
$(-15xy^2)(x^2y)$

- $x^2*x =xx *x =x^3$
$(-15x^3y^2)(y)$

Next multiply the y variables together.
$(-15 \ x^3y^2)(y)$

- $y^2*y =yy*y =y^3$

The answer is $-15x^3y^3$

type in   -15x^3y^3

558

Assistment #43054 "43054 - AlgGeo Test Variablized Assistment 3B"

Multiply the following:
$(\%v\{v2\}xy^{\%v\{v1\}})(-\%v\{v3\}x^{\%v\{v1\}}y)$

In order to type your answer in you must use the ^ to show exponents just like you do with a graphing calculator.
For example: $6 + x^2 - 4x^3 - 2x$ is $6+x^2-4x^3-2x$
ALSO in order to get the answer right do not put any spaces between the numbers and signs
Fill in:

✓ $\%v\{v4\}y^{\wedge}\%v\{v5\}x^{\wedge}\%v\{v5\}$

✓ $\%v\{v4\}x^{\wedge}\%v\{v5\}y^{\wedge}\%v\{v5\}$

Hints:

- Start by multiplying the front two numbers.
$(\%v\{v2\}xy^{\%v\{v1\}})(-\%v\{v3\}x^{\%v\{v1\}}y)$

- $\%v\{v2\} * -\%v\{v3\} = \%v\{v4\}$
$(\%v\{v4\}xy^{\%v\{v1\}})(x^{\%v\{v1\}}y)$

Next multiply the x variables together.
$(\%v\{v4\}xy^{\%v\{v1\}})(x^{\%v\{v1\}}y)$

- $x^{\%v\{v1\}}*x = x^{\%v\{v5\}}$
$(\%v\{v4\}\ x^{\%v\{v5\}}y^{\%v\{v1\}})(y)$

Next multiply the y variables together.
$(\%v\{v4\}\ x^{\%v\{v5\}}y^{\%v\{v1\}})(y)$

- $y^{\%v\{v1\}}*y = y^{\%v\{v5\}}$

The answer is $\%v\{v4\}\ x^{\%v\{v5\}}y^{\%v\{v5\}}$

Enter $\%v\{v4\}\ x^{\wedge}\%v\{v5\}y^{\wedge}\%v\{v5\}$

Assistment #43004 "43004 - Polynomial Competency - Number 4"

A) Find the **greatest common factor** of:

$$2xy^3 + 6x^2$$

Algebra:

✓ 2x

Scaffold:

In order to find the **greatest common factor** of a polynomial, we can start by finding the **greatest common factor** of the whole number portion of the two terms.

$$2xy^3 + 6x^2$$

What is the **greatest common factor** of 2 and 6?

Algebra:

✓ 2

Hints:

- List all the factors of 2 and 6 on a piece of paper.
- Your list should look something like this:

  Factors of 2:   1 and 2
  Factors of 6:   1, 2, 3, and 6

  Now from the list, find the **highest number** that appeared on the factors of 2 **and** 6.

- Factors of 2:   1 and **2**
  Factors of 6:   1, **2**, 3, and 6

  The highest number that appeared on both lists are 2.
  So the **greatest common factor** of 2 and 6 is 2.
      Type in 2.

Scaffold:

Now lets find the **greatest common factor** of the variable portion of the two terms.

$$2xy^3 + 6x^2$$

What is the **greatest common factor** of xy^3 and x^2?

Algebra:

✓ x

Hints:

- List all the factors of xy^3 and x^2 on a piece of paper.
  Since x^2 does not have a y like xy^3, you do not have to list the y's.
- Your list (ignoring y) should look something like this:

  Factors of xy^3:   1, x
  Factors of x^2:   1, x, x^2

  Now from the list, find the factor with the **most variables** that appeared on xy^3 **and** x^2.

- Factors of xy^3:   1, **x**
  Factors of x^2:   1, **x**, x^2

  The factor with the most variables that appeared on both lists are x.

So the **greatest common factor** of xy^3 and x^2 is x.
Type in x.

Scaffold:

Find the **greatest common factor** of:

$$2xy^3 + 6x^2$$

Algebra:

✓ 2x

Hints:

- Remember, the **greatest common factor** of the whole number portion is 2, and the **greatest common factor** of the variable number is x.

- To find the **greatest common factor**, we just simply multiply 2 and x.

- $2*x = $ **2x**
The **greatest common factor** is **2x**.
Type in 2x.

B) If we factor out the **greatest common factor**, 2x from the bottom expression...

$$2xy^3 + 6x^2$$

what will be in the parentheses?

$$2x(\underline{\quad} + \underline{\quad})$$

Multiple choice:

✓ $y^3 + 3x$
✗ $y^3 + 3x^2$
✗ $xy^3 + 3x$
✗ $2xy^3 + 6$
✗ $xy^3 + 3x^2$

Hints:

- By factoring 2x out of the first term, $2xy^3$ we get y^3.
- By factoring 2x out of the second term, $6x^2$ we get 3x.
- So by factoring 2x out of $2xy^3 + 6x^2$, the result will be

$$2x(y^3 + 3x)$$

Choose the answer that has $y^3 + 3x$.

Assistment #44610 "44610 - Polynomial Competency - 3A"
Multiply the following:

$a^3(a^6b^3c)$

In order to type your answer in you must use the ^ to show exponents just like you do with a graphing calculator.
For example: $6x^2y^3$ is $6x^2*y^3$

Algebra:
   ✓ (a^9)*(b^3)*c

Scaffold:
   Let's look at the solution for a problem similar to the one above:

   PROBLEM:

   Multiply the following:
   $a^3(a^5b^2c)$

   SOLUTION:

   $a^3(a^5b^2c)$ can be rewritten as $a^3a^5b^2c$.

   One important rule to remember is this:
   $x^mx^n = x^{m+n}$

   This means that
   $a^3a^5b^2c =$
   aaa*aaaaa*bb*c =
   a^8b^2c
   To type this into ASSISTments you would type a^8b^2c
   Multiple choice:
      ✓ I have read the example and now I am ready to try again.

Scaffold:
   Now try the original problem again.
   You may look back at the worked example if this helps you.

Multiply the following:

$a^3(a^6b^3c)$

Algebra:

✓ (a^9)*(b^3)*c

Hints:

- Here is the first step to get you started.
$a^3(a^6b^3c) =$
 $\mathbf{a^3a^6b^3c}$

- $a^3(a^6b^3c) =$
$a^3a^6b^3c =$
aaaaaaaaabbbc
$\mathbf{a^{3+6}b^3c}$

- $a^3(a^6b^3c) =$
$a^3a^6b^3c =$
$a^{3+6}b^3c =$
$\mathbf{a^9b^3c}$

Type in a^9*b^3*c

Assitment #43058 "43058 - Polynomial Competency - 3A"
 Multiply the following:

$\%v\{c1\}^{\%v\{v1\}}(\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\})$

In order to type your answer in you must use the ^ to show exponents just like you do with a graphing calculator.
For example: $6x^2y^3$ is 6x^2*y^3

Algebra:

✓ (%v{c1}^%v{v1+v2}) *(%v{c2}^%v{v3})*%v{c3}

Scaffold:
   Let's look at the solution for a problem similar to the one above:

PROBLEM:

Multiply the following:
$a^3(a^5b^2c)$

SOLUTION:

$a^3(a^5b^2c)$ can be rewritten as $a^3a^5b^2c$.

One important rule to remember is this:
$$x^mx^n = x^{m+n}$$

This means that
$a^3a^5b^2c =$
$aaa*aaaaa*bb*c =$
a^8b^2c

This is the answer to the problem.

Multiple choice:

✓ I have read the example and now I am ready to try again.

Scaffold:

Now try the original problem again.
You may look back at the worked example if this helps you.

Multiply the following:

$$\%v\{c1\}^{\%v\{v1\}}(\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\})$$

Algebra:

✓ $(\%v\{c1\}^\wedge\%v\{v1+v2\}) *(\%v\{c2\}^\wedge\%v\{v3\})*\%v\{c3\}$

Hints:

- Here is the first step to get you started.
$\%v\{c1\}^{\%v\{v1\}}(\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}) =$
$\%v\{c1\}^{\%v\{v1\}}\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}$

- $\%v\{c1\}^{\%v\{v1\}}(\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}) =$
$\%v\{c1\}^{\%v\{v1\}}\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\} =$
$\%v\{c1\}^{\%v\{v1\}+\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}$

- $\%v\{c1\}^{\%v\{v1\}}(\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}) =$
$\%v\{c1\}^{\%v\{v1\}}\%v\{c1\}^{\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\} =$
$\%v\{c1\}^{\%v\{v1\}+\%v\{v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\} =$
$\%v\{c1\}^{\%v\{v1+v2\}}\%v\{c2\}^{\%v\{v3\}}\%v\{c3\}$

Type in $\%v\{c1\}^\wedge\%v\{v1+v2\}*\%v\{c2\}^\wedge\%v\{v3\}*\%v\{c3\}$

A) Find the **greatest common factor** of:

$$\%v\{v1\}xy^{\%v\{v4\}} + \%v\{v3\}x^{\%v\{v5\}}$$

Algebra:

✓ $\%v\{v1\}x$

✓ $\%v\{v1\}*x$

Scaffold:

Let's look at the solution for a problem similar to the one above.

Find the **greatest common factor** of:

$$6xy^3 + 36x^2$$

Solution to the Problem:

In order to find the **greatest common factor** of a polynomial, we have to break the problem apart. First we will find the **greatest common factor** of the whole number portion and then the **greatest common factor** of the variable portion.

To find the **greatest common factor** of the whole number portion, we have to first identify the whole numbers.

For,

$$6xy^3 + 36x^2$$

The whole numbers are 6 and 36.

Now from these numbers, we have to list all their factors.

Factors of 6:   1, 2, 3, 6
Factors of 36:   1, 2, 3, 4, 6, 9, 12, 18, 36

From the above list, find the **highest number** that appeared on the factors of 6 **and** 36.

Factors of 6:   1, 2, 3, **6**
Factors of 36:   1, 2, 3, 4, **6**, 9, 12, 18, 36

The highest number that appeared on both lists are 6. So the **greatest common factor** of the whole number portion is 6. Now, let's find the **greatest common factor** of the variables portion by

using the same approach.

The variables of

$$6xy^3 + 36x^2$$

are xy^3 and x^2.

When we list the factors of xy^3 and x^2, we can ignore y since it only appears on one of the two terms.

Factors of xy^3: 1, **x**
Factors of x^2: 1, **x**, x^2

The factor with the most variables that appeared on both lists are x.

So, the **greatest common factor** of the whole number portion is 6,
and the **greatest common factor** of the variable portion is x.

Finally, all we have to do now is to multiply 6 and x to get the answer.

6 * x = 6x.

The **greatest common factor** of $6xy^3 + 36x^2$ is 6x.

Multiple choice:

✓ I have read the example and now I am ready to try again.

Scaffold:

Now try the original problem again.

You may look back at the worked example if it helps you.

Find the **greatest common factor** of:

$$\%v\{v1\}xy^{\%v\{v4\}} + \%v\{v3\}x^{\%v\{v5\}}$$

Algebra:

✓ %v{v1}*x

✓ %v{v1}x

Hints:

- The **greatest common factor** of the whole number portion is %v{v1}.
- The **greatest common factor** of the whole number portion is x.
- So, the **greatest common factor** of $\%v\{v1\}xy^{\%v\{v4\}} + \%v\{v3\}x^{\%v\{v5\}}$ is %v{v1}x.

B) If we factor out the **greatest common factor**, $v_1 x$ from the bottom expression...

$$v_1 x y^{v_4} + v_3 x^{v_5}$$

what will be in the parentheses?

$$v_1 x(\underline{\quad} + \underline{\quad})$$

Multiple choice:

✖ $y^{v_4} + v_{3/v_1} x$

✔ $y^{v_4} + v_{3/v_1} x^{v_{5-1}}$

✖ $xy^{v_4} + v_{3/v_1} x$

✖ $v_1 x y^{v_4} + v_3$

✖ $v_1 y^{v_4} + v_{3/v_1} x^{v_{5-1}}$

Hints:

- By factoring $v_1 x$ out of the first term, $v_1 x y^{v_4}$ we get y^{v_4}.
- By factoring $v_1 x$ out of the second term, $v_3 x^{v_5}$ we get $v_{3/v_1} x^{v_{5-1}}$.
- So by factoring $v_1 x$ out of $v_1 x y^{v_4} + v_3 x^{v_5}$, the result will be

$$v_1 x(y^{v_4} + v_{3/v_1} x^{v_{5-1}})$$

   Choose the answer that has $y^{v_4} + v_{3/v_1} x^{v_{5-1}}$.