

WORCESTER POLYTECHNIC INSTITUTE

# **The ASSISTment Project**

An Interactive Qualifying Project Report  
submitted to the Faculty of  
WORCESTER POLYTECHNIC INSTITUTE  
in partial fulfillment of the requirements for the  
Degree of Bachelor of Science

By

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## Abstract

The new tutoring system ASSISTments was further expanded by taking questions from former 6<sup>th</sup> grade MCAS tests, and expanding them into scaffolding questions. These scaffolding questions were designed to guide a student through the problem and teach him general topics of geometry and measurement. After analyzing the data, it was noted that almost no noticeable learning was detected. Among other factors, this most probably happened due to confusion that the students experienced from flawed design of the problem sets.

## Acknowledgements

We would like to acknowledge a few people who made the ASSISTment system possible. Of course, many thanks go to Neil Heffernan, who created the system. Cristina Heffernan's constant leadership and supervision made it possible for us to create quality tutoring problems for the kids. Technical support, which made great improvements on the technical side and gave us a chance to work much faster and efficient than before. And finally, all of the other IQP students who continued to expand ASSISTments, and helped make the system what it is today.

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# **1 Introduction**

## **1.1 Background**

With grants from the United States Department of Education, the National Science Foundation and other foundations, the ASSISTment system has been created. Founded by Prof. Neil Heffernan of Worcester Polytechnic Institute and built by professors and students (mainly from Worcester Polytechnic Institute and Carnegie Mellon University), this system, is now being tested by many Middle Schools in the Worcester area.

The ASSISTment system has been created for two main purposes. Firstly, it assists students in their learning of mathematics, increasing their knowledge of the material covered in class. Through the use of scaffolding questions, this system acts like a tutor, asking questions that will aid students in obtaining the correct answer to the main problem. Furthermore, for teachers, the ASSISTment system is a tool for the assessment of the students' understanding of the material. This system gives the teachers the opportunity to identify the areas of weaknesses of the students, thus allowing them to address these issues and increase the students' understanding of the material.

## **1.2 Project Overview**

In the first term of this project, problems were taken out of past MCAS exams (2001-2007) and put into the ASSISTment system. Instead of simply telling the students who use the system whether their answer is correct or wrong, scaffolding questions were created to aid the students who do not know how to approach the problem. The scaffolding questions are, in essence, questions a tutor would ask his/her student in order to guide them towards obtaining the correct answer to the problems.

Following the Mathematics Curriculum Framework (Massachusetts Department of Elementary & Secondary Education), the ASSISTments were sorted into groups for the creation of problem sets. These problems include pre- and post-test problems, which are essentially the same problems. Students will not know the correct answer to the pre-test problems. These problem sets serve two main purposes: firstly, it allowed the group to test the effectiveness of the scaffolds (to be explained in the next paragraph); and secondly, with these problem sets, teachers will be able to pinpoint the areas students are having trouble with and tackle those areas.

The second part of this project entailed the testing of the effectiveness of the scaffolding questions. This took place in the second term. The “test students” from various middle schools in the Worcester area were given the problem sets containing the pre-test and post-tests, testing the students for their understanding of the material before and after the scaffolding questions, and in effect, the effectiveness of this tutoring method. With the ASSISTment system, the group was able to obtain the following data: how well the students did for each of the pre- and post-test and whether they put any effort into the answering the problems. Data obtained from the tests were then analyzed and a conclusion was then obtained.

## 2 Other Systems

Besides ASSISTments, there are many different tutoring systems that offer the students and teachers different unique possibilities. Although, there are a substantial number of these systems, only a couple of leading ones will be described, such as Mastering Physics and Web Assign.

### 2.1 Mastering Physics

Mastering Physics is by far one of the best tutoring systems that currently exists on the internet. They are superior to others in many ways, but do have one major downfall, they were designed for only one subject. High school and college students could potentially use this website to learn only Physics.

Mastering Physics is very widely used, and are compatible with most commonly used physics textbooks, by providing an electronic version of most of the questions provided in the textbook accompanied with hints and tutorials to help guide the student through the problem. It is very convenient for physics professors in colleges and high schools to use this program, because they know that the program is very well maintained and, thus is very reliable. Also teachers know that the problem sets will be updated when the next edition of a textbook comes out.

The basic structure of the Mastering Physics website is shown in the Figure 1: Mastering Physics basic structure below.

**MasteringPHYSICS**

Intro Problem Library **Tutorials** Gradebook Reliability

**Conical Pendulum I**

A bob of mass  $m$  is suspended from a fixed point with a massless string of length  $L$  (i.e., it is a pendulum). You are to investigate the motion in which the string moves in a cone with half-angle  $\theta$ .

**Part A**

What tangential speed,  $v$ , must the bob have so that it moves in a horizontal circle with the string always making an angle  $\theta$  from the vertical?

Express your answer in terms of some or all of the variables  $m$ ,  $L$ , and  $\theta$ , as well as the acceleration due to gravity  $g$ .

$v = L \cdot g \cdot \sin(\theta) \cdot \tan(\theta)$

**Feedback**

You need to provide an expression for  $v$ , not  $v^2$ .

**Part B**

How long does it take the bob to make one full revolution (one complete trip around the circle)?

Express your answer in terms of some or all of the variables  $m$ ,  $L$ , and  $\theta$ , as well as the acceleration due to gravity  $g$ .

PEARSON Addison Wesley

17/26

Figure 1: Mastering Physics basic structure

One of major strengths of Mastering Physics is its input field that makes it possible for a student to easily write formulas with numbers or symbols that represent an answer. The formulas can include square roots, trigonometric functions, powers, and even simple division functions that show up on the screen same as a student would write them on the paper, and it can be done very easily and intuitively. Mastering Physics also has many applets, which let the user interact with the question making it easier to understand and visualize the problem at hand.

The hints and feedback are done very adequately as well. The Figure 2 below shows the structure of hints and feedback.



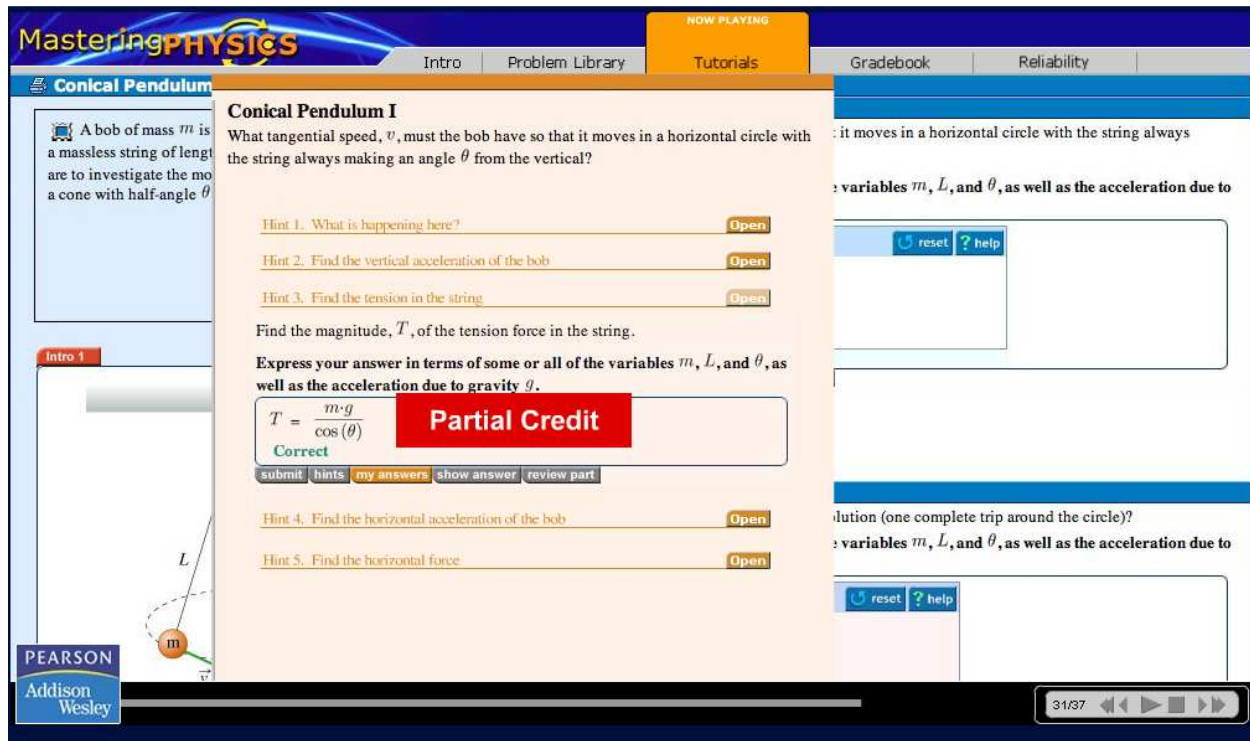


Figure 2: Mastering Physics hint and feedback structure

Each problem has multiple hints to help the students of different skill levels to get through the problem. Each wrong answer will receive some feedback. The website knows the most common wrong answers and gives back according feedback, whether it is a rounding error or forgetting a variable. Depending on the amount of hints and wrong answers, the grade is calculated, where partial credit can be given. The teacher of the class has many options to decide how much partial credit, if any, should be given.

Another very strong advantage of Mastering Physics is the data analysis. Mastering Physics makes it very easy for the teachers to keep track of grades and see who needs extra help and who is ahead of the class. In the Figure 3 below, a common grade book can be seen. Shades of red show the people who are having difficulty with the current material.



Figure 3: Mastering Physics gradebook

The Figure 4 below shows some of the data analysis that is done. This is very common way to analyze data and Mastering Physics does not fall behind other tutoring systems in this category.<sup>1</sup>

<sup>1</sup> <http://masteringphysics.com/>



Figure 4: Mastering Physics data analysis

## 2.2 Web Assign

A little bit simpler online tutoring system than Mastering Physics is Web Assign. Although simpler, it expands onto most math and science instead of just Physics. Web Assign is built by teachers for teachers, who have free access to it, thus it is constantly updated.

Web Assign is a very competent system because it is fairly simple to use and is as broad in subjects as the teachers make it. The system has a large number of users, which surpasses 800,000 people. It does not have as many flash applets capabilities as does Mastering Physics, but nevertheless has a decent interface for the students to work in. Figure 5 below shows the basic interface of Web Assign, where it can be seen how the problem is presented. On the middle-right of the figure it can be seen that the answer input field is given separately, and feedback is provided in case of a wrong answer.

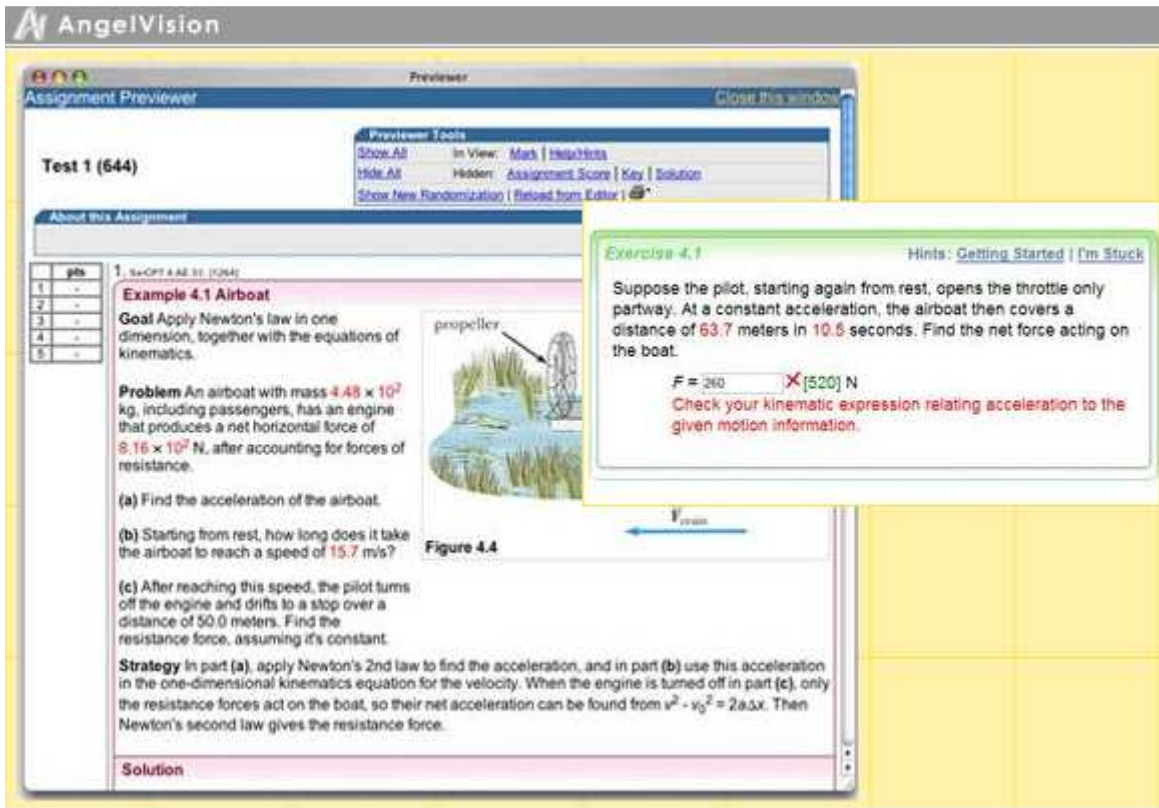


Figure 5: Web Assign basic structure

One of the major strengths of Web Assign is that some of the problems have an algorithm, which gives out different numbers for the common variables. This makes it much harder for students to copy answers from one another exactly, and the calculations have to be made. This is one of the weaknesses of the Mastering Physics, the fact that only one student has to do the problem, and the rest can copy the answers directly without understanding the problem or the formulas. Whereas Web Assign, although not always, makes the students learn at least the formulas that the numbers have to be plugged into, making it this much tougher to cheat off of each other.

Figure 6 below shows a regular grade book that Web Assign constructs. Similar to Mastering Physics, Web Assign has everything it needs to have in a grade book: all of the names are displayed, and it is fairly easy to distinguish who is at the top of the class and who needs

some help. As any other tutoring system, it is very useful to know if there is only one or two students that do not understand a certain topic, thus teaching them individually this topic instead of spending class time teaching the material that most of the class knows.

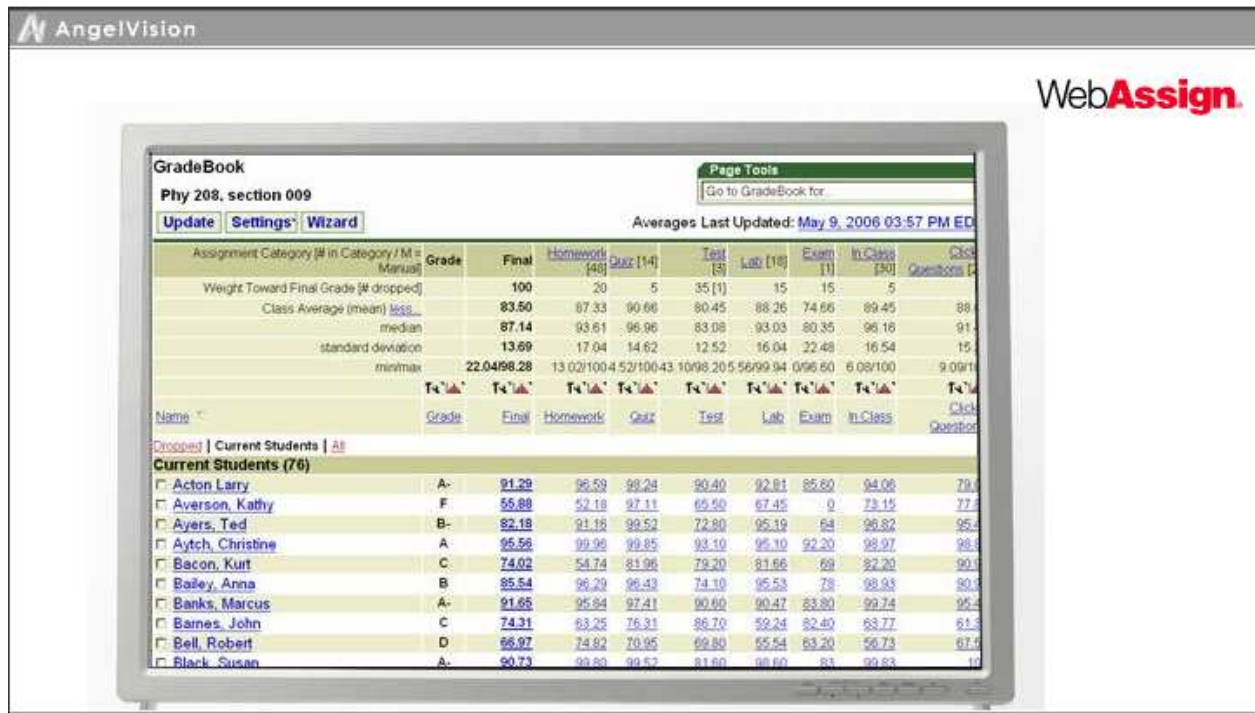


Figure 6: Web Assign gradebook

Figure 7 below shows some of the data analysis done by Web Assign, which seems to be not as advanced as Mastering Physics, but nevertheless, it is definitely everything that a common teacher would need.<sup>2</sup>

<sup>2</sup> <http://webassign.com/>

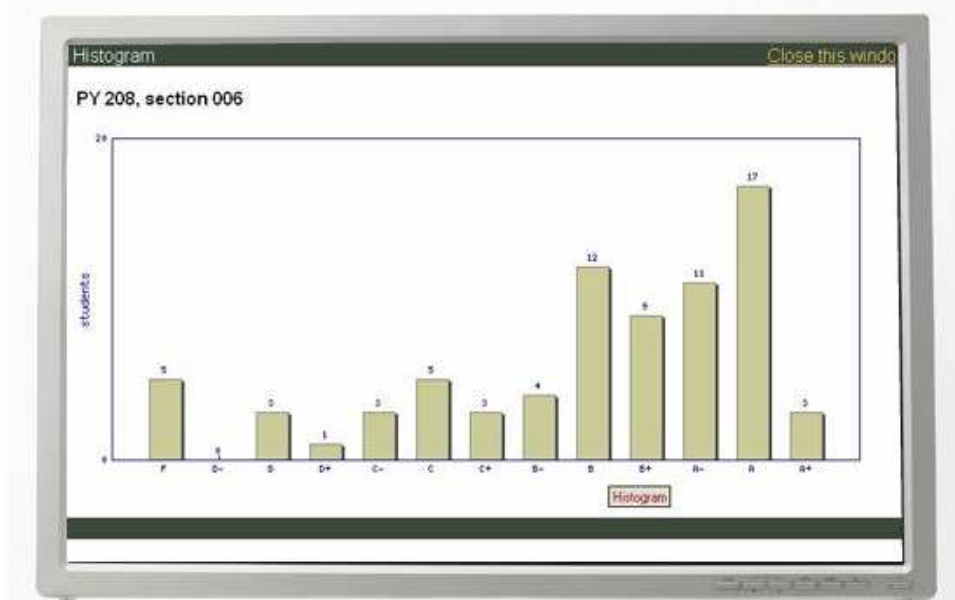


Figure 7: Web Assign data analysis

Overall, the two systems previously described: Mastering Physics and Web Assign are both very competent tutoring systems that will help students learn the material quicker and save teachers time by advising them on how much time they should spend on various material. The following section will describe in great detail relatively new tutoring system that is being discussed in this paper – ASSISTments.



## **3 ASSISTment**

The ASSISTment system allows anyone access. It has been created for simple use and not much computer aptitude is necessary. Teachers are able to log in and create assignments for the students, while students can use the system to improve their knowledge in the materials covered in school. In this section, the ASSISTment system for teachers, students, and builders will be explained thoroughly.

### **3.1 ASSISTment for Teachers**

The ASSISTment system provides the teachers two main benefits. Firstly, with the use of the ASSISTments, teachers are able to pinpoint the areas each student is having trouble with. Secondly, if each student in the class had trouble with a different topic, these ASSISTments allow the teachers to increase each student's understanding of a particular material individually. The teacher does not need to go through that material with the whole class if the majority already understands it.

#### **3.1.1 Making a Teacher Account**

The ASSISTment system allows everyone access. To start using the system, sign up for an account as a teacher (Figure 8) and log in with your name and password (Figure 9).

[Sign up](#)

---

Already have an account? [Log in](#)

I am a  at  [Can't find your school? Create a new one](#)

Enter your teacher display name in the Display Name field. This is the name your students will see when selecting your class. Use Mr. Smith instead of John Smith if you do not want your students to see your first name. Keep in mind, students may get confused if there are two Mr. Smiths in your school.

Display Name

Email  [I don't have an email address](#)

First Name

Middle Name

Last Name

Enter a password into the Password field. Write this password down so you don't forget it when you want to log back into ASSISTment. Repeat this password in the Confirm Password field.

Password

Confirm Password

Figure 8: Teacher sign-up page for ASSISTment

[Log in](#)

---

Need an account? [Sign up](#)

Login

Password

Remember me:

[I forgot my password](#)

For students: If you didn't provide an email address, your login is your first name, middle initial, last initial, and birth date. (example: John Mark Smith born on August 1 -> JohnMS0801)

For all other users: Your login is your email address

Figure 9: Log-in page for ASSISTment


### 3.1.2 The Teacher Account

While logged in to the teacher account, the teachers are able to make the following choice: they can either build their own ASSISTment problems<sup>3</sup> or create classes with problems already built by the builders.

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<sup>3</sup> See Section 3.4 p25



To do the latter, teachers need to be in the “Assess” tab of ASSISTment as shown in Figure 10. In this tab, teachers are able to create new classes by clicking on  [New Class](#). A screen such as the one in Figure 11 will appear, prompting them for the name, the grade level and the type of class (one that allows everyone access or one that needs the approval of the teacher). When the new classes are created, the screen will show all the classes (Figure 12), allowing the teachers to easily manage them. Furthermore, this screen contains important links (Figure 13), which allow the teachers to assign problems to the students and monitor the students’ and classes’ progress and results.

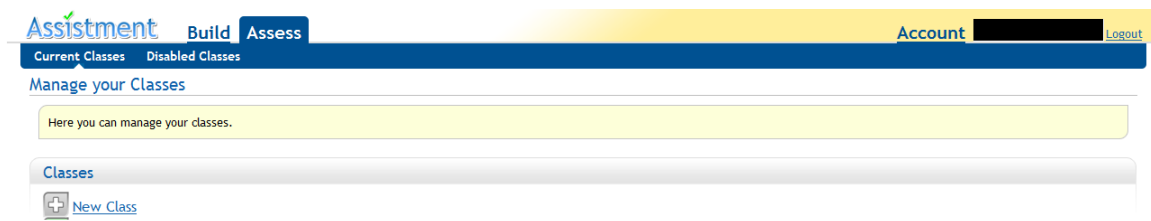


Figure 10: Blank “manage your classes” page

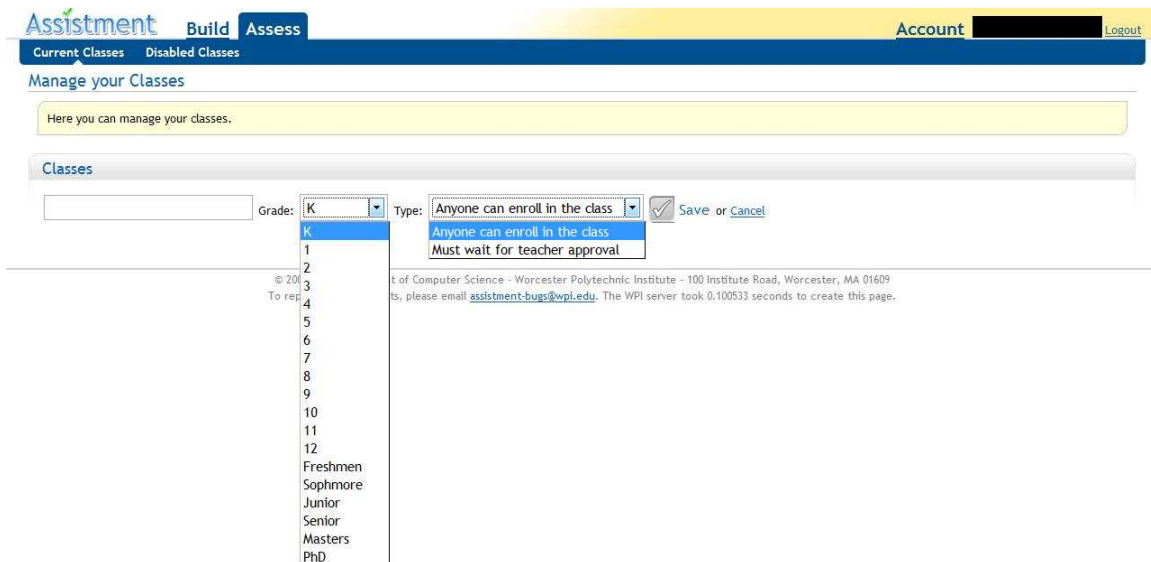


Figure 11: Building a new class

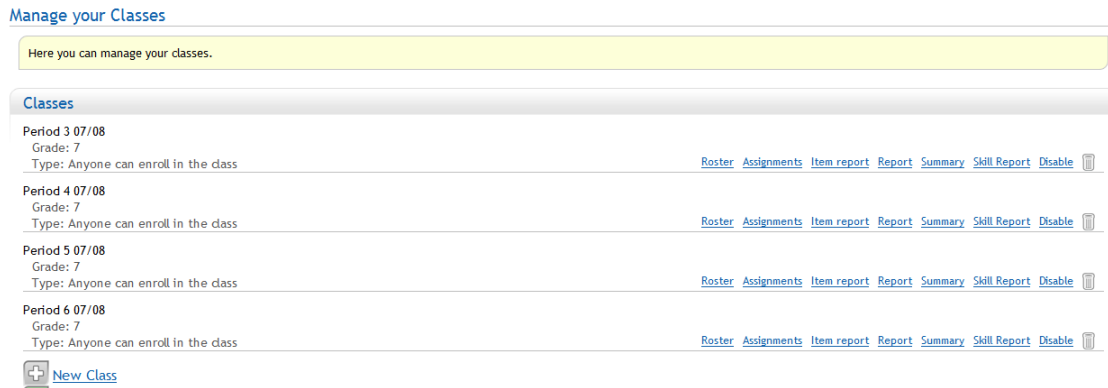




Figure 12: Managing classes



Figure 13: Links for managing classes

The [Roster](#) link (Figure 13) lists all the students in the class and allows the teacher to change the passwords of the students. Furthermore, the teachers are able to remove students from the class, if necessary.

The [Assignments](#) link (Figure 13) allows the teacher to manage the assignments for each class. As shown in Figure 14, a whole list of preset assignments (depending on the class level selected) is automatically added onto the list. If teachers are not satisfied with these assignments, they are able to delete assignments (  ) and/or add new assignments (  [New Assignment](#) ) by choosing from a list of over 5000 already-built assignments (Figure 15).

Class:  
Period 3 07/08

Here are the assignments for your class; you can manage assignments and see how your students are doing.

### Assignments

1 - Introduction To ASSISTment Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>
2 - Choose 20 Pretest - 7th grade(revised) Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>
3 - D.1.7-Venn-Stem-n-Leaf-Circle-Graphs (9 items) Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>
86 - 30871 - Moving_Straight_Ahead_Inv_4_first Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>
87 - 30910 - Moving_Straight_Ahead_Inv_4_second Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>
88 - 30949 - Moving_Straight_Ahead_Inv_4_third Class progress: 0 not started, 0 in progress, 0 complete	<a href="#">Progress</a> <a href="#">Preview</a> <a href="#">Grades</a> <a href="#">Item Report</a> <a href="#">Summary</a> <a href="#">Drag</a> <a href="#">Trash</a>

[+](#) New Assignment

Figure 14: List of assignments

5196 - MA2610 - 8a, 8b, 8c, 8d  
5197 - MA2610 - 11a, 11b, 11c  
5198 - P.4.8-Writing symbolic expressions v.3 (16 items)  
5199 - Problem Set #32601  
5200 - Problem Set #32602  
5201 - Incline Plane Experiment test  
5203 - Chapter 7, Problems 18, 19 and Chapter 8 Problem 10  
5205 - Chapter 7, Problem 15  
5206 - Chapter 8, Problem 13  
5207 - Chapter 8, Problem 15  
5208 - Chapter 7, Problem 8  
5209 - Chapter 7, Problem 10  
5210 - Problem Set #33131  
5211 - CMP Isomorphic Experiment 2  
5212 - CMP Isomorphic Experiment 1  
5213 - CMP Isomorphic Pre-Test  
5214 - CMP Isomorphic Post-Test

Choose a Problem Set to assign: [Cancel](#)

[Progress](#) [Preview](#) [Grades](#) [Item Report](#) [Summary](#) [Drag](#) [Trash](#)

Figure 15: Adding new assignments on ASSISTment

[Progress](#) [Preview](#) [Grades](#) [Item Report](#) [Summary](#) [Drag](#) [Trash](#)

Figure 16: Links for managing assignments

Below the title for each assignment, the teachers can view the progress: the number of students who have started, are working on, and have completed the assignment. Furthermore, links on the right side of the page (Figure 16) allow the teachers to easily manage the

assignments. With the [Progress](#) link, the teachers are able to view each student's status for each assignment (Figure 17). The [Preview](#) link shows the problem. With the [Grades](#) link, the teachers are able to see and change the grades for each student for that particular assignment (Figure 18).

94 - Stretching\_and\_Shinking\_Inv\_5  
 Class progress: 9 not started, 2 in progress, 16 complete

[Progress](#) [Preview](#) [Grades](#) [Item Report](#) [Summary](#)

Name	Status
[blacked out]	not_started
[blacked out]	complete
[blacked out]	complete
[blacked out]	complete
[blacked out]	in_progress
[blacked out]	not_started
[blacked out]	complete
[blacked out]	complete
[blacked out]	complete
[blacked out]	not_started
[blacked out]	complete

Figure 17: Status of students (names of students have been blacked out)


Gradebook > 94 - Stretching\_and\_Shinking\_Inv\_5

Here are all the grades for '94 - Stretching\_and\_Shinking\_Inv\_5'. To find a particular student quickly, start typing their name in the filter box.

filter by name:

Student	Score (teacher)	Correct	Status
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started
[blacked out]	<input type="text"/>		Not Started

Figure 18: Grades of students (names of students have been blacked out)

The [Item report](#) link will provide the teachers with detailed information of each student. As shown in **Figure 19**, in addition to the status of the students in the assignments, the teachers are able to see the students' average grade for the problem set and results from each individual ASSISTment in the problem set. Additionally, the teachers are able to see the answers the students made. The number of scaffolds and hints the students asked for will also be recorded onto this page. Furthermore, with a click of the “” next to the names of the students, the teachers will be brought to a page showing the student logs (**Figure 20**). In this page, the teachers will be able to deduce whether the student was guessing the answers by linking the amount of time the particular student took on each ASSISTment to the (in)accuracy of the answers.

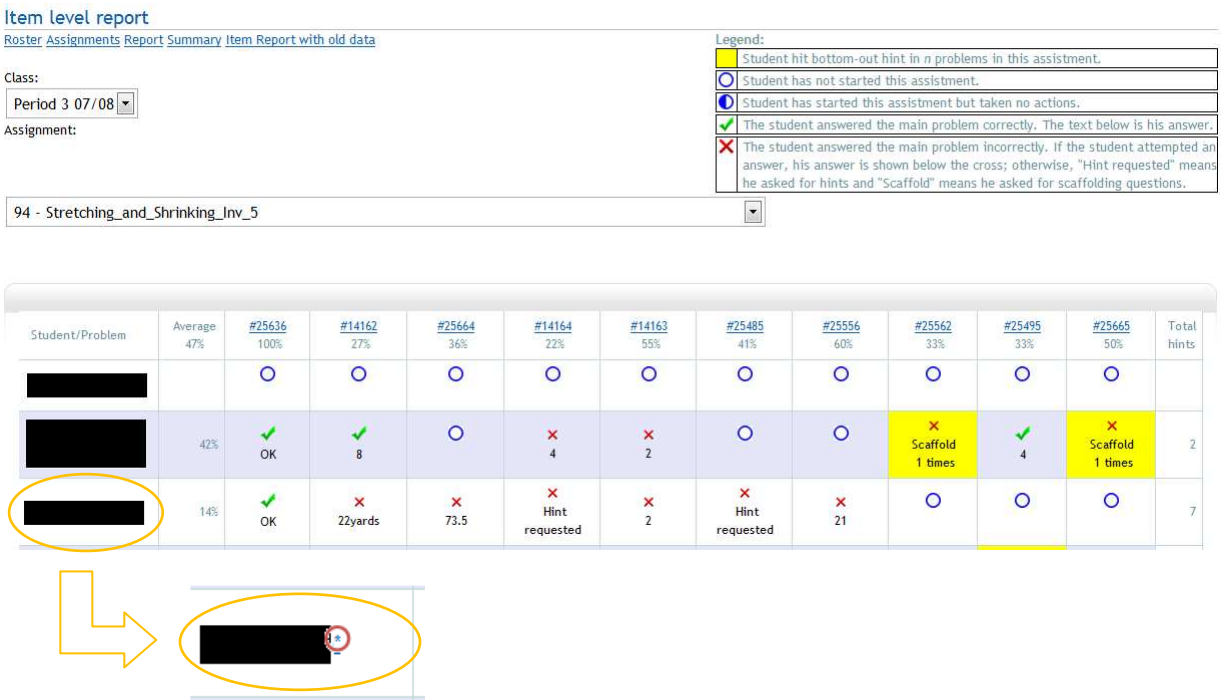


Figure 19: Item report of individual students for assignments (names of students have been blacked out)

## Student logs

Student: [REDACTED]  
Assignment: Stretching\_and\_Shinking\_Inv\_5

Note: These actions are in chronological order. The quantities reported in seconds indicate elapsed time since the previous action.  
BLUE: Answered correctly, DARK ORANGE: Answered incorrectly.

Time	Action	Object ID / Input text
Thu Feb 07 08:43:05 -0500 2008	Started a problem	#25636
0 mins 29 secs	Answered	#35904
Thu Feb 07 08:43:43 -0500 2008	Started a problem	#14162
1 mins 15 secs	Answered	22yards
0 mins 39 secs	Answered	77yards
0 mins 3 secs	Answered	77yards
0 mins 1 secs	Answered	77yards
0 mins 1 secs	Answered	77yards
0 mins 1 secs	Answered	77yards
1 mins 18 secs	Answered	150
0 mins 13 secs	Answered	150yards
0 mins 1 secs	Answered	150yards

Figure 20: Student logs

By clicking on the [Summary](#) link on the ASSISTment provides the teachers with a summary of the classes' progress as shown in Figure 21. This page shows the number of problems done and the number and percentage of correct problems. Furthermore, it shows the expected MCAS score and performance level of each student (number of standard deviations below or above average). Both the [Item report](#) and [Summary](#) links can be found on the "manage your classes" page (Figure 12 and Figure 13)

**Class summary**

Roster Assignments Item report Report Class Summary Report with old data

Class:

Period 3 07/08

Assignment:

94 - Stretching\_and\_Shinking\_Inv\_5

[Print this report](#)

Legend:

	Two standard deviations above average
	One standard deviation above average
	Within one standard deviation above or below average
	One standard deviation below average
	Two standard deviations below average

Student	Original questions					All questions			
	Done	Correct	Average	MCAS score	Perf. Level	Done	Correct	Average	Total hints
[blacked out]	7	6	85%	259	Pro./Adv.	7	6	85%	0
[blacked out]	7	4	57%	232	Needs improv.-High	7	4	57%	6
[blacked out]	7	1	14%	200	Warning/Failing-Low	7	1	14%	29
[blacked out]	6	0	0%	200	Warning/Failing-Low	12	2	16%	14
[blacked out]	7	4	57%	232	Needs improv.-High	7	4	57%	2
[blacked out]	7	7	100%	272	Pro./Adv.	7	7	100%	0
[blacked out]	5	1	20%	200	Warning/Failing-Low	5	1	20%	4
Class average	6		46%	225					8
Standard deviation	0		32%	26					8

Figure 21: Class summary (names of students have been blacked out)

**Assignment level report**

Roster Assignments Item report Summary Report with old data

Period 3 07/08

Student/Assignment	Number Sense 1 Summary Thu Feb 07 13:40:06 -0500 2008	Number Sense 2 Summary	Data Analysis 2 Summary	Number Sense Level 1 Summary	Data Analysis level 1 Summary	Number Sense Level 1 Summary Thu Feb 07 09:18:42 -0500 2008 0%	Data Analysis level 1 Summary Thu Feb 28 13:34:00 -0500 2008 22%	Stretch_and_Shink_Inv_1_first Summary Thu Feb 28 13:35:34 -0500 2008 56%	Stretching_and_Shinking_Inv_1_second Summary Thu Feb 28 13:36:57 -0500 2008 49%	Stretching_and_Shinking_Inv_5 Summary Thu Feb 07 13:29:13 -0500 2008 49%
[blacked out]	○	○	○	○	○	○	○	○	○	○
[blacked out]	○	○	○	○	○		●	14%	○	42%
[blacked out]	○	○	○	○	○	●	22%	●	○	14%
[blacked out]	○	○	○	○	○	●	○	○	○	14%
[blacked out]	○	●	○	○	○		○	○	○	●

Figure 22: Assignment level report (names of students have been blacked out)

### 3.2 ASSISTment for Students

#### 3.2.1 Observations of Special Ed. Students

From a trip to Worcester East Middle School, it has been observed that some special education students have problems with working on the ASSISTment system. This method of teaching requires more patience and self-motivation than most, which many children do not

have. Therefore, it seemed that some students might not use the system without some sort of supervision or guidance from an adult. Those without much patience tend to guess at the answers. Furthermore, ASSISTment requires a lot of reading, and some of the special education students have problems with that, which adds to their distress (if they do not get the correct answer). However, those who have the patience to work through the problems seem to benefit from the ASSISTments.

### 3.3 Tutoring Aspect

As stated before, the ASSISTment system is created to tutor students in different areas of mathematics. This is possible through three main features: scaffolding questions, buggy messages, and hints. Let us go through an already-built-into-the-ASSISTment example taken from question 10a of the 2004 6<sup>th</sup> grade MCAS.

As seen in the Figure 23, the main problem allows the students to either request help for the question if they have no idea how to approach the question or submit an answer. If the student requests for help, a scaffolding question will appear that should guide them in answering the problem as shown in Figure 24. This same scaffold will appear if the student were to submit the wrong answer. However, instead of the message “Let’s move on and figure out this problem”, the message, “Sorry, that is incorrect. Let's move on and figure out why!”, appears.





**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Request Help](#)

Select one:

A. Equilateral Triangle

B. Rhombus

C. Right Isosceles Triangle

D. Trapezoid

[Submit Answer](#)

[Comment on Problem #34027](#)

Figure 23: Main problem of (Grade 6, 2004, Q10a)

Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle?

[Request Help](#)

Select one:

A. A three-sided shape with one 90-degree angle and two equal sides.

B. A three-sided shape with three equal sides.

C. A four-sided shape with one pair of parallel sides.

D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

[Submit Answer](#)

[Comment on Problem #34028](#)

Figure 24: 1st scaffold of (Grade 6, 2004, Q10a)

As shown in Figure 24, similar to the main problem, the scaffolds give the students the same two choices—they can either request for help or submit an answer. In some cases, as in this scaffold problem, a so-called buggy message will appear (Figure 25), telling the student the terminology the wrong answer is describing. For each of the wrong answer in this scaffold problem, there is a buggy message. If the student requests for help, a hint will appear which should help him/her answer the scaffold problem (Figure 26). However, if the student is still not

able to answer the questions, a hint that gives him/her the answer will appear (Figure 27). In some cases, more than two hints are available to guide the student to the correct answer.

Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle? [Comment on Problem #34028](#)

[Request Help](#)

Select one:

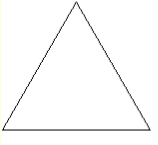
- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

[Submit Answer](#)

No, sorry. This is a right isosceles triangle.

Figure 25: Example of a buggy message (Grade 6, 2004, Q10a)

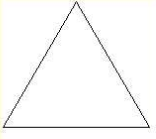
This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on Hint #27758](#)

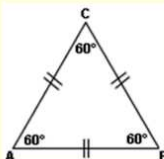
Figure 26: 1st hint of scaffold 1 (Grade 6, 2004, Q10a)

This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on Hint #27758](#)

Notice that an equilateral triangle has three sides. So you can eliminate answer C and D. Also, all three sides of the equilateral triangle are the same length.



An equilateral triangle is a three-sided shape with three equal sides.

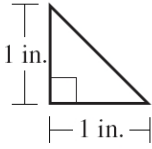
Select B.

[Comment on Hint #27759](#)

Figure 27: All hints of scaffold 1 (Grade 6, 2004, Q10a)

This process of scaffold and hints is repeated a few times as necessary. As shown in Figure 28, once the student has gone through all the scaffolding questions, the original problem is given again. At this point, the student should be able to answer the question. However, if the student is still not able to answer the problem, there are two features—the buggy messages and hints—whose purpose is to help him/her obtain the correct answer (Figure 29 and Figure 30).

Now we have defined all the terms, let's go back to the original problem.



**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Request Help](#)

Select one:

A. Equilateral Triangle

B. Rhombus

C. Right Isosceles Triangle

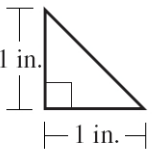
D. Trapezoid

[Submit Answer](#)

[Comment on Problem #34032](#)

Figure 28: Last scaffold, repeating the original problem (Grade 6, 2004, Q10a)

Now we have defined all the terms, let's go back to the original problem.



**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Request Help](#)

Select one:

A. Equilateral Triangle

B. Rhombus

C. Right Isosceles Triangle

D. Trapezoid

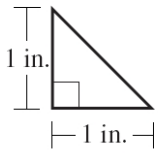
[Submit Answer](#)

The shape is not a three-sided shape with three equal sides, so it is not an equilateral triangle.

[Comment on Problem #34032](#)

Figure 29: Example of a buggy message for the last scaffold (Grade 6, 2004, Q10a)

Now we have defined all the terms, let's go back to the original problem.



**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Comment on Problem #34032](#)

Notice the shape is a three-sided shape with a 90-degree angle and two equal sides.

[Comment on Hint #27797](#)

A right isosceles triangle is a three-sided shape with a 90-degree angle and two equal sides.

Select C.

[Comment on Hint #27798](#)

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

[Submit Answer](#)

Figure 30: All hints for the last scaffold (Grade 6, 2004, Q10a)

## 3.4 Design Process

The builder has been created for simplicity—one does not need to have much computer aptitude to use this feature. However, the builder is time-consuming, with much time being put into uploading of pictures.

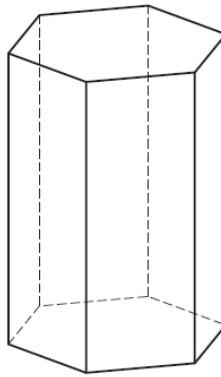
### 3.4.1 Drafts

As the group lacked experience in writing tutoring questions and in using the builder, it was necessary that we started somewhere. Since the builder is time-consuming, it was suggested that we improve our tutoring skills before attempting the builder, so that our work could be

critiqued before too much unnecessary time was spent on it. Therefore, as a first step, drafts of scaffolding questions were made using Microsoft Word.

As shown in Figure 32, the drafts contained the exact content—the main problem, scaffolding questions, images, hints, and answers—to be put into the builder. After a draft was approved, the content was then inserted into the builder; the text was cut-and-pasted and the images were uploaded (to be explained in the next section).

- 29 A hexagonal prism is shown below.



What is the total number of edges in a hexagonal prism?

Figure 31: Original problem from the MCAS (Grade 6, 2007, Q29)

2007 Q29 - Microsoft Word

Home Insert Page Layout References Mailings Review View

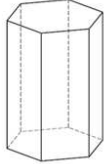
Times New Roman 18

Font Paragraph Styles

6th Grade MCAS 2007 Q29

Main Problem:

A hexagonal prism is shown below.



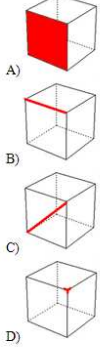
What is the total number of edges in a hexagonal prism?

Answer: 18

Scaffolding Questions

Scaffold 1:

First, let's understand what an edge is.  
Which of the following is an edge?



Answer: B

Page: 1 of 9 Words: 320 Recovered 56%


2007 Q29 - Microsoft Word

Home Insert Page Layout References Mailings Review View

Times New Roman 18

Font Paragraph Styles

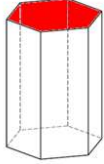
Hint 1:  
Let's look at the figure below. Each edge is in a different color.



In a three-dimensional shape, two faces form an edge.

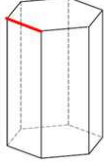
Hint 2:  
Figure B shows an edge.  
Select B.

Scaffold 2:  
Now that we know what an edge is, let's go back to the original problem.  
How many edges are in the hexagon in red?

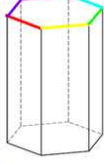


Answer: 6

Hint 1:  
Here's a hexagon, one of the edges is colored in red.



Hint 2:  
Each edge is in a different color. Count the number of edges (colored lines).



Hint 3:  
There are 6 edges in the hexagon in red.  
Type in 6.

Page: 3 of 9 Words: 320 Recovered 56%

2007 Q29 - Microsoft Word

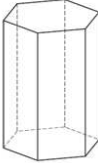
Home Insert Page Layout References Mailings Review View

Times New Roman 18

Font Paragraph Styles

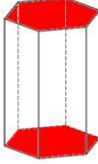
Page 5 of 9 Words: 320 Recovered 56%

Scaffold 3:  
Now, how many edges are in the two hexagons in the prism?



Answer: 12

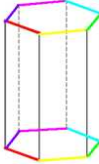
Hint 1:  
The hexagons are colored in red.



Hint 2:  
There are 2 hexagons and 6 edges in each hexagon.

Hint 3:

Hint 4:  
All the edges are in different colors. Count the number of edges (colored lines).



Hint 5:  
There are 12 edges in the two hexagons in the prism.  
Type in 12.

Scaffold 4:  
How many edges link the two hexagons together?

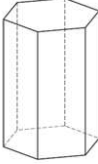
2007 Q29 - Microsoft Word

Home Insert Page Layout References Mailings Review View

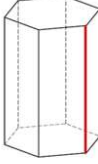
Times New Roman 18

Font Paragraph Styles

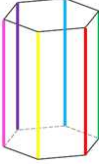
Page 7 of 9 Words: 320 Recovered 56%



Hint 1:  
One of the connecting edges is colored in red.

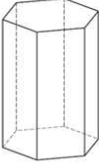


Hint 2:  
All the linking edges are in different colors. Count the number of edges connecting the two hexagons (colored lines).



Hint 3:  
There are 6 edges connecting the two hexagons together.  
Type in 6.

Scaffold 5:  
Now, let's go back to the original problem.  
A hexagonal prism is shown below.



What is the total number of edges in a hexagonal prism?



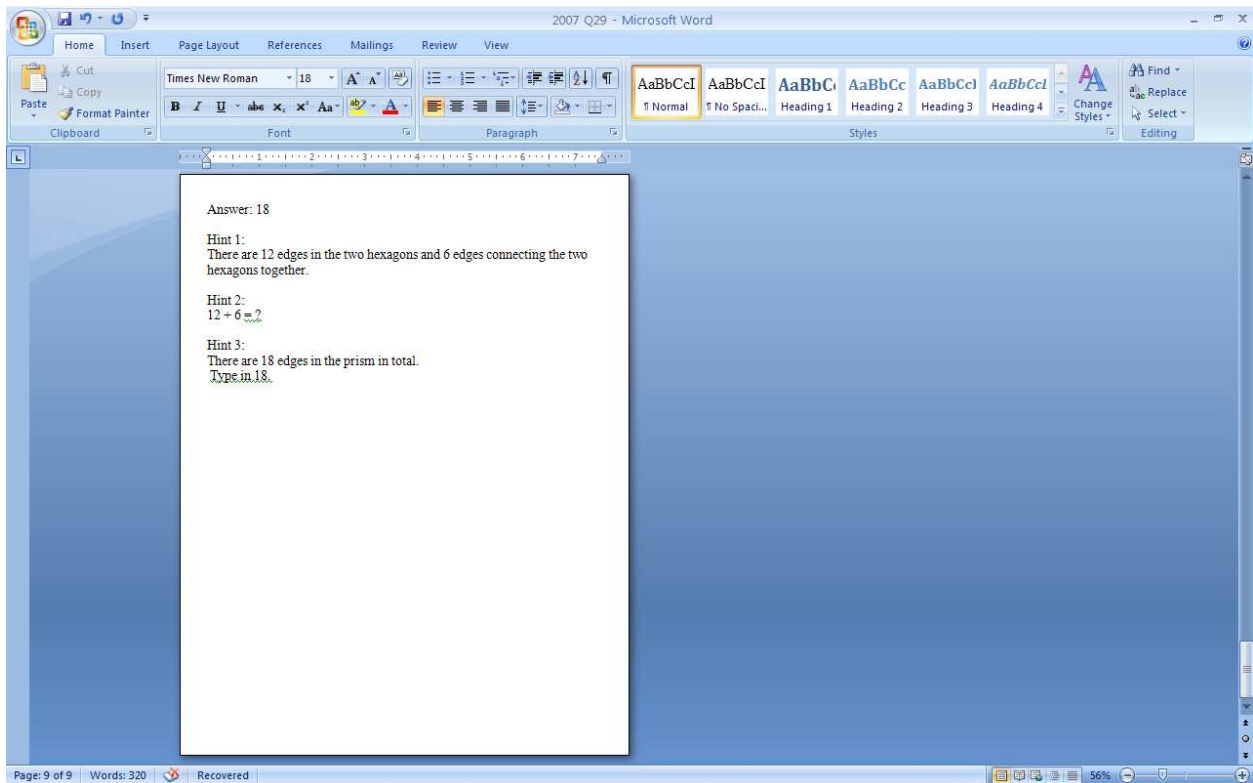


Figure 32: A sample of building draft in Microsoft Word (Grade 6, 2007, Q29)

Once the group became acquainted with the approach of writing the tutoring questions and the builder, drafts were no longer necessary. Instead, the scaffolding questions were directly created in the ASSISTment builder.

### 3.4.2 Building the ASSISTments

The building process on the ASSISTment website is straightforward for the most part and can be done either on Internet Explorer or Firefox. It has been found that on Firefox, the user needs to refresh the page when attempting to switch between the main problem and the scaffolds or he/she will not be able to save the problem body and hints.

The builder allows the users to choose either to aid the students via the hints or scaffold approach. When scaffold is enabled, hints are disabled for the problem. For this project, the group is only using the scaffold approach.

Since images (as opposed to words) have been found to be more effective for 6<sup>th</sup> graders, in most cases, the user needs to add images into either the main problem, scaffolds or hints. This process is a little inconvenient as he/she needs to upload the image onto the system before being able to insert the image into ASSISTment. Another issue is the format of the image to be uploaded. Microsoft Word's .doc files have been found to be too big (in dimensions) when inserted into the builder. Our group has found that Paint and Microsoft Visio are some of the better ways to create the images.

While using the builder, the user needs flag the problem type as either a fill in or multiple choice (the two main types used in this project) for both the main problem and scaffold. Additionally, the answer added has to be labeled as correct or wrong. Furthermore, the user has to make a decision whether to add “buggy” messages or incorrect messages to the wrong answer to aid the students in obtaining the correct final answer.

To show the building process, the same example as used in the previous—question 29 from the 2007 6<sup>th</sup> grade MCAS—will be used. Figure 33 shows the completed main problem. The problem has been flagged as a scaffolding-type problem; therefore, the hints have been disabled for the main problem. Additionally, as in the MCAS, the problem has been flagged as a “fill in” type, with “18” as the answer. A preview of the main problem is shown in Figure 34.



therefore four answers were needed: A, B, C, and D. As it was not yet possible to add in images into the answers, the choices were uploaded onto ASSISTment and then inserted into the problem body. To guide the students to obtaining the correct answers, hints were added to the scaffolds. Additionally, in order to further guide the students to getting the correct answers, buggy messages, or incorrect messages, were added to the wrong answers as well. Figure 36 shows a preview of this. This process was repeated for the rest of the scaffolds (Figure 37 to Figure 39).

The screenshot displays the ASSISTment interface during the 'Build' phase. At the top, there are navigation tabs for 'Assistment', 'Build', and 'Assess'. The user is logged in as 'jeslin (jeslin@wpi.edu)'. The main content area shows the scaffolding question: 'First, let's understand what an edge is. Which of these figures shows an edge?' with a dropdown menu showing 'A'. Below the question is an 'Answers' section with four options: A (Correct?), B (Correct), C (That's a diagonal line across a face.), and D (That's a vertex.). There is also a 'Hints' section with a diagram of a tetrahedron and text: 'Let's look at the figure below. Each edge is in a different color. In a three-dimensional shape, two faces form an edge. Figure B shows an edge. Select B.'

Figure 35: Build of 1st scaffolding question (Grade 6, 2007, Q29)

Let's move on and figure out this problem

First, let's understand what an edge is.

Which of these figures shows an edge?

A.



B.



C.

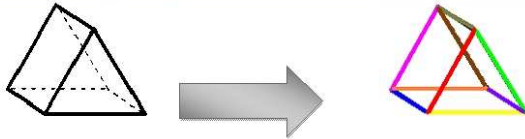


D.



[Comment on Problem #33715](#)

Let's look at the figure below. Each edge is in a different color.



In a three-dimensional shape, two faces form an edge.

[Comment on Hint #27261](#)

Figure B shows an edge.

Select B.

[Comment on Hint #27262](#)

Select one:

A

B

C

D

[Submit Answer](#)

That's a face.

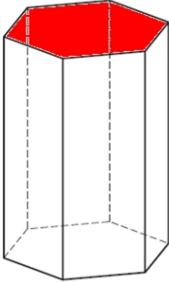
Figure 36: Preview of 1st scaffolding question (Grade 6, 2007, Q29)

As stated in the section before, the last scaffold is a repetition of the main problem. As shown in Figure 40, differing from the main problem, hints were added for the last scaffold to

help the students who are not able to answer the question even after going through all the scaffolds. A preview of the first scaffold is shown in Figure 36.

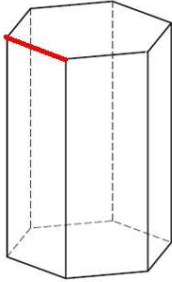
Now that we know what an edge is, let's go back to the original problem.

How many edges are there in the hexagon in red?



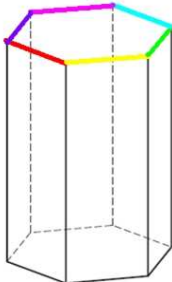
[Comment on Problem #33717](#)

One of the edges is colored in red.



[Comment on Hint #27264](#)

Each edge is colored in a different color. Count the number of edges (colored lines).



[Comment on Hint #27265](#)

There are 6 edges in the hexagon in red.

Type in 6.

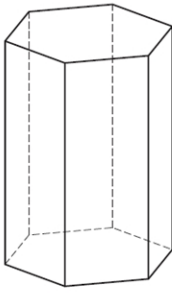
[Comment on Hint #27266](#)

Type your answer below:

[Submit Answer](#)

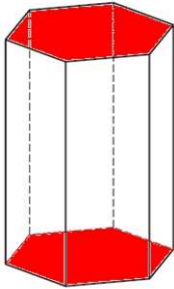
Figure 37: Preview of 2nd scaffolding question (Grade 6, 2007, Q29)

Now, how many edges are there in the two hexagons in the prism?



[Comment on Problem #33718](#)

The two hexagons are colored in red.



[Comment on Hint #27267](#)

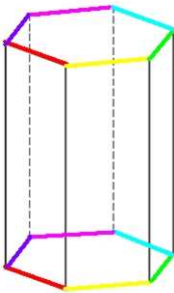
There are 2 hexagons and 6 edges in each hexagon.

[Comment on Hint #27270](#)

$6 + 6 = ?$

[Comment on Hint #27272](#)

All the edges are in different colors. Count the number of edges (colored lines).



[Comment on Hint #27268](#)

There are 12 edges in the two hexagons in the prism.

Type in 12.

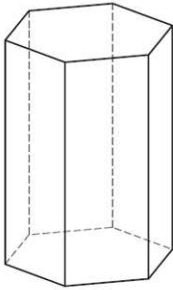
[Comment on Hint #27269](#)

Type your answer below:

Submit Answer

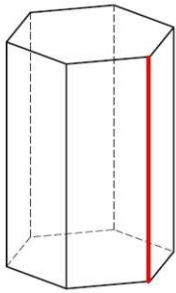
Figure 38: Preview of 3rd scaffolding question (Grade 6, 2007, Q29)

How many edges connect the two hexagons together?



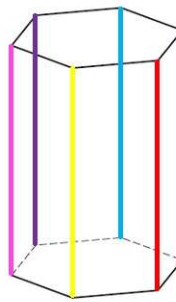
[Comment on Problem #33719](#)

One of the connecting edges is colored in red.



[Comment on Hint #27275](#)

All the connecting edges are in different colors. Count the number of edges connecting the two hexagons (colored lines).



[Comment on Hint #27276](#)

There are 6 edges connecting the two hexagons together.

Type in 6.

[Comment on Hint #27277](#)

Type your answer below:

[Submit Answer](#)

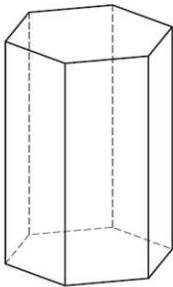
Figure 39: Preview of 4th scaffolding question (Grade 6, 2007, Q29)





Now, let's go back to the original problem

A hexagonal prism is shown below.



What is the total number of edges in a hexagonal prism?

[Comment on Problem #33722](#)

There are 12 edges in the two hexagons and 6 edges connecting the two hexagons together.

[Comment on Hint #27278](#)

$12 + 6 = ?$

[Comment on Hint #27279](#)

There are 18 edges in the prism in total.

Type in 18.

[Comment on Hint #27280](#)

Type your answer below:

[Submit Answer](#)

Figure 41: Preview of last scaffolding question (Grade 6, 2007, Q29)

### 3.4.3 Problem Sets

The geometry and measurements problems created were then placed into different groups, or problem sets, following the Curriculum Framework<sup>4</sup> (Massachusetts Department of Elementary & Secondary Education) found on the Mass.gov website. The purpose behind this is to perform a study of the effectiveness of ASSISTment system<sup>5</sup> and to allow the teachers to test the students' understanding of the material covered in class. Furthermore, students can make use of these problem sets to increase their knowledge of more complex topics.

<sup>4</sup> For more information, see Appendix B p208

<sup>5</sup> See Section 4 p40

As shown in Figure 42, each problem set consists of a pre- and post-test in addition to a minimum of one scaffolding problem. The pre- and post-tests are essentially the same problem, with the pre-test simply being the question. To test the students for their prior understanding of the material, the pre-test problems do not tell the students whether they got the answers correct or wrong (seen in Figure 43), whereas the post-test problems contain the scaffolding questions, hints, and answers. The post-tests test the students' understanding of the topic after the scaffolding questions, thereby allowing us to test the effectiveness of the scaffolding approach.

# of Q	Groups	Problem Set	Pre-Test	Post-Test	Scaffold Problems
4	6.M.2	5176	26504	26297	26352 26343

Figure 42: A sample of problems in a problem set (Problem set 5176: 6.M.2)

The measure of an angle is  $100^\circ$ . What kind of angle is this? [Comment on this question](#)

Request Help

Select one:

Right

Acute

Obtuse

Straight

Submit Answer

✗ Sorry, that is incorrect. Let's move on and figure out why!

This was a pre-test question. [Comment on this question](#)

We will not tell you if your answer is right or wrong.

You will get this problem again at the end of this problem set.

Select one:

Ok

Submit Answer

Figure 43: Preview of a pre-test problem (Problem set 5176: 6.M.2)

### 3.4.4 Problems Encountered

One major issue was encountered during the building process. As the ASSISTment system was still in the developmental process when the group was using it, there were times when necessary builder features were not functioning properly. For instance, the tab shown in Figure 44 for the hints of the scaffold was absent during a period of time; therefore, html had to be used to bold or color text, insert images, etc. This made the building process more time-consuming.



Figure 44: Screenshot of builder tab

## 3.5 Additional Work

One of the group members created 10 extra measurement problems<sup>6</sup> in the second term of the project as she needed to complete an extra 1/3 WPI credit. Since these problems were completed too late to be tested by the students, they were not able to be included in the study.

## 4 Study

### 4.1 Aim

The aim of this study is to test whether the scaffolding questions of the ASSISTment system are actually effective in aiding students with their learning of Mathematics.

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<sup>6</sup> See Appendix A p192

## 4.2 Hypothesis

Students learn from the ASSISTment system (primarily using the scaffolding method). Additionally, students with the higher IRT scores should have a higher gain score than those with the lower IRT scores.

## 4.3 Method

To launch this study, problems from the MCAS were built into the ASSISTment system using the scaffolding questions approach<sup>7</sup>. These problems were then group into sets according to the Mathematics Curriculum Framework (Massachusetts Department of Elementary & Secondary Education). The problem sets contained pre- and post-test problems and a minimum of one scaffolding problem. The pre- and post-tests test the students for their understanding of the material before and after the scaffolding questions, and in effect, allowing us to test the effectiveness of this tutoring method.

### 4.3.1 Experimental Sessions

Experimental sessions were done in various schools in the Worcester area: Burncoat Middle School, Forest Grove Middle School, Oak Middle School, Worcester Arts Magnet, and Worcester East Middle School. These sessions were typically held in the computer labs of the schools for approximately an hour. To make sure that each problem set contains some data, students were assigned different problem sets to start off with.

As the students have already had some background with the geometry and measurement material, the pre-tests tested each student for their prior understanding of the topic. The post-test will test the students' understanding of the same topic after the scaffolding problems. All

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<sup>7</sup> For more information, see Section 3.4 p25

answers chosen or filled in by the students were logged onto the system. With the ASSISTment system, we were able to obtain the following data: how well the students did for each of the pre- and post-test. Data obtained from the tests were then analyzed and a conclusion was then obtained.

#### 4.4 Data

Table 1: A fraction of the raw data showing input and correctness of the answers filled in for all questions in each problem set (names have been blacked out)

Sequence	Teacher	School	User ID	Name	Student IRT	Pre-test		Scaffold 1		Scaffold 2		Scaffold 3		Scaffold 4		Post-test		# in Seq.	Completeness
						Answer	Correctness	Answer	Correctness	Answer	Correctness	Answer	Correctness	Answer	Correctness	Answer	Correctness		
5172		Forest Grove Middle School			2.0437	120		B. s*6	1	44	0	No_answer	0	No_data		A. 120	0	5	complete
5172		Forest Grove Middle School			-0.4433	18		C. s/6	0	54	1	C. 30	0	No_data		C. 108	0	5	complete
5172		Forest Grove Middle School			-1.3333	108		D. 40	1	54	1	B. s*6	1	No_data		D. 20	0	5	complete
5172		Forest Grove Middle School			0.0413	120		B. s*6	1	A. 13	0	44 feet	0	No_data		A. 120	0	5	complete
5172		Forest Grove Middle School			1.3333	18		54	1	B. s*6	1	D. 40	1	No_data		B. 18	1	5	complete
5172		Forest Grove Middle School			2.2226	120		54	1	B. s*6	1	D. 40	1	No_data		No_data		5	incomplete
5172		Forest Grove Middle School			2.2186	120		B. s*6	1	D. 40	1	126	0	No_data		A. 120	0	5	complete

After a sufficient amount of data was collected (approximately 610 data sets), the raw data<sup>8</sup> obtained was then processed by the group before the analysis stage was started. Incomplete data (problem sets in which the post-test was not completed) could not be used and therefore

<sup>8</sup> See Raw Data Appendix C p233

were deleted from the table<sup>9</sup>. Approximately 97 data sets were excluded from the list due to incompleteness.

As seen in Table 1, the raw data consists of columns labeled “Correctness” with the numbers “1” and “0”. The “1” means the students answered the problems correctly and “0” means the students answered the problems wrong. Next, because the pre-tests in the ASSISTments do not actually have the answers labeled as correct or wrong, the column for correctness of the pre-test problem had to be filled out with either a “1” or a “0”.

Finally, to find out whether the students learned from the scaffolds, the gain score was calculated and put into Table 2. The gain score is computed by finding the difference between the scores for corresponding pre- and post-tests (post-test minus pre-test). A gain score of “1” means that while the student answered the pre-test wrong, he/she answered the post-test correctly after doing the scaffolding problems (i.e. the student learned from the scaffolds); a gain score of “0” means that the student either answered both the pre- and post-test correctly or incorrectly (i.e. the student did not show improvement or deterioration); and a gain score of “-1” means that the student answered the pre-test correctly and the post-test incorrectly (i.e. the student showed “unlearning”).

---

<sup>9</sup> For a list of excluded data, see Appendix C p345

Table 2: A portion of the processed data showing the gain scores for each data set

Sequence	Type	Teacher	School	User ID	Name	Student IRT	Pre-test	Scaffold 1	Scaffold 2	Scaffold 3	Scaffold 4	Post-test	Gain	# in Seq.
5172	Measurement		Burncoat Middle School			-1.947323	0	0	0	0		0	0	5
5172	Measurement		Worcester East Middle School			-1.752038	1	0	0	0		0	0	5
5172	Measurement		Burncoat Middle School			-1.441691	0	0	1	0		0	0	5
5172	Measurement		Burncoat Middle School			-1.417862	0	1	1	0		0	-1	5
5172	Measurement		Burncoat Middle School			-1.396434	0	0	0	0		0	0	5
5172	Measurement		Forest Grove Middle School			-1.333329	0	1	1	1		0	0	5
5172	Measurement		Burncoat Middle School			-0.476883	0	0	0	0		1	0	5

#### 4.4.1 “Unlearning”

Some students appeared to deteriorate after the scaffolding questions. This might be due to the way the pre-test was set up. Because the students were not told whether they answered the pre-test correctly, they might have assumed that the answer they filled in or chose was wrong, but in reality it was the correct answer. Therefore, the students might have filled in or chosen a different (wrong) answer for the post-test. These data were not excluded as this shows uncertainty in the students even after doing the scaffolding problems.

### 4.5 Analysis

Statistical analysis was conducted on several different data. The first test will show whether, in general, the students learned from the scaffolding questions; the second will show whether there were differences in learning between the measurement and geometry problems. All t-test analysis was conducted using Microsoft Excel.

#### 4.5.1 Test for Overall Learning

To test the overall learning of the students, a t-test was conducted on the data obtained.



Table 3: T-test showing overall learning of students

	<i>Overall</i>
Mean	0.008404644
Variance	0.1557884
Observations	172
Hypothesized Mean Difference	0
df	171
t Stat	0.279264679
P(T<=t) two-tail	0.780379184
t Critical two-tail	1.973933915

As shown in Table 3, for a large sample size of 172 students, the mean gain score is 0.0084. This number is not very far off from “0”, which means: overall, there was barely any learning from using the ASSISTments. A one sample t-test was done on the overall gain score of each student, testing a null hypothesis that students did not learn at all (an average gain score of 0). The p-value was 0.780, which is very large (Petruccelli, Nandram and Chen 292). This means that the evidence for the null hypothesis is very strong, i.e. the p-value does not support the hypothesis that the students learned from the scaffolding questions.

#### 4.5.2 Test for Differences in Learning between Problem Types

To test whether there was a difference between the learning in geometry and measurement problems, a t-test was conducted on two separate data obtained.

Table 4: T-test showing learning of students in both geometry and measurement problems

	<i>Geometry</i>	<i>Measurement</i>
Mean	0.029896313	0.008030303
Variance	0.229924166	0.123255514
Observations	124	110
Hypothesized Mean Difference	0	0
df	123	109
t Stat	0.694282422	0.239897155
P(T<=t) two-tail	0.488814378	0.810860551
t Critical two-tail	1.97943866	1.98196743

As seen in Table 4, there is a difference between the learning with the geometry and measurement problems, with the mean gain score for the geometry being 0.0299 and geometry, 0.0080. Again, a one sample t-test was done on the overall gain score of each student for each problem type, testing a null hypothesis that students did not learn at all (an average gain score of 0). The p-value is found to be a lot lower for geometry than for measurement, which further shows that the students learned more from with the geometry scaffolding questions than the measurement ones.

However, even though results do show the geometry scaffolding questions were more effective than the measurement ones, the mean gain scores for both problem types are still very low—close to 0. The p-values found are also large, supporting the null hypothesis that students did not learn from the ASSISTment system.

#### 4.5.3 Test for Differences in Learning between Schools

Separate one sample t-tests were conducted on data obtained from each school in order to test the whether there was a difference in learning between the five schools.

Table 5: T-test showing learning of students in different schools

	<i>Burncoat Middle School</i>	<i>Forest Grove Middle School</i>	<i>Oak Middle School</i>	<i>Worcester Arts Magnet</i>	<i>Worcester East Middle School</i>
Mean	0.115	0.043276644	-0.214285714	-0.05245098	-0.056465577
Variance	0.170887931	0.111187174	0.154761905	0.123588087	0.265855558
Observations	30	70	7	34	31
Hypothesized Mean Difference	0	0	0	0	0
df	29	69	6	33	30
t Stat	1.523711593	1.085863534	-1.441153384	-0.869970977	-0.609735875
P(T<=t) two-tail	0.138412639	0.28131848	0.199621673	0.390600585	0.546627695
t Critical two-tail	2.045229611	1.99494539	2.446911846	2.034515287	2.042272449

Results (Table 5) show that while students in Burncoat Middle School and Forest Grove Middle School showed some improvement (positive mean value) with the ASSISTment system, students in Oak Middle School, Worcester Arts Magnet, and Worcester East Middle School showed some deterioration (negative mean value).

Again, a one sample t-test was done on the overall gain score of each student for each school, testing a null hypothesis that students did not learn at all (an average gain score of 0). Results also show that there was not much learning with the ASSISTment system, with a p-value larger than 0.1. However, the p-value of Burncoat Middle School was relatively close to 0.1, meaning that the evidence against the null hypothesis (students did not learn) and in favor of the hypothesis (students learned) is “borderline” (Petruccioli, Nandram and Chen 292).

#### 4.5.4 Test for Differences in Learning between Students by IRT Scores

To test for learning differences between students by their IRT (item response theory) scores, the students’ IRT scores were either labeled as negative or positive according to their aptitude level, with the positive being the students with higher aptitude.

Table 6: T-test showing learning of students by student IRT scores

	<i>Negative</i>	<i>Positive</i>
Mean	0.004829545	0.00284613
Variance	0.112269372	0.162357107
Observations	48	76
Hypothesized Mean Difference	0	0
df	47	75
t Stat	0.099861073	0.061578052
P(T<=t) two-tail	0.920879365	0.95106266
t Critical two-tail	2.01174048	1.992102124

Table 7: T-test showing students' pre-test answers by student IRT scores

	<i>Negative</i>	<i>Positive</i>
Mean	0.339647968	0.636042284
Variance	0.146595876	0.155098845
Observations	48	76
Hypothesized Mean Difference	0	0
df	47	75
t Stat	6.145946327	14.07954119
P(T<=t) two-tail	1.61801E-07	9.44728E-23
t Critical two-tail	2.01174048	1.992102124

As shown in Table 6, there is barely any difference between the mean gain scores for both the students with the higher aptitudes and those with the lower aptitudes. Again, a one sample t-test was done on the overall gain score of for each group of students, testing a null hypothesis that students did not learn at all (an average gain score of 0). The p-value is significantly large, supporting the evidence that the students did not learn from the scaffolding questions.

Though it was expected that students with higher IRT scores should score better than those with the lower IRT scores, the results in Table 6 does not show that. This might be due to the fact that more students with a higher aptitude answered the pre-test correctly, as shown in Table 7. Students with the positive IRT score had a mean pre-test score of 0.636 while those with

the negative IRT score had a mean 0.340, which is a significant difference. This would mean that if these positive IRT students who answered the pre-test and post-test correctly would have received a gain score of 0.

## 5 Conclusion

After close analysis of our data the numbers showed that there is a high probability that our ASSISTments did not help the students learn the material. Although statistically it is proven that almost no learning was achieved, there are many factors which might have contributed to this conclusion that skewed our results, thus making them inaccurate.

Firstly, not enough data sets might have been collected. Out of about 610 problem sets that were accepted as data, 97 were thrown out because of the incompleteness. As it is true for any statistical analysis, the results would be more accurate if more data were collected. One of the concerns is that not enough different classrooms were examined, and too many of the same students took the problem sets. The problem with this phenomenon is that too many students might have been guessing depending on the school and the class's overall attitude towards learning, thus significantly modifying the expected results.

Another key reason why the results are unlikely to be accurate is the way the problem sets were set up. A normal problem set consists of 1 pre-test, 2-4 scaffolding questions, and 1 post-test. Pre-test and the post-test are the same exact question, but after the pre-test question was completed it was counted as a wrong answer displaying a message that the same question will be given again in the end of the problem set. The manner in which this was done has a high probability that the students confused the pre-test message of hiding the correctness of the student's response with the answer just being plainly wrong. If this was the case, then the students would not pick the same answer in the post-test as they did on the pre-test, even if they were right. This produced negative learning and skewed the results in the opposite direction then they should have gone without the unnecessary confusion.

Overall, the data that we found should not be used as the final data used in making key decisions deciding the future of these problem sets or ASSISTments in general. The structure of the problem sets should be changed to avoid confusion for 6<sup>th</sup> grade students. The pre-tests should not display any phrases stating that the answer inputted by the student is not correct. After this is done the problem sets should be ran again.

## Works Cited

Massachusetts Department of Elementary & Secondary Education. "Massachusetts Curriculum Frameworks." Nov 2000. Mass.gov. 19 April 2008

<<http://www.doe.mass.edu/frameworks/math/2000/final.pdf>>.

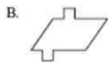
Petruccelli, Joseph D., B. Nandram and M. Chen. Applied Statistics for Engineers and Scientists. 1st Edition. Upper Saddle River: Prentice-Hall, 1999.



# Appendix A: All ASSISTment problems created

Grade 6, 2007, Q35 (26286)

Which of the following figures appears to have both line symmetry and rotational symmetry?



[Comment on this question](#)

Request Help

Select one:

- A
- B
- C
- D

Submit Answer

Let's move on and figure out this problem

To solve this problem, we need to understand what line symmetry and rotational symmetry are. Let's start with line symmetry.

What does it mean for a figure to have line symmetry?

[Comment on this question](#)

Select one:

- A. A figure has line symmetry when you can reflect (or flip) it over a straight line and it stays unchanged.
- B. A figure has line symmetry when you can rotate (or spin) it around a center point by a certain angle and it stays unchanged.
- C. A figure has line symmetry when every point on the figure has been translated (or slid) the same distance.

Submit Answer

✔ Correct!

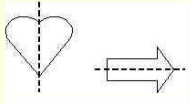
So we know that line symmetry means you can reflect (flip) the figure along a certain line and it stays the same.

Which of these figures has line symmetry?



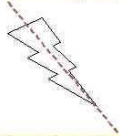
[Comment on this question](#)

These are two images with line symmetry. Notice the two sides are mirror images of each other.



[Comment on this hint](#)

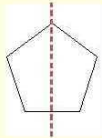
Let's look at figure A first.  
When reflected (or flipped) over the red dotted line, the figure does not stay the same.



So figure A does not have line symmetry.

[Comment on this hint](#)

Now, let's look at figure B.  
When reflected (or flipped) over the red dotted line, the figure stays the same.



So figure B has line symmetry.

Select B.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

Now that we know what line symmetry is. Let's figure out what is rotational symmetry.

What does it mean for a figure to have rotational symmetry?

[Comment on this question](#)

Select one:





- A. A figure has rotational symmetry when you can reflect (or flip) it over a straight line and it stays unchanged.
- B. A figure has rotational symmetry when you can rotate (or spin) it around a center point by a certain angle and it stays unchanged.
- C. A figure has rotational symmetry when every point on the figure has been translated (or slid) the same distance.

Submit Answer

✔ Correct!

So we know that rotational symmetry means you can rotate (or spin) the figure around a center point by a certain angle and it stays the same.

Which of these figures has rotational symmetry?

- A. 
- B. 
- C. 
- D. 

[Comment on this question](#)

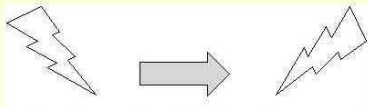
Let's take a look at the second image. Notice that as the figure stays the same as you rotate it.



[Comment on this hint](#)

Now, let's look at figure A.

The figure does not stay the same when you rotate it.

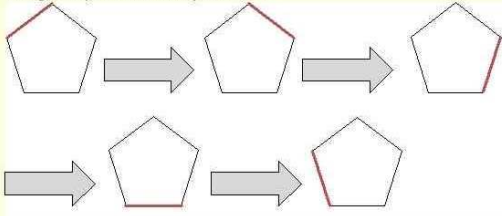


So figure A does not have rotational symmetry.

[Comment on this hint](#)

Now, let's look at figure B.

The figure stays the same when you rotate it.



So figure B has rotational geometry.

Select B.

[Comment on this hint](#)

Select one:





- A
- B
- C
- D

Submit Answer

✔ Correct!

Now that we know what line and rotational symmetry are. Let's return to the original problem.

Which of the following figures appears to have both line symmetry and rotational symmetry?

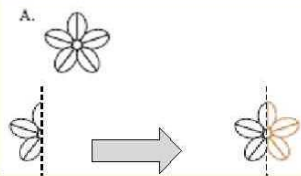
- A. 
- B. 
- C. 
- D. 

[Comment on this question](#)

Notice in the practice problems before that this figure has both line symmetry and rotational symmetry.



[Comment on this hint](#)



First, let's check figure A for line symmetry.

Figure A can be flipped over a certain and it will stay the same, so it has line symmetry.

[Comment on this hint](#)

Now that we know that figure A has line symmetry, let's check figure A for rotational symmetry.

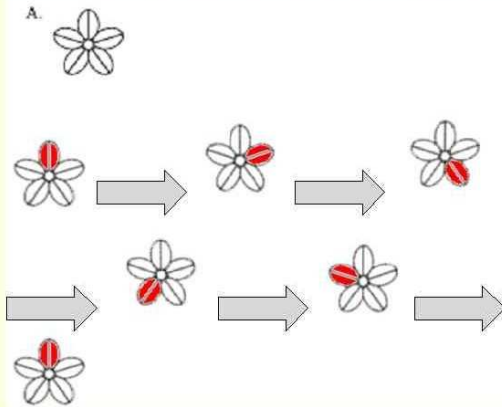


Figure A can be rotated around a center point and it will stay the same, so it has rotational symmetry.

Figure A has both line symmetry and rotational symmetry, so the answer is A.

Select A.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

Correct!

You are done with this problem!

[Comment on this problem](#)

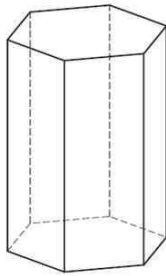
Grade 6, 2007, Q29 (26287)

Assistment

You are previewing content.

Assistment #26287

A hexagonal prism is shown below.



What is the total number of edges in a hexagonal prism?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

First, let's understand what an edge is.

Which of these figures shows an edge?

A.



B.



C.

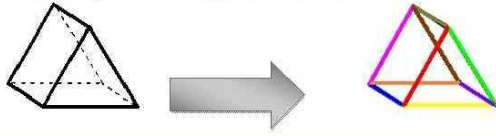


D.



[Comment on this question](#)

Let's look at the figure below. Each edge is in a different color.



In a three-dimensional shape, two faces form an edge.

[Comment on this hint](#)

Figure B shows an edge.

Select B.

[Comment on this hint](#)

Select one:

A

B

C

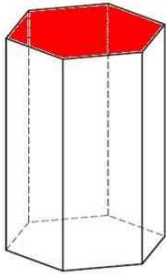
D

Submit Answer

✔ Correct!

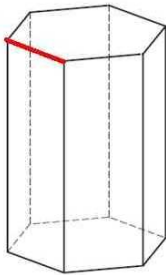
Now that we know what an edge is, let's go back to the original problem.

How many edges are there in the hexagon in red?



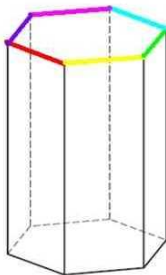
[Comment on this question](#)

One of the edges is colored in red.



[Comment on this hint](#)

Each edge is colored in a different color. Count the number of edges (colored lines).



[Comment on this hint](#)

There are 6 edges in the hexagon in red.

Type in 6.

[Comment on this hint](#)

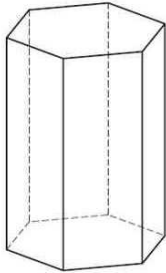
Type your answer below:

6

Submit Answer

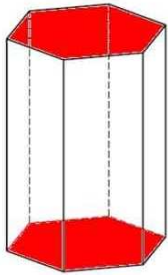
✔ Correct!

Now, how many edges are there in the two hexagons in the prism?



[Comment on this question](#)

The two hexagons are colored in red.



[Comment on this hint](#)

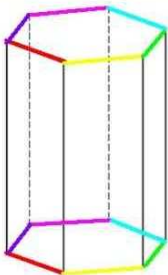
There are 2 hexagons and 6 edges in each hexagon.

[Comment on this hint](#)

$6 + 6 = ?$

[Comment on this hint](#)

All the edges are in different colors. Count the number of edges (colored lines).



[Comment on this hint](#)

There are 12 edges in the two hexagons in the prism.

Type in 12.

[Comment on this hint](#)

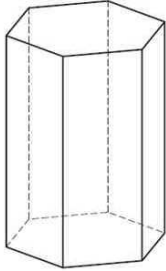
Type your answer below:

12

Submit Answer

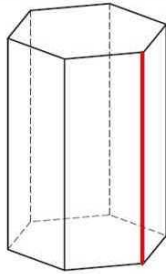
✔ Correct!

How many edges connect the two hexagons together?



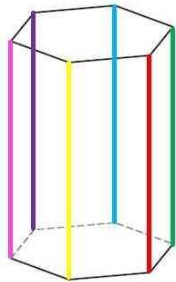
[Comment on this question](#)

One of the connecting edges is colored in red.



[Comment on this hint](#)

All the connecting edges are in different colors. Count the number of edges connecting the two hexagons (colored lines).



[Comment on this hint](#)

There are 6 edges connecting the two hexagons together.

Type in 6.

[Comment on this hint](#)

Type your answer below:

6

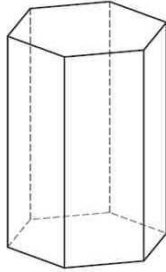
Submit Answer

✔ Correct!



Now, let's go back to the original problem

A hexagonal prism is shown below.



What is the total number of edges in a hexagonal prism?

[Comment on this question](#)

There are 12 edges in the two hexagons and 6 edges connecting the two hexagons together.

[Comment on this hint](#)

$12 + 6 = ?$

[Comment on this hint](#)

There are 18 edges in the prism in total.

Type in 18.

[Comment on this hint](#)

Type your answer below:

18

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

David drew the six triangles shown below.

Which term listed can be used to describe triangle A?

[Request Help](#)

Select one:

- A. Equilateral
- B. Scalene
- C. Right
- D. Obtuse

[Submit Answer](#)

[Comment on this question](#)

Let's move on and figure out this problem

First, let's define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle?

[Comment on this question](#)

This is an equilateral triangle. Look at the angles to find the correct answer.

[Comment on this hint](#)

Notice that all three angles are the same (60 degrees).

All three angles are the same in an equilateral triangle.

Select C.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90 degree angle.
- B. A triangle in which one angle is greater than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

[Submit Answer](#)

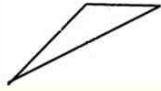
✔ Correct!

Now that we know what an equilateral triangle is, let's define scalene triangle.

What is a scalene triangle?

[Comment on this question](#)

This is a scalene triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice all the angles are unequal.

All three angles in a scalene triangle are unequal.

Select D.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90 degree angle.
- B. A triangle in which one angle is greater than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

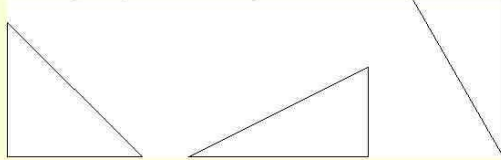
✔ Correct!

Now that we know what equilateral and scalene triangles are, let's define right triangle.

What is a right triangle?

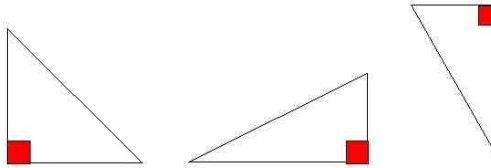
[Comment on this question](#)

These are right triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

One of the angles in the triangle is a 90 degree angle.

A right triangle contains one 90 degree angle.

Select A.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90 degree angle.
- B. A triangle in which one angle is greater than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

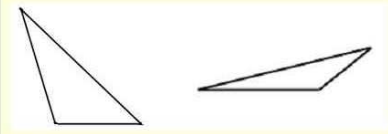
✔ Correct!

Now that we know what equilateral, scalene, and right triangles are, let's define obtuse triangle.

What is an obtuse triangle?

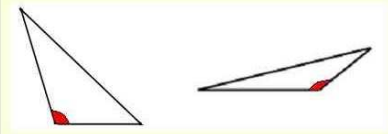
[Comment on this question](#)

These are obtuse triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

Notice the angles in red are greater than 90 degrees.

An obtuse triangle is a triangle in which one angle is greater than 90 degrees.

Select B.

[Comment on this hint](#)

Select one:

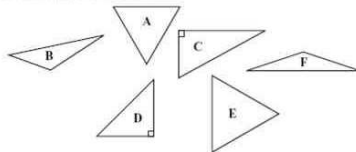
- A. A triangle containing one 90 degree angle.
- B. A triangle in which one angle is greater than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know what each term means, let's answer the original problem.

David drew the six triangles shown below.



Which term listed can be used to describe triangle A?

[Comment on this question](#)

Select one:

- A. Equilateral
- B. Scalene
- C. Right
- D. Obtuse

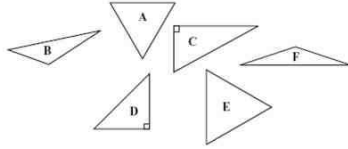
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

David drew the six triangles shown below.



Which two terms listed can be used to describe triangle B?

[Comment on this question](#)

Request Help

Select one:

- A. Acute and equilateral triangle
- B. Acute and scalene triangle
- C. Obtuse and equilateral triangle
- D. Obtuse and scalene triangle

Submit Answer

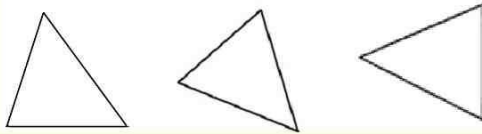
Let's move on and figure out this problem

First, let's define the terms listed. Let's start with acute triangle.

What is an acute triangle?

[Comment on this question](#)

These are acute triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Notice that all angles are less than 90 degrees.

An acute triangle is a triangle in which all three angles are less than 90 degrees.

Select B.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know what an acute triangle is, let's define obtuse triangle.

What is an obtuse triangle?

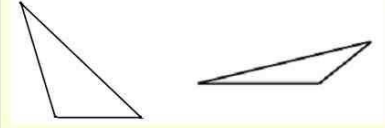
[Comment on this question](#)

These are obtuse triangles. Look at what they have in common to find the correct answer.



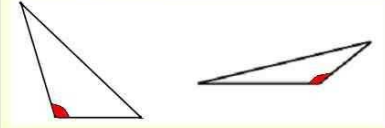
[Comment on this hint](#)

These are obtuse triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

Notice the angles in red are greater than 90 degrees.

An obtuse triangle is a triangle in which one angle is greater than 90 degrees.

Select A.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

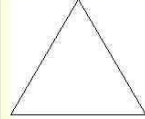
✔ Correct!

Now that we know what acute and obtuse triangles are, let's define equilateral triangle.

What is an equilateral triangle?

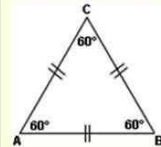
[Comment on this question](#)

This is an equilateral triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice that all three angles are the same (60 degrees).



All three angles are the same in an equilateral triangle.

Select C.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

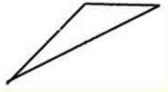
✔ Correct!

Now that we know what acute, obtuse, and equilateral triangles are, let's define scalene triangle.

What is a scalene triangle?

[Comment on this question](#)

This is a scalene triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice all the angles are unequal.

All three angles in a scalene triangle are unequal.

Select D.

[Comment on this hint](#)

Select one:

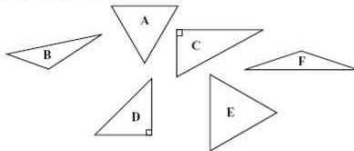
- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know what all the terms mean, let's answer the original problem.

David drew the six triangles shown below:



Which two terms listed can be used to describe triangle B?

[Comment on this question](#)

Select one:

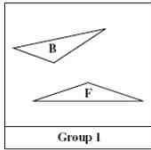
- A. Acute and equilateral triangle
- B. Acute and scalene triangle
- C. Obtuse and equilateral triangle
- D. Obtuse and scalene triangle

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



What do the two triangles in Group 1 have in common?

[Comment on this question](#)

Request Help

Select one:

- A. They are both acute triangles.
- B. They are both obtuse triangles.
- C. They are both isosceles triangles.
- D. They are both scalene triangles.

Submit Answer

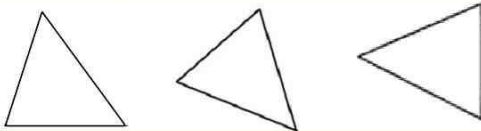
Let's move on and figure out this problem

First, let us define the terms. Let's start with acute triangle.

What is an acute triangle?

[Comment on this question](#)

These are acute triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Notice that all angles are less than 90 degrees.

An acute triangle is a triangle in which all three angles are less than 90 degrees.

Select B.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which two angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know what an obtuse triangle is, let's define obtuse triangle.

What is an obtuse triangle?

[Comment on this question](#)

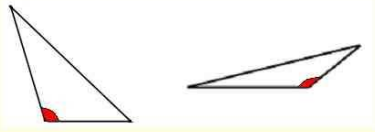
These are obtuse triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)



Look at the angles in red.



[Comment on this hint](#)

Notice the angles in red are greater than 90 degrees.

An obtuse triangle is a triangle in which one angle is greater than 90 degrees.

Select A.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which two angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know what acute and obtuse triangles are, let's define isosceles triangle.

What is an isosceles triangle?

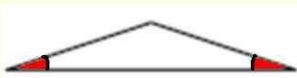
[Comment on this question](#)

This is an isosceles triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Look at the two red angles.



[Comment on this hint](#)

Notice the two angles are equal.

An isosceles triangle is a triangle in which two angles are equal.

Select C.

[Comment on this hint](#)

Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which two angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

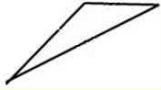
Now that we know what acute, obtuse, and isosceles triangles are, let's define scalene triangle.

What is a scalene triangle?

[Comment on this question](#)

[Comment on this question](#)

This is a scalene triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice all the angles are unequal.

All three angles in a scalene triangle are unequal.

Select D.

[Comment on this hint](#)

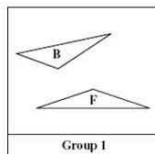
Select one:

- A. A triangle in which one angle is greater than 90 degrees.
- B. A triangle in which all three angles are smaller than 90 degrees.
- C. A triangle in which two angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now that we know all the terms, let's answer the original problem.



What do the two triangles in Group 1 have in common?

[Comment on this question](#)

Select one:

- A. They are both acute triangles.
- B. They are both obtuse triangles.
- C. They are both isosceles triangles.
- D. They are both scalene triangles.

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

The measure of an angle is  $100^\circ$ . What kind of angle is this?

[Comment on this question](#)

Request Help

Select one:

- A. Right
- B. Acute
- C. Obtuse
- D. Straight

Submit Answer

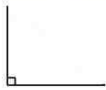
Let's move on and figure out this problem

To answer the question, we must first understand the answers given to us. Let's start with right angle.

What is a right angle?

[Comment on this question](#)

Here's a figure of a right angle:



[Comment on this hint](#)

A right angle is a 90-degree angle.

Select B.

[Comment on this hint](#)

Select one:

- A. A right angle is an angle that is less than 90 degrees.
- B. A right angle is a 90-degree angle.
- C. A right angle is an angle that is greater than 90 degrees.
- D. A right angle is a 180-degree angle.

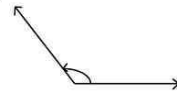
Submit Answer

✔ Correct!

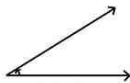
So we know a right angle is a 90-degree angle.

Which of these figures is a right angle?

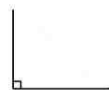
A.



B.



C.





[Comment on this question](#)

Remember a right angle is a 90-degree angle. Pick a 90-degree angle.

[Comment on this hint](#)

Angle C is a 90-degree angle.

Select C.

[Comment on this hint](#)

Select one:

A.

B.

C.

D.

Submit Answer

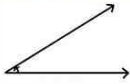
✔ Correct!

Now we know what a right angle is, we can define acute angle.

What is an acute angle?

[Comment on this question](#)

Here's a figure of an acute angle.



[Comment on this hint](#)

An acute angle is an angle that is less than 90 degrees.

Select A.

[Comment on this hint](#)

Select one:

A. An acute angle is an angle that is less than 90 degrees.

B. An acute angle is a 90-degree angle.

C. An acute angle is an angle that is greater than 90 degrees.

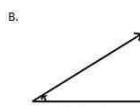
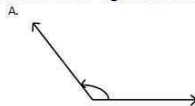
D. An acute angle is a 180-degree angle.

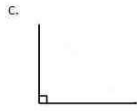
Submit Answer

✔ Correct!

So we know an acute angle is an angle that is less than 90 degrees.

Which of these figures is an acute angle?



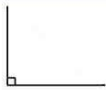


[Comment on this question](#)

Remember an acute angle is an angle that is less than 90 degrees.

[Comment on this hint](#)

This is a 90-degree angle.



Pick the angle that is less than this one.

[Comment on this hint](#)

Angle B is an acute angle.

Select B.

[Comment on this hint](#)

Select one:

- A.
- B.
- C.
- D.

Submit Answer

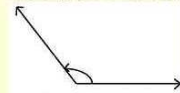
✔ Correct!

Now we know what right and acute angles are, now we can define obtuse angle.

What is an obtuse angle?

[Comment on this question](#)

Here's a figure of an obtuse angle:



[Comment on this hint](#)

An obtuse angle has an angle that is greater than 90 degrees.

Select C.

[Comment on this hint](#)

Select one:

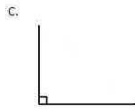
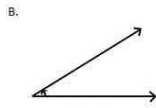
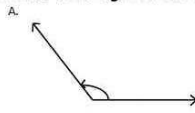
- A. An obtuse angle is an angle that is less than 90 degrees.
- B. An obtuse angle is a 90-degree angle.
- C. An obtuse angle is an angle that is greater than 90 degrees.
- D. An obtuse angle is a 180-degree angle.

Submit Answer

✔ Correct!

So we know an obtuse angle is an angle that is greater than 90 degrees.

Which of these figures is an obtuse angle?

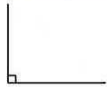


[Comment on this question](#)

Remember an obtuse angle is an angle that is greater than 90 degrees.

[Comment on this hint](#)

This is a 90-degree angle.



Pick the angle that is greater than this one.

[Comment on this hint](#)

Angle A is an obtuse angle.

Select A.

[Comment on this hint](#)

Select one:

A.

B.

C.

D.

Submit Answer

✔ Correct!

Now we know what right, acute, and obtuse angles are, we can now define straight line.

What is a straight line?

[Comment on this question](#)

Here's an image of a straight-line:



[Comment on this hint](#)

A straight line has a 180-degree angle.

Select D.

[Comment on this hint](#)

Select one:

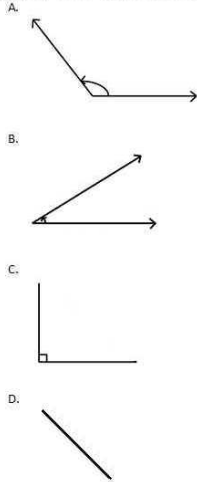
- A. A straight line has an angle that is less than 90 degrees.
- B. A straight line has a 90-degree angle.
- C. A straight line has an angle that is greater than 90 degrees.
- D. A straight line has a 180-degree angle.

Submit Answer

✔ Correct!

So we know a straight line has a 180-degree angle.

Which of these figures is a straight line?



[Comment on this question](#)

Remember a straight line is a 180-degree angle.

[Comment on this hint](#)

Angle D is a 180-degree angle.

Select D.

[Comment on this hint](#)

Select one:

- A.
- B.
- C.
- D.

Submit Answer

✔ Correct!

Now that we know what all the terms mean, let's go back to the original problem.

The measure of an angle is  $100^\circ$ . What kind of angle is this?

[Comment on this question](#)

Remember a right angle is a 90-degree angle.

Therefore, we can eliminate A.

[Comment on this hint](#)

Remember an acute angle is an angle that is less than 90 degrees.

Therefore, we can eliminate B.

[Comment on this hint](#)

Remember a straight line is a 180-degree angle.

Therefore, we can eliminate D.

[Comment on this hint](#)

A 100-degree angle is an obtuse angle because it is an angle that is greater than 90-degrees.

Select C.

[Comment on this hint](#)

Select one:

- A. Right
- B. Acute
- C. Obtuse
- D. Straight

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

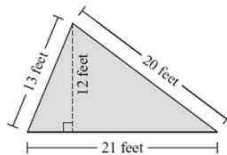
Grade 6, 2007, Q30 (26298)

Assistment

You are previewing content.

Assistment #26298

The shaded figure below represents Peggy's garden.



Based on the dimensions in the figure, what is the perimeter, in feet, of Peggy's garden?

[Comment on this question](#)

Request Help

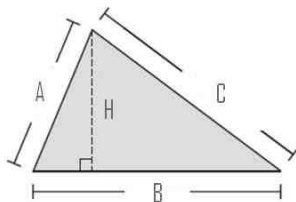
Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer the problem, we must first know how to calculate the perimeter of a triangle.

What is the formula for the perimeter of the triangle below?



[Comment on this question](#)

The perimeter of a triangle is the distance around the outside of the triangle.

[Comment on this hint](#)



The perimeter of a triangle is calculated through the formula:  
 $P = A + B + C$

[Comment on this hint](#)

Select one:

A.  $P = 1/2 * B * H$

B.  $P = A + B$

C.  $P = A + B + C$

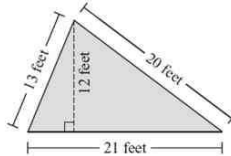
D.  $P = A + B + C + H$

Submit Answer

✔ Correct!

Now let's go back to the original problem.

The shaded figure below represents Peggy's garden.



Based on the dimensions in the figure, what is the perimeter, in feet, of Peggy's garden?

[Comment on this question](#)

Remember the formula for calculating the perimeter of a triangle is:  
 $P = A + B + C$

[Comment on this hint](#)

Looking at the problem, we can see that:

A = 13 feet

B = 21 feet

C = 20 feet

Plug the numbers into the formula.

[Comment on this hint](#)

$P = A + B + C$   
 $= 13 + 21 + 20$   
 $= 54$

The perimeter of Peggy's garden is 54 feet.

Type in 54.

[Comment on this hint](#)

Type your answer below:

54

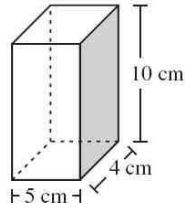
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Mattias has a rectangular prism with the dimensions shown below.



What is the total surface area, in square centimeters, of the rectangular prism?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer the problem, we must first understand what "total surface area" of a rectangular prism is.

What is the definition of "total surface area" of a rectangular prism.

[Comment on this question](#)

Select one:

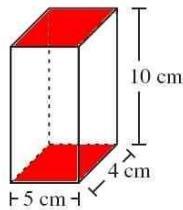
- A. The total surface area of a rectangular prism is the sum of all the edges in one side of the prism.
- B. The total surface area of a rectangular prism is the area of one side of the prism.
- C. The total surface area of a rectangular prism is the total area of all six faces of the prism.
- D. The total surface area of a rectangular prism is the total volume of the rectangular prism.

Submit Answer

✔ Correct!

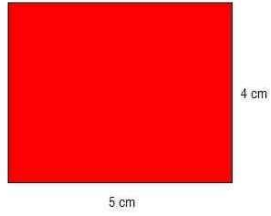
Now that we understand what that the surface area is is the total area of all six faces of the prism, let's break the problem down.

What is the area of the two shaded faces?



[Comment on this question](#)

Let's look at one of the shaded faces.

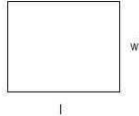


Find the area of two of these shaded faces.

[Comment on this hint](#)

Area is the measure of the amount of space taken up by a figure.  
It is calculated using the formula:

$$A = l \times w$$



[Comment on this hint](#)

In this shaded face,

$$l = 5 \text{ cm}$$
$$w = 4 \text{ cm}$$

Plug the numbers into the formula to get:

$$A = l \times w$$
$$= 5 \times 4$$
$$= 20 \text{ cm}^2$$

The area of one of the shaded figures is  $20 \text{ cm}^2$ .

[Comment on this hint](#)

The area of both the shaded faces is:

$$20 + 20 = 40 \text{ cm}^2$$

Type in 40.

[Comment on this hint](#)

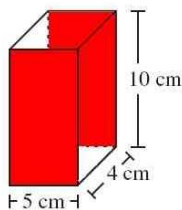
Type your answer below:

Submit Answer

✔ Correct!

Knowing that the surface area is the total area of all six faces of the prism, let's find the area of the other faces.

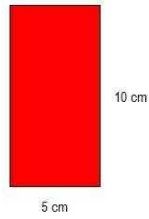
What is the area of the two shaded faces?



[Comment on this question](#)

[Comment on this question](#)

Let's look at one of the shaded faces.

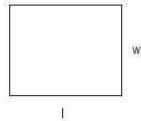


Find the area of two of these shaded faces.

[Comment on this hint](#)

Area is the measure of the amount of space taken up by a figure.  
It is calculated using the formula:

$$A = l \times w$$



[Comment on this hint](#)

In this shaded face,

$$l = 5 \text{ cm}$$
$$w = 10 \text{ cm}$$

Plug the numbers into the formula to get:

$$A = l \times w$$
$$= 5 \times 10$$
$$= 50 \text{ cm}^2$$

The area of one of the shaded figures is  $50 \text{ cm}^2$ .

[Comment on this hint](#)

The area of both the shaded faces is:

$$50 + 50 = 100 \text{ cm}^2$$

Type in 100.

[Comment on this hint](#)

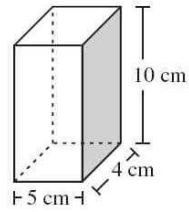
Type your answer below:

Submit Answer

✔ Correct!

Let's return to the original problem.

Mattias has a rectangular prism with the dimensions shown below.



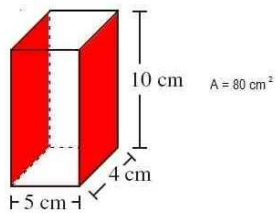
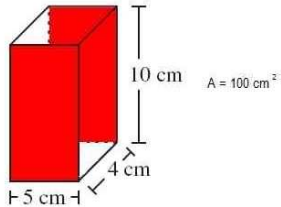
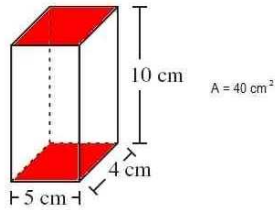
What is the total surface area, in square centimeters, of the rectangular prism?

[Comment on this question](#)

The surface area of the rectangular prism is the sum of the areas of all the faces of the rectangular prism.

[Comment on this hint](#)

Add up all the areas obtained from the scaffolds before.



[Comment on this hint](#)

$$\begin{aligned} \text{Total Surface Area} &= 40 + 100 + 80 \\ &= 220 \text{ cm}^2 \end{aligned}$$

Type in 220.

[Comment on this hint](#)

Type your answer below:

220

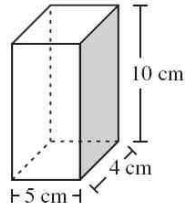
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Mattias has a rectangular prism with the dimensions shown below.



What is the volume, in cubic centimeters, of the rectangular prism?

[Comment on this question](#)

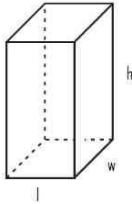
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

What is the formula for calculating the volume of the rectangular prism below?

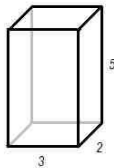


[Comment on this question](#)

The volume is the amount of space a three-dimensional shape takes up.

[Comment on this hint](#)

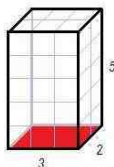
Let's look at an example to figure out how to calculate the volume of a rectangular prism:



To find the volume of the rectangular prism, we must find the area of the base and multiply it with the height of the prism.

[Comment on this hint](#)

This is how we find the area of the base in red:





The area of the base is  $2 \times 3 = 6$ . This is the same as:  
 $A = l \times w$

[Comment on this hint](#)

This base layer in red must be multiplied by the height (or the number of rows) to find the volume.  
 $V = 6 \times 5$   
 $= 30$  squares

So, the formula for the volume of a rectangular prism is:  
 $V = l \times w \times h$

Select B.

[Comment on this hint](#)

Select one:

A.  $V = l + w + h$

B.  $V = l \times w \times h$

C.  $V = 2(w + h)$

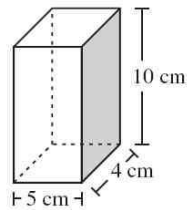
D.  $V = w \times h$

Submit Answer

✔ Correct!

Now let's go back to the original problem.

Mattias has a rectangular prism with the dimensions shown below.



What is the volume, in cubic centimeters, of the rectangular prism?

[Comment on this question](#)

Remember the formula for calculating the volume of a rectangular prism is:  
 $V = l \times w \times h$

[Comment on this hint](#)

Looking at the diagram, we can see that:

$l = 4$  cm

$w = 5$  cm

$h = 10$  cm

Substitute in these numbers into the formula.

[Comment on this hint](#)

$V = l \times w \times h$   
 $= 4 \times 5 \times 10$   
 $= 200$

The volume of the rectangular prism is 200 cubic centimeters.

Type in 200.

[Comment on this hint](#)

Type your answer below:

200

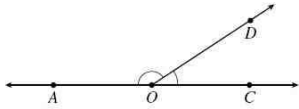
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

In the figure below, points  $A$ ,  $O$ , and  $C$  lie on the same line.



What is the sum of the measures of angle  $AOD$  and angle  $DOC$ ?

[Comment on this question](#)

Request Help

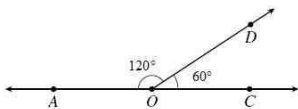
Type your answer below:

Submit Answer

Let's move on and figure out this problem

Let's start with an example.

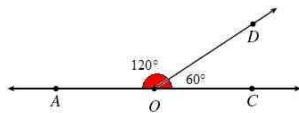
In the figure below, points  $A$ ,  $O$ , and  $C$  lie on the same line.



What is the sum of the measures of angle  $AOD$  and angle  $DOC$ ?

[Comment on this question](#)

The sum of the measures of angle  $AOD$  and angle  $DOC$  is the measure of angle  $AOC$  (the angle in red).



[Comment on this hint](#)

$$\begin{aligned} \text{Angle } AOC &= AOD + DOC \\ &= 120 + 60 \\ &= 180 \text{ degrees} \end{aligned}$$

A straight line is a 180-degree angle

[Comment on this hint](#)

Type in 180.

[Comment on this hint](#)

Type your answer below:

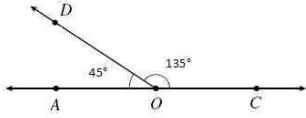


Submit Answer

✔ Correct!

Let's look at another example.

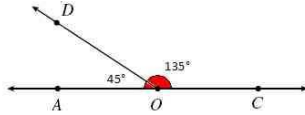
In the figure below, points  $A$ ,  $O$ , and  $C$  lie on the same line.



What is the sum of the measures of angle  $AOD$  and angle  $DOC$ ?

[Comment on this question](#)

The sum of the measures of angle  $AOD$  and angle  $DOC$  is the measure of angle  $AOC$  (the angle in red).



[Comment on this hint](#)

$$\begin{aligned}\text{Angle } AOC &= AOD + DOC \\ &= 45 + 135 \\ &= 180 \text{ degrees}\end{aligned}$$

A straight line is a 180-degree angle.

[Comment on this hint](#)

Type in 180.

[Comment on this hint](#)

Type your answer below:

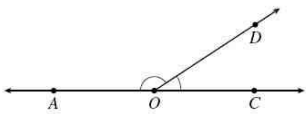
180

Submit Answer

✔ Correct!

Now, let's return to the original problem.

In the figure below, points  $A$ ,  $O$ , and  $C$  lie on the same line.



What is the sum of the measures of angle  $AOD$  and angle  $DOC$ ?

[Comment on this question](#)

Compare the two examples from before to get the answer.

[Comment on this hint](#)

The sum of the measures of angle  $AOD$  and  $DOC$  is the measure of angle  $AOC$ .  $AOC$  lies on a straight line.

[Comment on this hint](#)

A straight line is a 180-degree angle.

[Comment on this hint](#)

Type in 180.

[Comment on this hint](#)

Type your answer below:

180

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

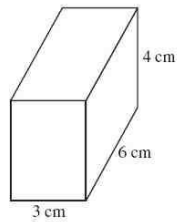
Grade 6, 2995, Q29 (26344)

Assistment

You are previewing content.

Assistment #26344

What is the volume, in cubic centimeters, of the rectangular prism shown below?



[Comment on this question](#)

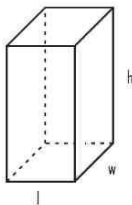
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

In order to solve this problem, we must first know how to calculate the volume of a rectangular prism.



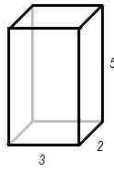
What is the formula for the volume of a rectangular prism?

[Comment on this question](#)

The volume is the amount of space a three-dimensional shape takes up.

[Comment on this hint](#)

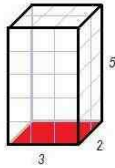
Let's look at an example to figure out how to calculate the volume of a rectangular prism:



To find the volume of the rectangular prism, we must find the area of the base and multiply it with the height of the prism.

[Comment on this hint](#)

This is how we find the area of the base in red:



The area of the base is  $2 \times 3 = 6$ . This is the same as:  
 $A = l \times w$

[Comment on this hint](#)

This base layer in red must be multiplied by the height (or the number of rows) to find the volume.

$$V = 6 \times 5 \\ = 30 \text{ squares}$$

So, the formula for the volume of a rectangular prism is:  
 $V = l \times w \times h$

Select B.

[Comment on this hint](#)

Select one:

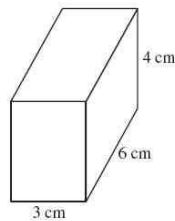
- A.  $V = l + w + h$
- B.  $V = l \times w \times h$
- C.  $V = 2(w + h)$
- D.  $V = w \times h$

Submit Answer

✔ Correct!

Now let's go back to the original problem.

What is the volume, in cubic centimeters, of the rectangular prism shown below?



[Comment on this question](#)

Remember the formula for calculating the volume of a rectangular prism is:  
 $V = l \times w \times h$

[Comment on this hint](#)

Looking at the diagram, we can see that:

$$\begin{aligned}l &= 3 \text{ cm} \\w &= 6 \text{ cm} \\h &= 4 \text{ cm}\end{aligned}$$

Substitute in these numbers into the formula.

[Comment on this hint](#)

$$\begin{aligned}V &= l \cdot w \cdot h \\&= 3 \cdot 6 \cdot 4 \\&= 72\end{aligned}$$

The volume of the rectangular prism is 72 cubic centimeters.

Type in 72.

[Comment on this hint](#)

Type your answer below:

72

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

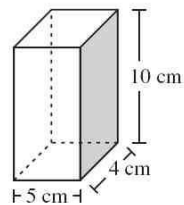
Grade 6, 2005, Q27a (26345)

Assistment

You are previewing content.

Assistment #26345

Mattias has a rectangular prism with the dimensions shown below.



What is the area, in square centimeters, of the shaded face of the rectangular prism?

[Comment on this question](#)

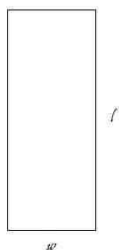
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To solve this problem, we must first know how to calculate the area of a rectangle.



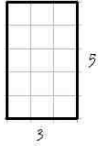
What is the formula for calculating the area of a rectangle?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

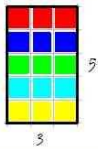
To figure out the formula for the area of a rectangle, let's use an example.



To calculate the area of the rectangle, we can count the number of squares (15 squares).

[Comment on this hint](#)

The process of counting the number of squares can be simplified.



To calculate the area of the rectangle, we need to count 3 squares, 5 times, which is the same as  $5 \times 3$

[Comment on this hint](#)

In general the area of a the rectangle is  $l \times w$ .

Select B.  $A = l \times w$

[Comment on this hint](#)

Select one:

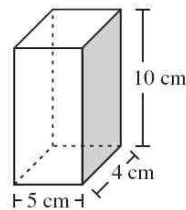
- A.  $A = l + w$
- B.  $A = l \times w$
- C.  $A = 2(l + w)$
- D.  $A = 2(l \times w)$

Submit Answer

✔ Correct!

Now that we know the formula for calculating the area of a rectangle, let's go back to the original problem.

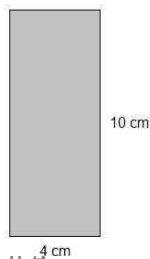
Mattias has a rectangular prism with the dimensions shown below.



What is the area, in square centimeters, of the shaded face of the rectangular prism?

[Comment on this question](#)

Let's simplify this problem so that we only look at the shaded area.



[Comment on this hint](#)

Remember the formula for calculating the area of a rectangle is:  
 $A = l \cdot w$

[Comment on this hint](#)

In this problem,  
 $l = 10 \text{ cm}$   
 $w = 4 \text{ cm}$

So substitute the numbers into the formula.

[Comment on this hint](#)

$A = l \cdot w$   
 $= 10 \cdot 4$   
 $= 40 \text{ square centimeters}$

The area of the shaded rectangle is 40 square centimeters.

Type in 40.

[Comment on this hint](#)

Type your answer below:

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Grade 6, 2004, Q31a (26354)

The circular ring of a circus has a radius of 10 feet.

What is the diameter, in feet, of the ring?


[Comment on this question](#)


Type your answer below:


Let's move on and figure out this problem

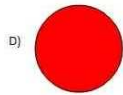
First we have to know what a radius is.

Which one is a radius?

A) 

B) 

C) 



[Comment on this question](#)

The radius of a circle is a line segment from the center to the perimeter of the circle.

[Comment on this hint](#)

This is a radius:



Select A.

[Comment on this hint](#)

Select one:

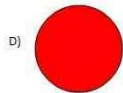
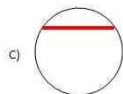
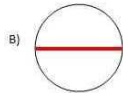
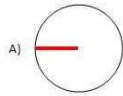
- A  
 B  
 C  
 D

Submit Answer

✔ Correct!

Now we know what a radius is, then we need to know what a diameter is.

Which is a diameter?



[Comment on this question](#)

The diameter of a circle is a straight line segment that passes through the center of the circle and whose endpoints are on the circle.

[Comment on this hint](#)

This is a diameter:



Select B.

[Comment on this hint](#)

Select one:

- A  
 B  
 C  
 D

Submit Answer

✔ Correct!

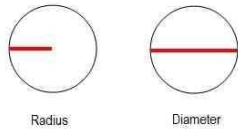
Now we know what the radius and diameter of a circle are, we must find out the formula for calculating the diameter to solve the problem.

What is the formula to calculate the diameter of a circle?

- A.  $D = 2r$
- B.  $D = 2\pi r$
- C.  $D = \pi D$
- D.  $D = \pi r^2$

[Comment on this question](#)

Find the link between these two figures of the radius and the diameter:



[Comment on this hint](#)

Notice that the diameter is twice the length of the radius.

$$D = 2r$$

Select A.

[Comment on this hint](#)

Select one:

- A.
- B.
- C.
- D.

Submit Answer

✔ Correct!

Since we know the formula for calculating the diameter of a circle, we can now solve the original problem.

The circular ring of a circus has a radius of 10 feet.

What is the diameter, in feet, of the ring?

[Comment on this question](#)

Remember the formula for calculating the diameter of a circle is:  
 $D = 2r$

[Comment on this hint](#)

From the question, we know that:  
 $r = 10$  feet

Substitute the number into the formula to get the answer.

[Comment on this hint](#)

$$\begin{aligned} D &= 2r \\ &= 2 * 10 \\ &= 20 \end{aligned}$$

The diameter of the circle is 20 feet.

Type in 20.

[Comment on this hint](#)

Type your answer below:

20

Submit Answer

✔ Correct!



You are done with this problem!

[Comment on this problem](#)

Grade 6, 2004, Q 31b (26356)

Assistment

You are previewing content.

Assistment #26356

The circular ring of a circus has a radius of 10 feet.

What is the area, in square feet, of the ring? (Use 3.14 for  $\pi$ .)

[Comment on this question](#)

Request Help

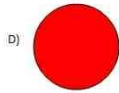
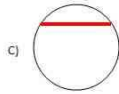
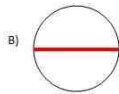
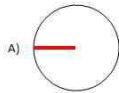
Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer the question, we must first know the definition of radius.

Which of the following figures shows a radius?

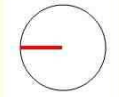


[Comment on this question](#)

The radius of a circle is a line segment from the center to the perimeter of the circle.

[Comment on this hint](#)

This is the radius:



Select A.

[Comment on this hint](#)

Select one:

A.

B.

C.

D.

Submit Answer

✔ Correct!

Now we know what the radius of a circle is, we need to know the formula for the area of a circle.

Which of these is the formula to calculate the area of a circle?

- A.  $A = 2r$
- B.  $A = 2\pi r$
- C.  $A = \pi D$
- D.  $A = \pi r^2$

[Comment on this question](#)

Select one:

- A.
- B.
- C.
- D.

Submit Answer

✔ Correct!

Since we know the formula for calculating the area of a circle, now, we should be able to answer the original problem.

The circular ring of a circus has a radius of 10 feet.

What is the area, in square feet, of the ring? (Use 3.14 for  $\pi$ .)

[Comment on this question](#)

Remember the formula for calculating the area of a circle is:  
 $A = \pi r^2$

[Comment on this hint](#)

From the question, we know that:  
 $\pi = 3.14$   
 $r = 10$  feet

Substitute the numbers into the formula.

[Comment on this hint](#)

$A = \pi r^2$   
 $= 3.14 * 10^2$   
 $= 3.14 * 10 * 10$   
 $= 314$

The area of the circle is 314 square feet.

Type in 314.

[Comment on this hint](#)

Type your answer below:

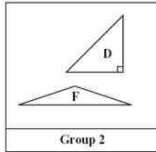
314

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



What do the two triangles in Group 2 have in common?

[Comment on this question](#)

Request Help

Select one:

- A. They are both equilateral triangles.
- B. They are both isosceles triangles.
- C. They are both right triangles.
- D. They are both scalene triangles.

Submit Answer

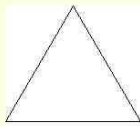
Let's move on and figure out this problem

First, let us define the terms. Let's start with equilateral triangle.

What is an equilateral triangle?

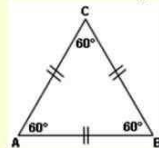
[Comment on this question](#)

This is an equilateral triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice that all three angles are the same (60 degrees).



All three angles are the same in an equilateral triangle.

Select C.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now we know the definition of an equilateral triangle, we can define isosceles triangle.

What is the definition of an isosceles triangle?

[Comment on this question](#)

This is an isosceles triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Look at the two red angles.



[Comment on this hint](#)

Notice the two angles are equal.

An isosceles triangle is a triangle in which two angles are equal.

Select B.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

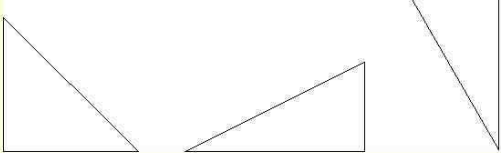
✔ Correct!

Now we know the definitions of equilateral and isosceles triangle, what is the definition of a right triangle?

What is a right triangle?

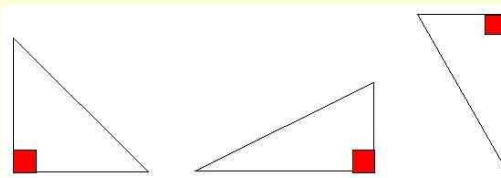
[Comment on this question](#)

These are right triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

One of the angles in the triangle is a 90 degree angle.

A right triangle contains one 90-degree angle.

Select A.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

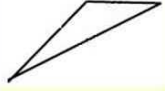
✔ Correct!

Now we know the definitions of equilateral, isosceles, and right triangle, we can define a scalene triangle.

What is the definition of a scalene triangle?

[Comment on this question](#)

This is a scalene triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice all the angles are unequal.

All three angles in a scalene triangle are unequal.

Select D.

[Comment on this hint](#)

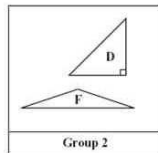
Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now we know the definitions of all the terms, let's answer the original problem.



What do the two triangles in Group 2 have in common?

[Comment on this question](#)

Select one:

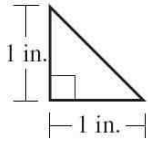
- A. They are both equilateral triangles.
- B. They are both isosceles triangles.
- C. They are both right triangles.
- D. They are both scalene triangles.

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Comment on this question](#)

Request Help

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

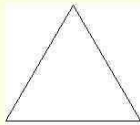
Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle?

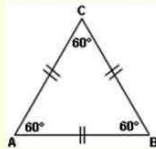
[Comment on this question](#)

This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on this hint](#)

Notice that an equilateral triangle has three sides. So you can eliminate answer C and D. Also, all three sides of the equilateral triangle are the same length.



An equilateral triangle is a three-sided shape with three equal sides.

Select B.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

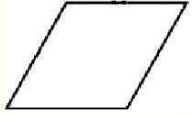
✔ Correct!

Now we have defined equilateral triangle, let's define rhombus.

What is a rhombus?

[Comment on this question](#)

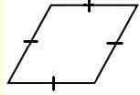
This is a rhombus. Look at the sides to figure out the correct answer.



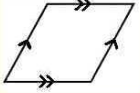
[Comment on this hint](#)

Notice the rhombus is a four-sided shape, so we can eliminate answers A and B.

Also, all sides in the rhombus are equal.



And the opposite sides of the rhombus are parallel.



A rhombus is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

Select D.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined equilateral triangle and rhombus, let's define right isosceles triangle.

What is a right isosceles triangle?

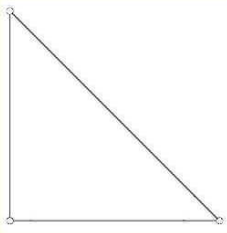
[Comment on this question](#)

There are two parts to the "right isosceles triangle":

1. The triangle is a right triangle
2. The triangle is an isosceles triangle

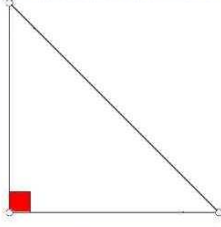
[Comment on this hint](#)

This is a right isosceles triangle. Look at the angles and the sides to figure out the right answer.

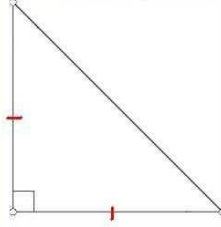


[Comment on this hint](#)

Notice the right isosceles triangle is a three-sided shape, so we can eliminate C and D.  
Also the triangle contains a 90-degree angle.



And two sides of the triangle are the same length.



A right isosceles triangle is a three-sided shape with one 90-degree angle and two equal sides.

Select A.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

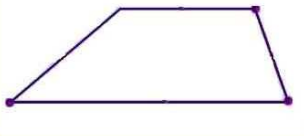
✔ Correct!

Now we have defined equilateral triangle, rhombus and right isosceles triangle, let's define trapezoid.

What is a trapezoid?

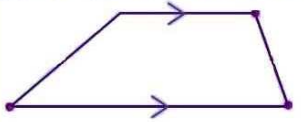
[Comment on this question](#)

This is a trapezoid. Look at the sides to figure out the right answer.



[Comment on this hint](#)

Notice the trapezoid is a four-sided shape, so A and B can be eliminated.  
Also, two sides of the trapezoid are parallel to each other.



A trapezoid is a four-sided shape with one pair of parallel sides.

Select C.

[Comment on this hint](#)

Select one:

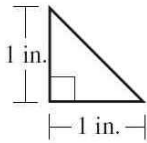
- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer



✔ Correct!

Now we have defined all the terms, let's go back to the original problem.



**Shape A**

Which one of the geometric terms listed most accurately describes Shape A?

[Comment on this question](#)

Notice the shape is a three-sided shape with a 90-degree angle and two equal sides.

[Comment on this hint](#)

A right isosceles triangle is a three-sided shape with a 90-degree angle and two equal sides.

Select C.

[Comment on this hint](#)

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

✔ Correct!

You are done with this problem!

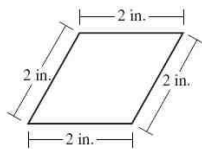
[Comment on this problem](#)

Grade 6, 2004, Q10b (26408)

Assistment

You are previewing content.

Assistment #26408



**Shape B**

Which one of the geometric terms listed most accurately describes Shape B?

[Comment on this question](#)

Request Help

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

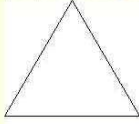
Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

### What is an equilateral triangle?

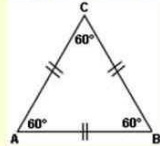
[Comment on this question](#)

This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on this hint](#)

Notice that an equilateral triangle has three sides. So you can eliminate answer C and D. Also, all three sides of the equilateral triangle are the same length.



An equilateral triangle is a three-sided shape with three equal sides.

Select B.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

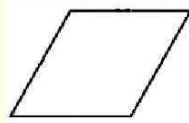
✔ Correct!

Now we have defined equilateral triangle, let's define rhombus.

### What is a rhombus?

[Comment on this question](#)

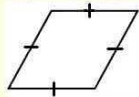
This is a rhombus. Look at the sides to figure out the correct answer.



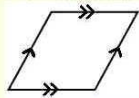
[Comment on this hint](#)

Notice the rhombus is a four-sided shape, so we can eliminate answers A and B.

Also, all sides in the rhombus are equal.



And the opposite sides of the rhombus are parallel.



A rhombus is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

Select D.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined equilateral triangle and rhombus, let's define right isosceles triangle.

What is a right isosceles triangle?

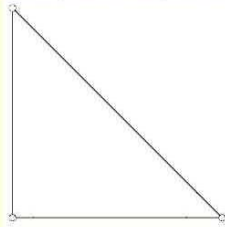
[Comment on this question](#)

There are two parts to the "right isosceles triangle":

1. The triangle is a right triangle
2. The triangle is an isosceles triangle

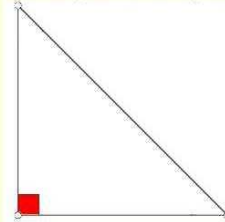
[Comment on this hint](#)

This is a right isosceles triangle. Look at the angles and the sides to figure out the right answer.

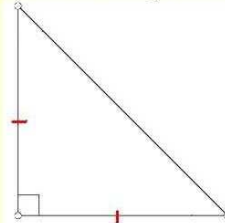


[Comment on this hint](#)

Notice the right isosceles triangle is a three-sided shape, so we can eliminate C and D. Also the triangle contains a 90-degree angle.



And two sides of the triangle are the same length.



A right isosceles triangle is a three-sided shape with one 90-degree angle and two equal sides.

Select A.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

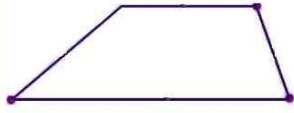
✔ Correct!

Now we have defined equilateral triangle, rhombus and right isosceles triangle, let's define trapezoid.

What is a trapezoid?

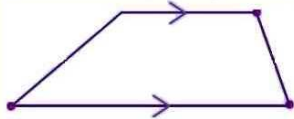
[Comment on this question](#)

This is a trapezoid. Look at the sides to figure out the right answer.



[Comment on this hint](#)

Notice the trapezoid is a four-sided shape, so A and B can be eliminated. Also, two sides of the trapezoid are parallel to each other.



A trapezoid is a four-sided shape with one pair of parallel sides.

Select C.

[Comment on this hint](#)

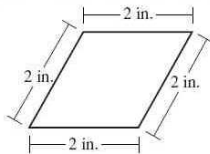
Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined all the terms, let's go back to the original problem.



Shape B

Which one of the geometric terms listed most accurately describes Shape B?

[Comment on this question](#)

Notice the shape is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

[Comment on this hint](#)

A rhombus is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

Select B.

[Comment on this hint](#)

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

✔ Correct!

You are done with this problem!

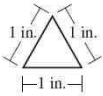
[Comment on this problem](#)

Grade 6, 2004, Q10c (26409)

Assistment

You are previewing content.

Assistment #26409



Shape C

Which one of the geometric terms listed most accurately describes Shape C?

[Comment on this question](#)

Request Help

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

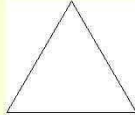
Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle?

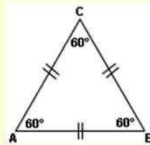
[Comment on this question](#)

This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on this hint](#)

Notice that an equilateral triangle has three sides. So you can eliminate answer C and D. Also, all three sides of the equilateral triangle are the same length.



An equilateral triangle is a three-sided shape with three equal sides.

Select B.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

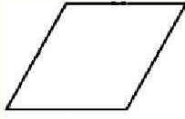
✔ Correct!

Now we have defined equilateral triangle, let's define rhombus.

What is a rhombus?

[Comment on this question](#)

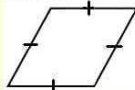
This is a rhombus. Look at the sides to figure out the correct answer.



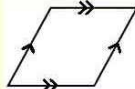
[Comment on this hint](#)

Notice the rhombus is a four-sided shape, so we can eliminate answers A and B.

Also, all sides in the rhombus are equal.



And the opposite sides of the rhombus are parallel.



A rhombus is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

Select D.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined equilateral triangle and rhombus, let's define right isosceles triangle.

What is a right isosceles triangle?

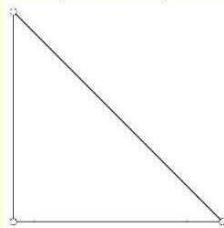
[Comment on this question](#)

There are two parts to the "right isosceles triangle":

1. The triangle is a right triangle
2. The triangle is an isosceles triangle

[Comment on this hint](#)

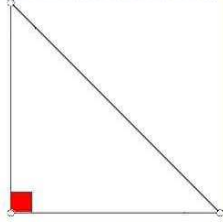
This is a right isosceles triangle. Look at the angles and the sides to figure out the right answer.



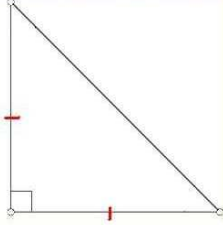
[Comment on this hint](#)

Notice the right isosceles triangle is a three-sided shape, so we can eliminate C and D.

Also the triangle contains a 90-degree angle.



And two sides of the triangle are the same length.



A right isosceles triangle is a three-sided shape with one 90-degree angle and two equal sides.

Select A.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

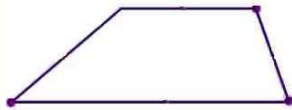
✔ Correct!

Now we have defined equilateral triangle, rhombus and right isosceles triangle, let's define trapezoid.

What is a trapezoid?

[Comment on this question](#)

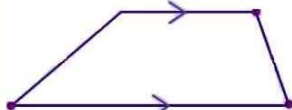
This is a trapezoid. Look at the sides to figure out the right answer.



[Comment on this hint](#)

Notice the trapezoid is a four-sided shape, so A and B can be eliminated.

Also, two sides of the trapezoid are parallel to each other.



A trapezoid is a four-sided shape with one pair of parallel sides.

Select C.

[Comment on this hint](#)

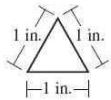
Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined all the terms, let's go back to the original problem.



Shape C

Which one of the geometric terms listed most accurately describes Shape A?

[Comment on this question](#)

Notice the shape is a three-sided shape with three equal sides.

[Comment on this hint](#)

An equilateral triangle is a three-sided shape with three equal sides.

Select A.

[Comment on this hint](#)

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

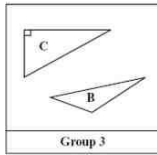
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)





What do the two triangles in Group 3 have in common?

[Comment on this question](#)

Request Help

Select one:

- A. They are both equilateral triangles.
- B. They are both isosceles triangles.
- C. They are both right triangles.
- D. They are both scalene triangles.

Submit Answer

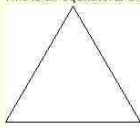
Let's move on and figure out this problem

First, let us define the terms. Let's start with equilateral triangle.

What is an equilateral triangle?

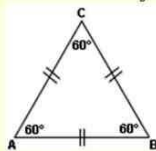
[Comment on this question](#)

This is an equilateral triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice that all three angles are the same (60 degrees).



All three angles are the same in an equilateral triangle.

Select C.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now we know the definition of an equilateral triangle, we can define isosceles triangle.

What is the definition of an isosceles triangle?

[Comment on this question](#)

This is an isosceles triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Look at the two red angles.



[Comment on this hint](#)

Notice the two angles are equal.

An isosceles triangle is a triangle in which two angles are equal.

Select B.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

[Submit Answer](#)

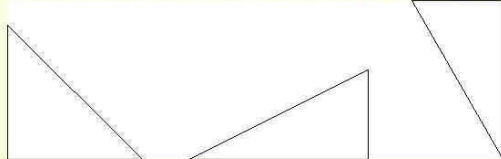
✔ Correct!

Now we know the definitions of equilateral and isosceles triangle, what is the definition of a right triangle?

What is a right triangle?

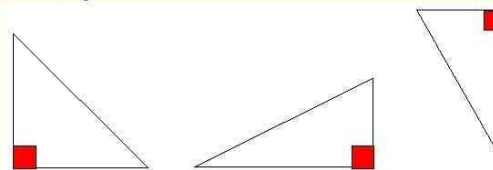
[Comment on this question](#)

These are right triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

One of the angles in the triangle is a 90 degree angle.

A right triangle contains one 90-degree angle.

Select A.

[Comment on this hint](#)

Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

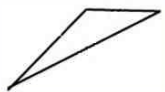
✔ Correct!

Now we know the definitions of equilateral, isosceles, and right triangle, we can define a scalene triangle.

What is the definition of a scalene triangle?

[Comment on this question](#)

This is a scalene triangle. Look at the angles to find the correct answer.



[Comment on this hint](#)

Notice all the angles are unequal.

All three angles in a scalene triangle are unequal.

Select D.

[Comment on this hint](#)

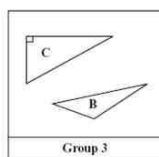
Select one:

- A. A triangle containing one 90-degree angle.
- B. A triangle in which two angles are equal.
- C. A triangle in which all three angles are equal.
- D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Now we know the definitions of all the terms, let's answer the original problem.



What do the two triangles in Group 3 have in common?

[Comment on this question](#)

Select one:

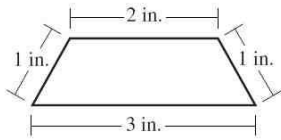
- A. They are both equilateral triangles.
- B. They are both isosceles triangles.
- C. They are both right triangles.
- D. They are both scalene triangles.

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



Shape D

Which one of the geometric terms listed most accurately describes Shape D?

[Comment on this question](#)

Request Help

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

Submit Answer

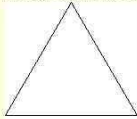
Let's move on and figure out this problem

In order to solve the problem, we must first define the terms listed. Let's start with equilateral triangle.

What is an equilateral triangle?

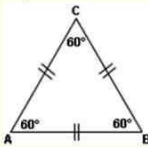
[Comment on this question](#)

This is an equilateral triangle. Look at the sides to find the correct answer.



[Comment on this hint](#)

Notice that an equilateral triangle has three sides. So you can eliminate answer C and D. Also, all three sides of the equilateral triangle are the same length.



An equilateral triangle is a three-sided shape with three equal sides.

Select B.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

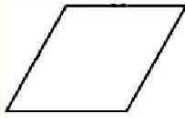
✔ Correct!

Now we have defined equilateral triangle, let's define rhombus.

What is a rhombus?

[Comment on this question](#)

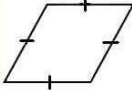
This is a rhombus. Look at the sides to figure out the correct answer.



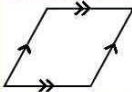
[Comment on this hint](#)

Notice the rhombus is a four-sided shape, so we can eliminate answers A and B.

Also, all sides in the rhombus are equal.



And the opposite sides of the rhombus are parallel.



A rhombus is a four-sided shape with both pairs of opposite sides parallel and four equal sides.

Select D.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined equilateral triangle and rhombus, let's define right isosceles triangle.

What is a right isosceles triangle?

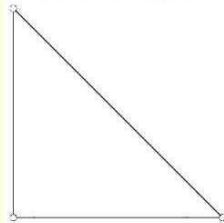
[Comment on this question](#)

There are two parts to the "right isosceles triangle":

1. The triangle is a right triangle
2. The triangle is an isosceles triangle

[Comment on this hint](#)

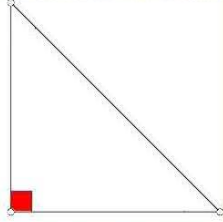
This is a right isosceles triangle. Look at the angles and the sides to figure out the right answer.



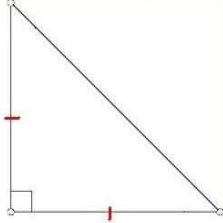
[Comment on this hint](#)

Notice the right isosceles triangle is a three-sided shape, so we can eliminate C and D.

Also the triangle contains a 90-degree angle.



And two sides of the triangle are the same length.



A right isosceles triangle is a three-sided shape with one 90-degree angle and two equal sides.

Select A.

[Comment on this hint](#)

Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

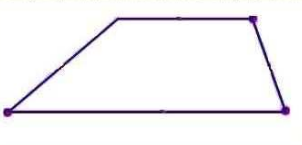
✔ Correct!

Now we have defined equilateral triangle, rhombus and right isosceles triangle, let's define trapezoid.

What is a trapezoid?

[Comment on this question](#)

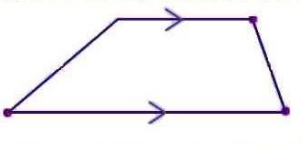
This is a trapezoid. Look at the sides to figure out the right answer.



[Comment on this hint](#)

Notice the trapezoid is a four-sided shape, so A and B can be eliminated.

Also, two sides of the trapezoid are parallel to each other.



A trapezoid is a four-sided shape with one pair of parallel sides.

Select C.

[Comment on this hint](#)

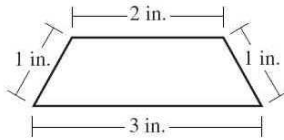
Select one:

- A. A three-sided shape with one 90-degree angle and two equal sides.
- B. A three-sided shape with three equal sides.
- C. A four-sided shape with one pair of parallel sides.
- D. A four-sided shape with both pairs of opposite sides parallel and four equal sides.

Submit Answer

✔ Correct!

Now we have defined all the terms, let's go back to the original problem.



Shape D

Which one of the geometric terms listed most accurately describes Shape D?

[Comment on this question](#)

Notice the shape is a four-sided shape with one pair of parallel sides.

[Comment on this hint](#)

A trapezoid is a four-sided shape with one pair of parallel sides.

Select D.

[Comment on this hint](#)

Select one:

- A. Equilateral Triangle
- B. Rhombus
- C. Right Isosceles Triangle
- D. Trapezoid

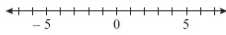
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

What is the distance between -2 and 2 on the number line shown below?



[Comment on this question](#)

Request Help

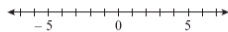
Type your answer below:

Submit Answer

Let's move on and figure out this problem

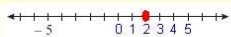
Let's take a look at a similar problem.

What is the distance between 2 and 5 on the number line shown below?



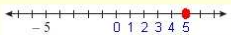
[Comment on this question](#)

First place the number 2 on the number line.



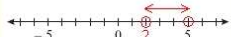
[Comment on this hint](#)

Now place the number 5 on the number line.



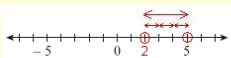
[Comment on this hint](#)

To find the distance we have to find number of steps it takes to get from one point to the other. Count the steps from 2 to 5.



[Comment on this hint](#)

There are 3 steps to get from 2 to 5. The distance from 2 to 5 is 3. Please enter 3.



[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Where is the point -2 on the number line?

- A.
- B.
- C.

[Comment on this question](#)

Select one:

- A
- B

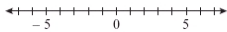


Submit Answer

✔ Correct!

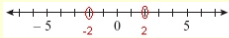
Let's go back to the original problem.

Can you find the distance from -2 to 2 on the number plane below now?



[Comment on this question](#)

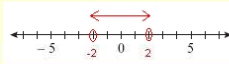
Here are -2 and 2 placed on the number line.



[Comment on this hint](#)

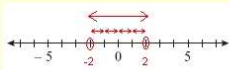
To find the distance we have to find number of steps it takes to get from one point to the other.

How many steps are there from -2 to 2?



[Comment on this hint](#)

There are 4 steps from -2 to 2.



The distance from -2 to 2 is 4. Please enter 4.

[Comment on this hint](#)

Type your answer below:

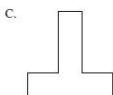
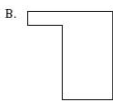
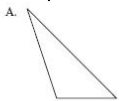
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which picture below appears to have a single line of symmetry?





[Comment on this question](#)

Request Help

Select one:

- A.
- B.
- C.
- D.

Submit Answer

Let's move on and figure out this problem

Let's try to figure out what the question is asking:

What does it mean for a figure to have a line of symmetry?

[Comment on this question](#)





Select one:

- A. It means you can fold it along a certain line and both sides will be exactly the same.
- B. It means you can rotate it around a certain point.
- C. It means you can slide it in a certain direction for a determined distance.

Submit Answer

✔ Correct!

Which one of the following images has the correct line of symmetry?

- A. 
- B. 
- C. 
- D. 

[Comment on this question](#)

If we were to fold along the blue line, the two sides should be exactly the same.

[Comment on this hint](#)

A line of symmetry must be straight. Thus D is not correct.

[Comment on this hint](#)

Smiley face B has one side that is the mirror images of the other side. B is the right answer.

[Comment on this hint](#)

Select one:

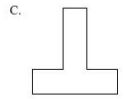
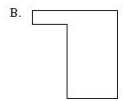
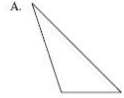
- A
- B
- C
- D

Submit Answer

✔ Correct!

Let's go back to the original problem:

Which figure has a single line of symmetry?



[Comment on this question](#)

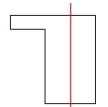
Let's see if figure A has a single line of symmetry:



If we were to fold the figure along the red line, the two sides would not go directly on top of each other. A is not the right answer.

[Comment on this hint](#)

Let's take a look at figure B.



If we were to fold along the red line, both sides would not match up. B is not the right answer.

[Comment on this hint](#)

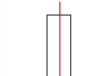
Let's take a look at figure D:



If we were to fold the figure along the red line, the two sides will not be a perfect match. D is not the right answer.

[Comment on this hint](#)

Let's take a look at figure C:





If were to fold the figure above along the red line, the two sides will fall perfectly on each other. The correct answer is C.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

You are done with this problem!

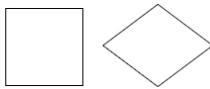
[Comment on this problem](#)

Which of the following appears to show a pair of congruent figures?

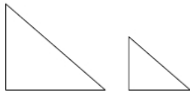
A.



B.



C.



D.



[Comment on this question](#)

Request Help

Select one:

A

B

C

D

Submit Answer

Let's move on and figure out this problem

In order to solve this problem we need to understand what congruent figures are:

What is the definition of congruent figures?

[Comment on this question](#)

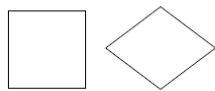
**Similar** figures have the same shape but the size may differ.



These two triangles are similar since they have same shape but they are not congruent. A is not the right answer.

[Comment on this hint](#)

Two figures that have the same number of sides may not be congruent.



This square and this rhombus are not congruent. C is not the correct answer.

[Comment on this hint](#)

Congruent figures have the same shape and size. Select B.

[Comment on this hint](#)

Select one:

A. Congruent figures have the same shape but the size may differ.

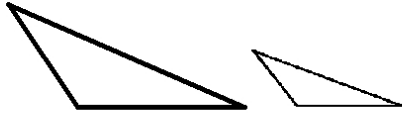
B. Congruent figures have the same size and shape.

C. Congruent figures only have to have an equal amount of sides.

Submit Answer

✔ Correct!

The figures below are?



[Comment on this question](#)

Congruent shapes have the same size and shape. Above figure is not congruent because it does not have the same size.

[Comment on this hint](#)

The figures above have exactly the same shape, but different size.

[Comment on this hint](#)

The figures above are similar. Select B.

[Comment on this hint](#)

Select one:

A. Congruent

B. Similar

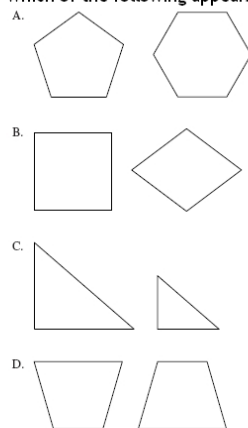
C. Not Related

Submit Answer

✔ Correct!

Let's go back to the original problem:

Which of the following appears to show a pair of congruent figures?



[Comment on this question](#)

Congruent figures have the same size and shape. In other words you can pick up one figure and place it exactly on the other.

[Comment on this hint](#)

Let's take a look at choice A:  
Left figure is a pentagon (Has 5 sides), while the right figure is a hexagon (Has 6 sides). The shapes in A are not congruent.

[Comment on this hint](#)

Let's take a look at choice B:

The angles are different on these shapes so they do not have the same size and shape. You cannot pick up the square and fit it exactly on the rhombus. The shapes in B are not congruent.

[Comment on this hint](#)

Let's take a look at choice C:

The figures are similar because they have the same shape but the triangle on the right is significantly smaller. The shapes in C are not congruent.

[Comment on this hint](#)

The two shapes in D are congruent you can pick one up and place it on the other after turning it around. Select D.

[Comment on this hint](#)

Select one:

- A  
 B  
 C  
 D

Submit Answer

✔ Correct!

You are done with this problem!

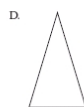
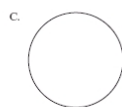
[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26274

Which of the following shapes appears to have exactly two lines of symmetry?



[Comment on this question](#)

Request Help

Select one:

- A  
 B  
 C  
 D

Submit Answer

Let's move on and figure out this problem

What does it mean for a figure to have a line of symmetry?

[Comment on this question](#)

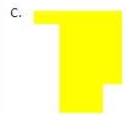
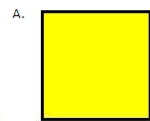
Select one:

- A. It means you can fold it along a certain line and both sides will be exactly the same.
- B. It means you can rotate it around a certain point.
- C. It means you can slide it in a certain direction for a determined distance.

Submit Answer

✔ Correct!

Which of the following figures has exactly one line of symmetry?



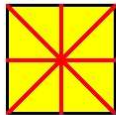
[Comment on this question](#)

A star has 5 lines of symmetry. D is not the right answer.



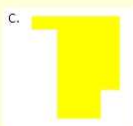
[Comment on this hint](#)

The square has more than one line of symmetry as well.



[Comment on this hint](#)

The figure C does not have any lines of symmetry.



[Comment on this hint](#)



Smiley face has only one line of symmetry. Select B.



[Comment on this hint](#)

Select one:

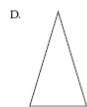
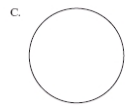
- A
- B
- C
- D

Submit Answer

✔ Correct!

Let's go back to the original problem.

Which of the following shapes appears to have **exactly** two lines of symmetry?



[Comment on this question](#)

The circle has two lines of symmetry but it also has a lot more. Any line you draw that goes through the center is a line of symmetry. The circle is not the right answer.



[Comment on this hint](#)

There is no other way to fold a triangle other than folding it right down the middle. Triangle is not the right answer.



[Comment on this hint](#)

If you look carefully we can fold a square not only vertically and horizontally, but along each diagonal as well. The square is not the right answer.



[Comment on this hint](#)

The rectangle can only be folded vertically and horizontally. The answer is B.



[Comment on this hint](#)

Select one:

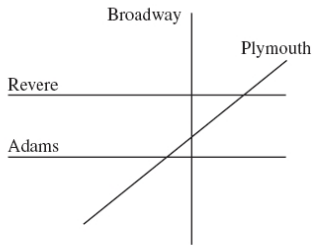
- A
- B
- C
- D

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



Which two streets on the map above appear to be parallel?

[Comment on this question](#)

Request Help

Select one:

- A. Broadway and Adams
- B. Broadway and Plymouth
- C. Adams and Plymouth
- D. Adams and Revere

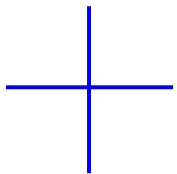
Submit Answer

Let's move on and figure out this problem

What does it mean when two lines are parallel to each other?

[Comment on this question](#)

The two lines below are **perpendicular** to each other:



The lines have a 90 degree angle between each other.

[Comment on this hint](#)

Two **parallel** lines do not have any angles between them.

[Comment on this hint](#)

When two lines are **parallel** they never intersect.  
Correct answer is B.

[Comment on this hint](#)

Select one:

- A. The two lines are on top of each other.
- B. The two lines never intersect.
- C. The two lines have a 90 degree angle between each other.
- D. The two lines can have any angle between them.

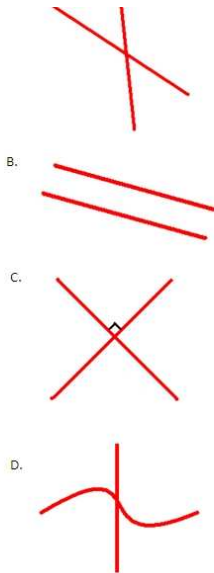
Submit Answer

✔ Correct!

Which choice has two lines that are **parallel** to each other?

A.





[Comment on this question](#)

The two lines in Choice C are **perpendicular** to each other.  
C is not the right answer.

[Comment on this hint](#)

Choice D has only one straight line.  
Choice D is not the right answer.

[Comment on this hint](#)

The lines in choice B never intersect, this means that they are **parallel**.  
Choice B is the right answer.

[Comment on this hint](#)

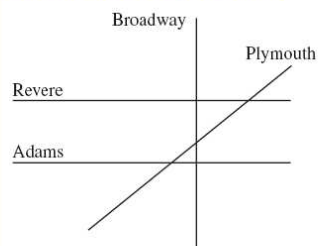
Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

Let's return to our original problem:

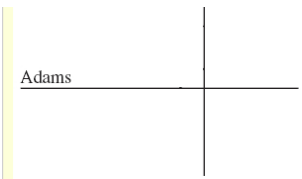


Which two streets on the map above appear to be parallel?

[Comment on this question](#)

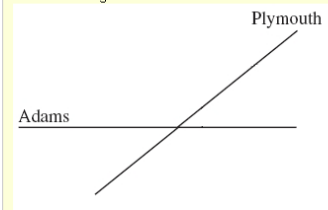
Broadway and Adams are **perpendicular** to each other.  
A is not the right answer.

Broadway



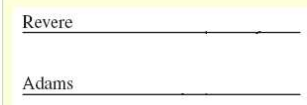
[Comment on this hint](#)

Adams and Plymouth intersect. By the definition **parallel** lines do not intersect. C is not the right answer.



[Comment on this hint](#)

Only Adams and Revere never intersect. By definition, this means that they are **parallel** to each other. D is the correct answer.



[Comment on this hint](#)

Select one:

- A. Broadway and Adams
- B. Broadway and Plymouth
- C. Adams and Plymouth
- D. Adams and Revere

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

The line below shows the locations of three towns on a highway.



The distance from Westfield to Springfield is 10 miles, and the distance from Westfield to Palmer is 25 miles. What is the distance, in miles, from Springfield to Palmer?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

[Let us know how you did on this problem.](#)

Let's move on and figure out this problem.

Let's look at a similar, but separate problem:

The line below shows the locations of three towns on a highway.

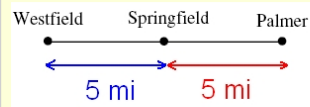


The distance from Westfield to Springfield is 5 miles, and the distance from Springfield to Palmer is also 5 miles. What is the distance, in miles, from Westfield to Palmer?

[Comment on this question](#)

Draw a picture. Label all of the distances.

[Comment on this hint](#)

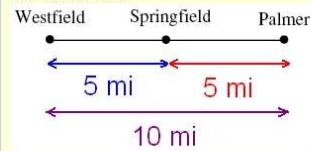


[Comment on this hint](#)

Distance from Westfield to Springfield + Distance from Springfield to Palmer = Distance from Westfield to Palmer

[Comment on this hint](#)

The distance from Westfield to Palmer is  
 $5 \text{ mi} + 5 \text{ mi} = 10 \text{ mi}$ .



Please enter 10.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Let's go back to the original problem:

The line below shows the locations of three towns on a highway.

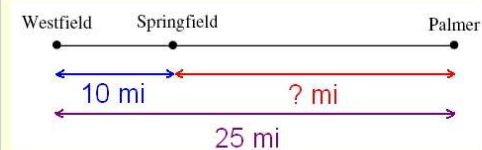


The distance from Westfield to Springfield is 10 miles, and the distance from Westfield to Palmer is 25 miles. What is the distance, in miles, from Springfield to Palmer?

[Comment on this question](#)

Draw a picture. Label all of the distances.

[Comment on this hint](#)



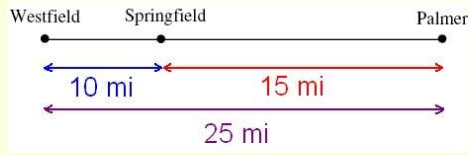
[Comment on this hint](#)

Distance from Springfield to Palmer = Distance from Westfield to Palmer - Distance from Westfield to Springfield

[Comment on this hint](#)

Distance from Springfield to Palmer =  $25 \text{ mi} - 10 \text{ mi} = 15 \text{ mi}$

Distance from Springfield to Palmer: 25 mi, 15 mi, 10 mi



Please type in 15.

[Comment on this hint](#)

Type your answer below:

15

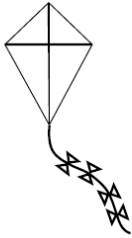
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Lily designed the kite below for an experiment.



Which of the following correctly describes the shape of Lily's kite?

[Comment on this question](#)

Request Help

Select one:

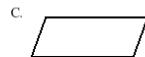
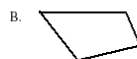
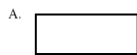
- A. triangle
- B. rectangle
- C. parallelogram
- D. quadrilateral

Submit Answer

Let's move on and figure out this problem

Let's figure out what each figure looks like:

Which of the following figures is a triangle?



[Comment on this question](#)

A triangle is a three sided polygon.

[Comment on this hint](#)

Choice D has 3 sides, thus it is a triangle.

Choice D is the right answer.

[Comment on this hint](#)

Select one:

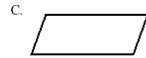
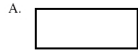
- A
- B
- C
- D

Submit Answer



✔ Correct!

Which of the following figures is a rectangle?



[Comment on this question](#)

A rectangle is a four-sided polygon with four right angles.

[Comment on this hint](#)

The figure below shows a 90 degree angle. A corner of a paper has this angle.



[Comment on this hint](#)

Figure A shows a polygon with four sides with four right angles.

A is the right answer.

[Comment on this hint](#)

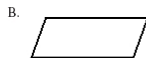
Select one:

- A  
 B  
 C  
 D

Submit Answer

✔ Correct!

Which of the following figures is a parallelogram?

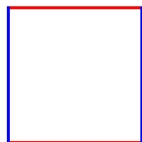


[Comment on this question](#)

A parallelogram is a four-sided polygon with opposite sides parallel.

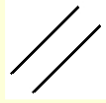
[Comment on this hint](#)

A square is shown below, because it is a four-sided polygon with opposite sides parallel, it is a parallelogram.



[Comment on this hint](#)

The following figure shows two parallel lines.



[Comment on this hint](#)

Only Figure B has opposite parallel sides.

Choice B is the correct answer.

[Comment on this hint](#)

Select one:

A

B

C

Submit Answer

✔ Correct!

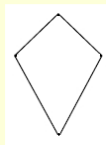
Let's go back to the original problem:



Which of the following correctly describes the shape of Lily's kite?

[Comment on this question](#)

Below is the shape of the kite you need to describe:

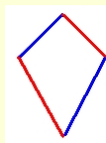


[Comment on this hint](#)

The shape of the kite has 4 sides, thus it is not a triangle.

[Comment on this hint](#)

The sides of the kite are not parallel, thus it is not a parallelogram.



[Comment on this hint](#)

The shape of the kite does not have any right angles, thus it is not a rectangle.

The shape of the kite is a quadrilateral - a regular 4 sided polygon.

Correct answer is Choice D.

[Comment on this hint](#)

Select one:

- A. triangle
- B. rectangle
- C. parallelogram
- D. quadrilateral

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Sherrie is sewing a costume for a party. She is using the pattern shown below.



Which of the following pieces of cloth is congruent to the pattern?

- A.
- B.
- C.
- D.

[Comment on this question](#)

Request Help

Select one:

- A
- B
- C
- D

Submit Answer

Let's move on and figure out this problem

In order to solve this problem we need to understand what congruent figures are:

What is the definition of congruent figures?

[Comment on this question](#)

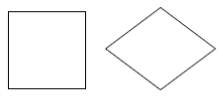
Similar figures have the same shape but the size may differ.



These two triangles are similar since they have same shape but they are not congruent.  
A is not the right answer.

[Comment on this hint](#)

Two figures that have the same number of sides may not be congruent.



This square and this rhombus are not congruent.  
C is not the correct answer.

[Comment on this hint](#)

Congruent figures have the same shape and size.  
Select B.

[Comment on this hint](#)

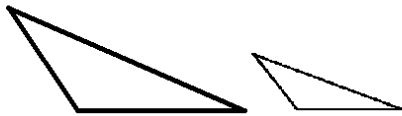
Select one:

- A. Congruent figures have the same shape but the size may differ.
- B. Congruent figures have the same size and shape.
- C. Congruent figures only have to have an equal amount of sides.

Submit Answer

✔ Correct!

The figures below are:



[Comment on this question](#)

Congruent shapes have the same size and shape. Above figure is not congruent because it does not have the same size.

[Comment on this hint](#)

The figures above have exactly the same shape, but different size.

[Comment on this hint](#)

The figures above are similar. Select B.

[Comment on this hint](#)

Select one:

- A. Congruent
- B. Similar
- C. Not related

Submit Answer

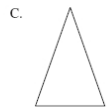
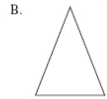
✔ Correct!

Let's go back to the original problem:





Which of the following pieces of cloth is congruent to the pattern?



[Comment on this question](#)

The figure in Choice A is an equilateral triangle, and it is not congruent to the original figure because the size and the angles differ.

Choice A is not the right answer.

[Comment on this hint](#)

The figure in Choice D has the same base of the triangles, but this figure is taller than the original. Thus the shape is not the same. Choice D is not the right answer.

[Comment on this hint](#)

The figure in Choice C is a similar triangle. The angles are the same, but the size is different. Choice C is not the right answer.

Choice B is the right answer.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

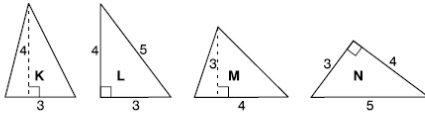
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which triangles are congruent?



[Comment on this question](#)

Request Help

Select one:

- A. K and M only
- B. L and N only
- C. K, L, M, and N
- D. No two figures shown are congruent.

Submit Answer

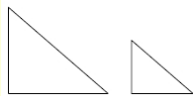
Let's move on and figure out this problem

In order to solve this problem we need to understand what congruent figures are:

What is the definition of congruent figures?

[Comment on this question](#)

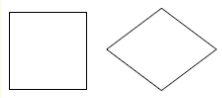
Similar figures have the same shape but the size may differ.



These two triangles are similar since they have same shape but they are not congruent. A is not the right answer.

[Comment on this hint](#)

Two figures that have the same number of sides may not be congruent.



This square and this rhombus are not congruent. C is not the correct answer.

[Comment on this hint](#)

Congruent figures have the same shape and size. Select B.

[Comment on this hint](#)

Select one:

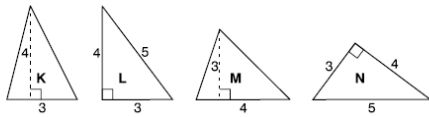
- A. Congruent figures have the same shape but the size may differ.
- B. Congruent figures have the same size and shape.
- C. Congruent figures only have to have an equal amount of sides.

Submit Answer

✔ Correct!

Let's go back to the original problem:

Which triangles are congruent?

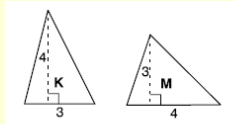


[Comment on this question](#)

Do not pay attention to the numbers, but look only at the shapes and sizes of the triangles.

[Comment on this hint](#)

Figures K and M have different shapes.

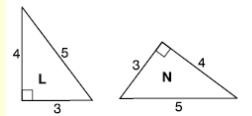


Shapes K and M are not congruent.

Thus Choices A and C are not correct.

[Comment on this hint](#)

Figures L and N have same size and shape:



By definition, L and N are congruent.

Choice B is correct.

[Comment on this hint](#)

Select one:

- A. K and M only
- B. L and N only
- C. K, L, M, and N
- D. No two figures shown are congruent.

Submit Answer

✓ Correct!

You are done with this problem!

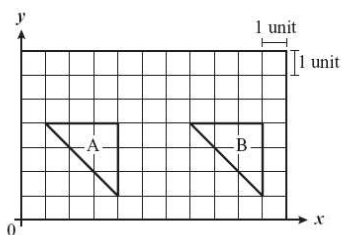
[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26320

Which of the following describes the transformation from figure A to figure B on the grid below?



[Comment on this question](#)

Request Help

Select one:

- A. Reflection across the x-axis.
- B. Reflection across the y-axis.
- C. Rotation about point (0, 0)
- D. Translation 6 units right

Submit Answer

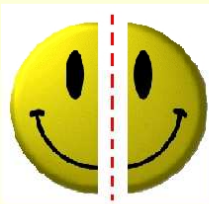
Let's move on and figure out this problem

Let's understand the different choices given to us. We will start with A:

When a figure is reflected what does it mean?

[Comment on this question](#)

The figure below is a reflection:



[Comment on this hint](#)

When a figure is reflected, it looks like the figure is looking at itself in a mirror. Please choose B.

[Comment on this hint](#)

Select one:

- A. It slides to different space.
- B. It is mirrored along a certain line, called line of symmetry.
- C. It is rotated certain number of degrees around a point.
- D. It does not move at all.

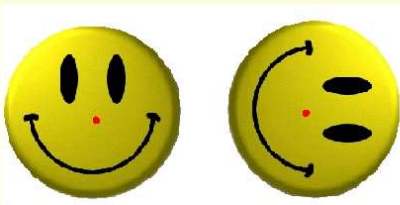
Submit Answer

✓ Correct!

When a figure is rotated what does it mean?

[Comment on this question](#)

The figure below is rotated.



[Comment on this hint](#)

The figure above is rotated around the red point. Correct answer is C.

[Comment on this hint](#)

Select one:

- A. It slides to different space.
- B. It is mirrored along a certain line, called line of symmetry.



- C. It moves certain number of degrees around a point.
- D. It does not move at all.

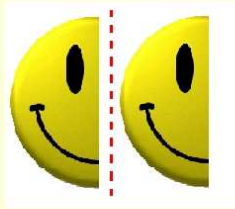
Submit Answer

✔ Correct!

When a figure is translated what does it mean?

[Comment on this question](#)

The figure below is translated:



[Comment on this hint](#)

The figure above is translated. Half of a smiley face was slid over the dotted line. Correct answer is A.

[Comment on this hint](#)

Select one:

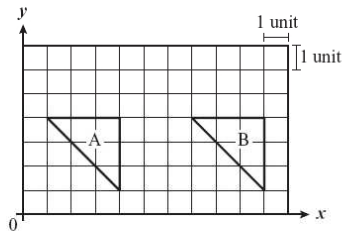
- A. It slides to different space.
- B. It is mirrored along a certain line, called line of symmetry.
- C. It moves certain number of degrees around a point.
- D. It does not move at all.

Submit Answer

✔ Correct!

Based on the definitions we just reviewed, what is the correct answer to the original problem?

Which of the following describes the transformation from figure A to figure B on the grid below?



[Comment on this question](#)

When a figure is rotated about (0,0) it will spin around that point. This figure has not spun, so this is not the correct choice.

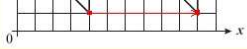
[Comment on this hint](#)

We know that the answer is not reflection because the two figures are not mirrors of each other.

[Comment on this hint](#)

This image shows what happened to figure A.





[Comment on this hint](#)

Figure A was translated over 6 units. Select D.

[Comment on this hint](#)

Select one:

- A. Reflection across the x-axis.
- B. Reflection across the y-axis.
- C. Rotation about point  $(0, 0)$ .
- D. translation 6 units right

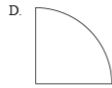
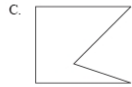
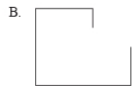
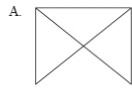
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which figure is a polygon?



[Comment on this question](#)

Request Help

Select one:

A

B

C

D

Submit Answer

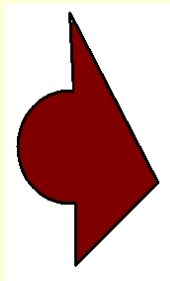
Let's move on and figure out this problem

Let's figure out the vocabulary in this problem:

What is the definition of a polygon?

[Comment on this question](#)

Below is an example of a figure that is **NOT** a polygon:



Thus A is not correct.

[Comment on this hint](#)

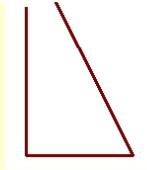
A polygon can be made with only straight lines.

Thus, Choice C is not correct.

[Comment on this hint](#)

A polygon has to be a closed figure. The figure below is **NOT** a polygon:





[Comment on this hint](#)

A polygon is a shape formed by line segments so that each of the segments meets exactly two other segments.

Correct answer is Choice B.

[Comment on this hint](#)

Select one:

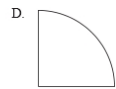
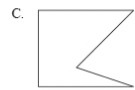
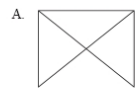
- A. Any figure can be considered a polygon.
- B. A shape formed by line segments so that each of the segments meets exactly two other segments.
- C. A shape formed by line segments so that each of the segments meets exactly one other segment.
- D. Shape that is formed with line segments and arcs.

Submit Answer

✔ Correct!

Let's go back to the original problem:

Which figure is a polygon?



[Comment on this question](#)

The following is **NOT** a single polygon, but rather multiple polygons put together:



[Comment on this hint](#)

Choice B is an open figure, which by definition cannot be a polygon.  
Choice B is not correct.

[Comment on this hint](#)

Choice D has an arc as one of its sides. Because a polygon can be made of only straight lines, Choice D is not correct.

[Comment on this hint](#)

Choice A has lines running through the middle of a figure. As mentioned in the first hint, this means that the figure is a multitude of polygons put together.

The only figure that has a closed path made of all straight edges is Choice C.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26322

A circle has a radius of 5 inches. Which is the best estimate of its circumference?

[Comment on this question](#)

Request Help

Select one:

- A. 15 inches
- B. 30 inches
- C. 7 1/2 inches
- D. 75 inches

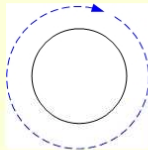
Submit Answer

Let's move on and figure out this problem

What is the definition of a circumference?

[Comment on this question](#)

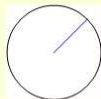
The picture below shows the **circumference** of a circle.



[Comment on this hint](#)

The shortest distance from the center of a circle to any point on a circle is a **radius**.

The blue line below shows the **radius** of a circle.



Thus B is not the correct answer.

[Comment on this hint](#)

The size of the circle measured in square units is called an **area** of the circle. This is shown in the figure below.



Thus A is not the correct answer.

[Comment on this hint](#)

[Comment on this hint](#)

The **circumference** is the length around a circle.  
Choice C is correct.

[Comment on this hint](#)

Select one:

- A. The size of the circle measured in square units.
- B. The shortest distance from the center of a circle to any point on a circle.
- C. The length around a circle.

Submit Answer

✔ Correct!

Which formula calculates the circumference of a circle?

- A.  $\pi r^2$
- B.  $2\pi r$
- C.  $\pi r$

[Comment on this question](#)

Only the area is measured in squared units. Choice A has r squared. Thus Choice A is not correct.

[Comment on this hint](#)

The formula for the circumference is  $2\pi r$ .  
Choice B is correct.

[Comment on this hint](#)

Select one:

- A.
- B.
- C.

Submit Answer

✔ Correct!

Let's go back to the original problem:

A circle has a radius of 5 inches. Which is the best estimate of its circumference?

[Comment on this question](#)

Because we are estimating, estimate that  $\pi$  is equal to 3 instead of 3.1459...

[Comment on this hint](#)

Remember that the formula for the **circumference** is  $C = 2\pi r$ .

[Comment on this hint](#)

Lets plug in the numbers we have into this equation:  
**Circumference** =  $2 \times 3 \times 5$

[Comment on this hint](#)

**Circumference** =  $2 \times 3 \times 5 = 30$

[Comment on this hint](#)

The best estimate for the **circumference** is 30 inches.

The correct answer is B.

[Comment on this hint](#)

Select one:

- A. 15 inches
- B. 30 inches
- C. 7.42 inches

- C.  $7\frac{1}{2}$  inches
- D. 75 inches

Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)

A garden snail can travel about 5 feet in 2 minutes. At this speed, how far can it travel in one hour?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

Let's work through the steps:

How many minutes are there in 1 hour?

[Comment on this question](#)

Think of a clock. How many times does a minute hand move to make it around the circle?



[Comment on this hint](#)

Minute hand goes around 60 times while the hour hand moves down only by one hour.

There are 60 minutes in 1 hour. Please enter 60.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Remember, a snail can travel 5 feet in 2 minutes.

How fast will it travel 10 feet?

[Comment on this question](#)

A good way to solve this problem is to draw a table. Start like this:

Distance traveled	Time Traveled

[Comment on this hint](#)



Distance traveled	Time Traveled
5 ft	2 min
10 ft	?

[Comment on this hint](#)

To go twice the distance it would take the snail twice the time.  
 $2 \times 2 = ? \text{ min}$

[Comment on this hint](#)

Distance traveled	Time Traveled
5 ft	2 min
10 ft	4 min

It would take the snail 4 minutes to go 10 feet.

Please enter 4.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Still remembering that a snail can go 5 feet in 2 minutes,

How far can a snail go in 10 minutes?

[Comment on this question](#)

A good way to solve this problem is to draw a table. Start like this:

Distance traveled	Time Traveled

[Comment on this hint](#)

Distance traveled	Time Traveled
5 ft	2 min
10 ft	4 min
15 ft	6 min
20 ft	8 min
25 ft	10 min

The snail will travel **25 feet** in 10 minutes.

[Comment on this hint](#)

Type your answer below:

25

Submit Answer

✔ Correct!

Now let's return to our original problem:

A garden snail can travel about 5 feet in 2 minutes. At this speed, how far can it travel in one hour?

[Comment on this question](#)

A good way to solve this problem is to draw a table. Start like this:

Distance traveled	Time Traveled

[Comment on this hint](#)

Remember there are 60 minutes in an hour.

Distance traveled	Time Traveled
5 ft	2 min
?	60 min

[Comment on this hint](#)

Distance traveled	Time Traveled
5 ft	2 min
10 ft	4 min
15 ft	6 min
20 ft	8 min
25 ft	10 min
30 ft	12 min
...	...
?	60 min

[Comment on this hint](#)

For a snail to go 30 times longer (60min/2min), the distance he will go will be 30 times bigger.

$$30 \times 5 = ?$$

[Comment on this hint](#)

$$30 \times 5 = 150 \text{ feet.}$$

Please enter 150.

[Comment on this hint](#)

type your answer below:

150

Submit Answer

✓ Correct!

You are done with this problem!

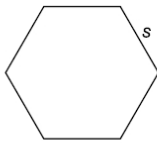
[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26324

All of the sides of this hexagon have the same length,  $s$ . Which expression represents the perimeter of this hexagon?



[Comment on this question](#)

Request Help

Select one:

- A.  $s+6$
- B.  $s^6$
- C.  $s/6$
- D.  $s \cdot 6$

Submit Answer

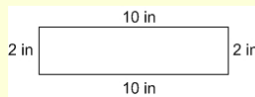
Let's move on and figure out this problem

Let's figure out the vocabulary of this problem:

What is the definition of the perimeter?

[Comment on this question](#)

The perimeter of the figure below is  $10 \text{ in} + 2 \text{ in} + 10 \text{ in} + 2 \text{ in} = 24 \text{ in}$



[Comment on this hint](#)

The perimeter of the figure is the distance around a figure.

Please choose A.

[Comment on this hint](#)

Select one:

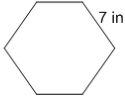
- A. The distance around a figure.
- B. The size of the figure measured in squared units.
- C. The shortest distance from the center of the polygon to one of the vertices.

Submit Answer

✓ Correct!

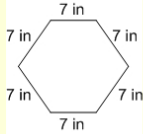
Let's figure out a similar problem with numbers:

What is the perimeter of the following figure?



[Comment on this question](#)

To find the perimeter you need to find the distance around the figure. Add up all of its sides.



[Comment on this hint](#)

$$7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} = ?$$

[Comment on this hint](#)

$$7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} + 7 \text{ in} \text{ or}$$

$$7 \text{ in} \cdot 6 = ?$$

[Comment on this hint](#)

$$7 \text{ in} \cdot 6 = 42$$

Please choose A.

[Comment on this hint](#)

Select one:

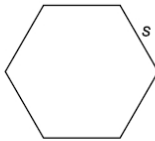
- A. 42  
 B. 49  
 C. 14  
 D. 35

Submit Answer

✔ Correct!

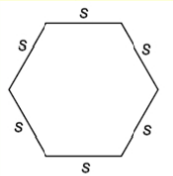
Let's return to the original problem:

All of the sides of this hexagon have the same length,  $s$ . Which expression represents the perimeter of this hexagon?



[Comment on this question](#)

To find the perimeter add up all of the sides.



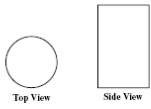
[Comment on this hint](#)

$$s + s + s + s + s + s = ?$$

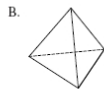
[Comment on this hint](#)



A new sculpture was built in a city park. The diagrams below show the top view and the side view of the sculpture.



Which of the following pictures **best** shows the shape of the sculpture?



[Comment on this question](#)

[Request Help](#)

Select one:

- A
- B
- C
- D

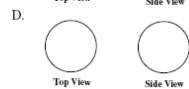
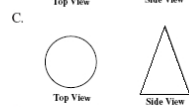
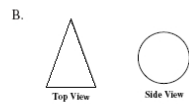
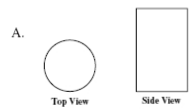
[Submit Answer](#)

Let's move on and figure out this problem

Let's solve this problem by analyzing each figure separately:



For the figure above, which of the following is the top and the side view?



If we look at the figure carefully we can see that base of the cone is a circle, thus the top view of the figure is a circle.



[Comment on this hint](#)

To find the side view of the figure visually remove the circle from the original figure and see what you are left with:



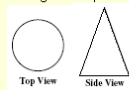
[Comment on this hint](#)

If you cut out the base you will be left with a triangle.



[Comment on this hint](#)

The figure's top view and side view are shown below:



The correct answer is C.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!



For the figure above, which of the following is the top and the side view?

- A. 

Top View      Side View
- B. 

Top View      Side View
- C. 

Top View      Side View
- D. 

Top View      Side View

If we look at the figure carefully we can see that base of the pyramid is another triangle, thus the top view of the figure is a triangle.



[Comment on this hint](#)

Other than the base every single side of the figure is a triangle.

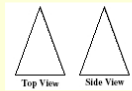
[Comment on this hint](#)

The side view of the triangle is also a triangle.



[Comment on this hint](#)

The top view and the side view of the figure are triangles.



Correct answer is D.

[Comment on this hint](#)

Select one:

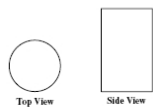
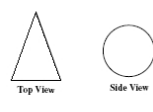
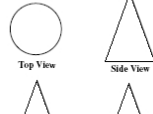
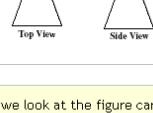
- A
- B
- C
- D

Submit Answer

✔ Correct!



For the figure above, which of the following is the top and the side view?

- A.   
Top View    Side View
- B.   
Top View    Side View
- C.   
Top View    Side View
- D.   
Top View    Side View

[Comment on this question](#)

If we look at the figure carefully we can see that base of the figure is a circle, thus the top view of the figure is a circle.



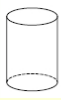




Top View

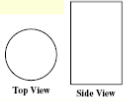
[Comment on this hint](#)

To find the side view of the figure visually remove the circle from the original figure and see what you are left with:



[Comment on this hint](#)

The top and the side of the figure are:



The correct answer is A.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

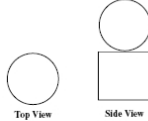
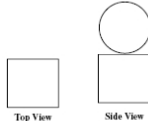
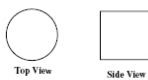

Submit Answer

✔ Correct!

Finally let's take a look at the final figure:



For the figure above, which of the following is the top and the side view?

- A. 
- B. 
- C. 
- D. 

[Comment on this question](#)

If we look at the figure carefully we can see that base of the figure is a square, thus the top view of the figure is a square.



Top View

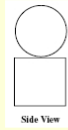
[Comment on this hint](#)

The side view of the figure is a little bit more tricky.

Because we have two figures on top of each other, side view will be these two figures on top of each other.

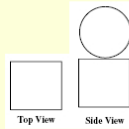
[Comment on this hint](#)

The two figures are square and a circle.



[Comment on this hint](#)

The top view and the side view of the figure are:



The correct answer is B

[Comment on this hint](#)

Select one:

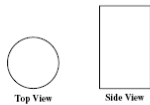
- A
- B
- C
- D

Submit Answer





✔ Correct!

Let's return to the original problem:

A new sculpture was built in a city park.



Which of the following pictures best shows the shape of the sculpture?

- A. 
- B. 
- C. 
- D. 


[Comment on this question](#)

The top view of the figure is:



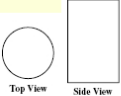
Top View [Comment on this hint](#)

The side view of the figure is:



Side View [Comment on this hint](#)

The top and the side view of the figure are:



Top View Side View

The correct answer is C. [Comment on this hint](#)

Select one:

A

B

C

D

Submit Answer

✔ Correct!

You are done with this problem! [Comment on this problem](#)

Donna wants to use ready-made 6-foot long fence sections for her yard. The yard measures 24 feet long and 30 feet wide. How many **fence sections** would she need to enclose her entire yard? [Comment on this question](#)

Request Help

Select one:

A. 120

B. 18

C. 108

D. 20

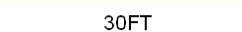
Submit Answer

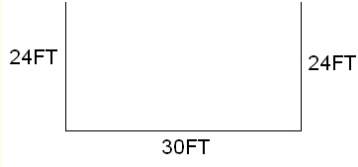
Let's move on and figure out this problem

How many feet of fence do we need? [Comment on this question](#)

To find the total amount of feet of fence needed we need to find the perimeter of the field.

Draw a picture. [Comment on this hint](#)





[Comment on this hint](#)

To find the perimeter we need to add all of the sides.

[Comment on this hint](#)

$$\text{Perimeter} = 30\text{FT} + 24\text{FT} + 30\text{FT} + 24\text{FT} = 108\text{FT}$$

Please enter 108.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Let's go back to the original problem:

Donna wants to use ready-made 6-foot long fence sections for her yard. The yard measures 24 feet long and 30 feet wide. How many **fence sections** would she need to enclose her entire yard?

[Comment on this question](#)

Now that we know the total perimeter we know how much fence we need total.

Because the fence only comes in chunks of 6 feet, we need to find the number of fences that would cover the total perimeter.

[Comment on this hint](#)

To do so we need to divide the total perimeter by the length of an individual fence:

$$108\text{FT} / 6\text{FT}$$

[Comment on this hint](#)

$$108\text{FT} / 6\text{FT} = 18 \text{ fences.}$$

Please enter 18.

[Comment on this hint](#)

Type your answer below:

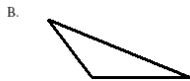
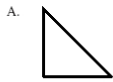
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which of the following is an obtuse triangle?



[Comment on this question](#)

Request Help

Select one:

A

B

C

Submit Answer

Let's move on and figure out this problem

What is an obtuse triangle?

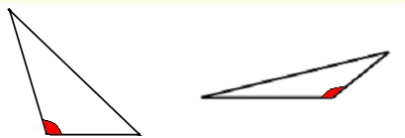
[Comment on this question](#)

These are obtuse triangles. Look at what they have in common to find the correct answer.



[Comment on this hint](#)

Look at the angles in red.



[Comment on this hint](#)

Notice the angles in red are greater than 90 degrees.

An obtuse triangle is a triangle in which one angle is greater than 90 degrees.

Select B.

[Comment on this hint](#)

Select one:

A. A triangle containing one 90 degree angle.

B. A triangle in which one angle is greater than 90 degrees.

C. A triangle in which all three angles are equal.

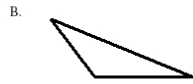
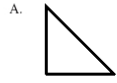
D. A triangle in which all three angles are unequal.

Submit Answer

✔ Correct!

Let's return to the original problem:

Which of the following is an obtuse triangle?



[Comment on this question](#)

An obtuse triangle has one angle greater than 90 degrees.

[Comment on this hint](#)

Only figure in choice B has an angle greater than 90 degrees.



[Comment on this hint](#)

Figure in Choice B is an obtuse triangle.

Please choose B.

[Comment on this hint](#)

Select one:

- A  
 B  
 C

Submit Answer

✔ Correct!

You are done with this problem!

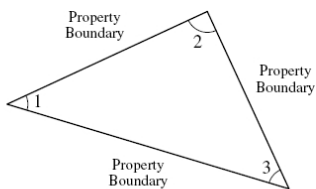
[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26410

An architect measured the three angles marked in the diagram below.



What was the sum of the measures of the three angles?

Request Help

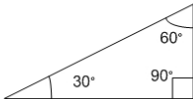
Type your answer below:

Submit Answer

Let's move on and figure out this problem

Let's take a look at a problem where the angles are given.

What is the sum of the angles of the triangle shown below?



[Comment on this question](#)

To find the sum of the angles add the numbers shown in the figure.

[Comment on this hint](#)

Sum of all of the angles =  $30 + 60 + 90$

[Comment on this hint](#)

Sum of all of the angles = 180  
Please enter 180

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

Let's take a look at another problem where the angles are given.

What is the sum of the angles of the triangle shown below?



[Comment on this question](#)

To find the sum of the angles add the numbers shown in the figure.

[Comment on this hint](#)

The sum of the angles =  $60 + 60 + 60$

[Comment on this hint](#)

The sum of the angles = 180  
Please enter 180

[Comment on this hint](#)

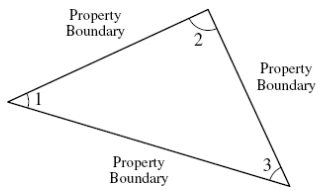
Type your answer below:

Submit Answer

✔ Correct!

Let's go back to the original problem.

An architect measured the three angles marked in the diagram below.



What was the sum of the measures of the three angles?

[Comment on this question](#)

Look at the previous problems. What property do you notice about the sum of the angles in a triangle.

[Comment on this hint](#)

A property of a triangle is:

All of the interior angles add up to 180 degrees.

[Comment on this hint](#)

Sum of angles in every triangle is equal to 180 degrees.

Please enter 180 degrees.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



On Kenesha's last business trip she drove 820 miles. Her company pays her \$0.32 per mile. Which of the following is closest to the amount Kenesha's company will pay her for the miles she drove?

[Comment on this question](#)[Request Help](#)

Select one:

- A. 1/4 of 800
- B. 1/3 of 800
- C. 1/4 of 900
- D. 1/3 of 900

[Submit Answer](#)

Let's move on and figure out this problem

Let's figure out this problem.

What is the closest approximation of the 820 miles that Kenesha drove?

[Comment on this question](#)

To find the closest approximation of a number, look at the answers and try to find the number that is the closest to the original.

[Comment on this hint](#)

Is 820 miles is 20 miles away from 800 miles, and 80 miles away from 900 miles.

[Comment on this hint](#)

800 miles is the closest approximation of 820 miles.

Please choose A.

[Comment on this hint](#)

Select one:

- A. 800 mi
- B. 900 mi
- C. 700 mi
- D. 1000 mi

[Submit Answer](#)

✔ Correct!

What is the closest approximation of \$0.32?

[Comment on this question](#)

To find which fraction has the closest value to 0.32 write out the value for each fraction.

$1/4 = ?$

$1/2 = ?$

$1/3 = ?$

[Comment on this hint](#)

The fractions below are some of common fractions, try to memorize these.

$1/4 = 0.25$

$1/2 = 0.50$

$1/3 = 0.33$  (approximately)

[Comment on this hint](#)

Look at the values mentioned above and find the one closest to 0.32.

[Comment on this hint](#)

The closest value to \$0.32 is \$0.33, which is  $\frac{1}{3}$  of \$1.

Please choose C.

[Comment on this hint](#)

Select one:

- A.  $\frac{1}{4}$  of \$1
- B.  $\frac{1}{2}$  of \$1
- C.  $\frac{1}{3}$  of \$1
- D. \$0

Submit Answer

✔ Correct!

Now that we know all of the closest values, let's return to the original problem.

On Kenesha's last business trip she drove 820 miles. Her company pays her \$0.32 per mile. Which of the following is closest to the amount Kenesha's company will pay her for the miles she drove?

[Comment on this question](#)

Remember from previous questions the closest approximation of 820 miles is 800 miles. And the closest approximation of \$0.32 is  $\frac{1}{3}$ .

[Comment on this hint](#)

The closest to the amount Kenesha's company will pay her for the miles she drove will be  $\frac{1}{3}$  of 800.

Please choose B.

[Comment on this hint](#)

Select one:

- A.  $\frac{1}{4}$  of 800
- B.  $\frac{1}{3}$  of 800
- C.  $\frac{1}{4}$  of 900
- D.  $\frac{1}{3}$  of 900

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26412

Rosa volunteered at a local nursing home for 20 days. She worked for  $1\frac{1}{4}$  hours each day. How many total hours did Rosa volunteer at the nursing home?

[Comment on this question](#)

Request Help

Select one:

- A. 15
- B. 20
- C. 25
- D. 30

Submit Answer

Let's move on and figure out this problem

Let's start with a simpler problem.

Rosa volunteered at a local nursing home for 2 days. She worked for  $1\frac{1}{4}$  hours each day. How many total hours did Rosa volunteer at the nursing home?

[Comment on this question](#)

To figure out this problem first break up the number of hours she works per day  $1\frac{1}{4}$  to a whole part and a fraction part.

[Comment on this hint](#)

Rosa has worked for 1 hour per day + 1/4 hour per day.

[Comment on this hint](#)

Now, multiply the number of days Rosa has worked by each part and add them together.

[Comment on this hint](#)

2 days \* 1 hours = 2 hours  
+  
2 days \* 1/4 hours = 1/2 hours

[Comment on this hint](#)

Finally add them together:

2 hours + 1/2 hours = ?

[Comment on this hint](#)

In two days Rosa has worked 2 and 1/2 hours.

Please choose B.

[Comment on this hint](#)

Select one:

- A. 2 hours
- B. 2 and 1/2 hours
- C. 2 and 1/4 hours
- D. 3 hours

Submit Answer

 Correct!

Now lets return to the original problem.

Rosa volunteered at a local nursing home for 20 days. She worked for  $1\frac{1}{4}$  hours each day. How many total hours did Rosa volunteer at the nursing home?

[Comment on this question](#)

To figure out this problem first break up the number of hours she works per day  $1\frac{1}{4}$  to a whole part and a fraction part.

[Comment on this hint](#)

Rosa has worked for 1 hour per day + 1/4 hour per day.

[Comment on this hint](#)

Now, multiply the number of days Rosa has worked by each part and add them together.

[Comment on this hint](#)

20 days \* 1 hours = 20 hours  
+  
20 days \* 1/4 hours = 5 hours

[Comment on this hint](#)

Finally add them together:

20 hours + 5 hours = ?

[Comment on this hint](#)

In two days Rosa has worked for 25 hours.

Please choose C.

[Comment on this hint](#)

Select one:

- A. 15
- B. 20
- C. 25
- D. 30

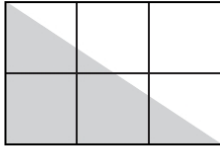
Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)

Each of the 6 small squares in the figure below measures 1 inch on each side.



Which of the following is closest to the area of the shaded portion of the figure?

[Comment on this question](#)

Request Help

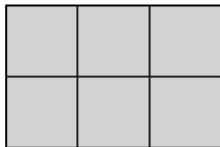
Select one:

- A. 2 square inches
- B. 3 square inches
- C. 4 square inches
- D. 5 square inches

Submit Answer

Let's move on and figure out this problem

Each of the 6 small squares in the figure below measures 1 inch on each side.



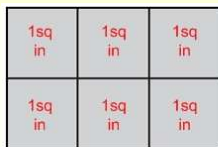
Which of the following is the area of the whole figure?

[Comment on this question](#)

Each square is 1 square inch.

Count how many squares are there.

[Comment on this hint](#)



[Comment on this hint](#)

There are 6 squares, thus the total area is 6 square inches.

Please Choose A.

[Comment on this hint](#)

Select one:

- A. 6 square inches
- B. 3 square inches
- C. 12 square inches
- D. 36 square inches

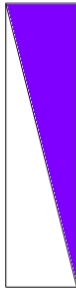
Submit Answer

Correct!

Correct

Let's look at a little bit different problem.

If the area of the figure below is 20 square inches, what is the area of the shaded region?



[Comment on this question](#)

The diagonal line divides the figure in **half**.

[Comment on this hint](#)

The area of the shaded figure is going to be **half** of the area of the original figure.

[Comment on this hint](#)

20 square inches / 2 = ?

[Comment on this hint](#)

20 square inches / 2 = 10 square inches

Please choose C.

[Comment on this hint](#)

Select one:

- A. 40 square inches
- B. 20 square inches
- C. 10 square inches
- D. 5 square inch

Submit Answer

Correct!

Let's go back to the original problem.

Each of the 6 small squares in the figure below measures 1 inch on each side.



Which of the following is **closest** to the area of the shaded portion of the figure?

[Comment on this question](#)

The same idea applies as in the previous question.

The diagonal divides the figure in **half**.

[Comment on this hint](#)

We know that the area of the whole figure is 6 square inches, and the area of the shaded region is going to be **half** of the area of the whole figure.

[Comment on this hint](#)

6 square inches / 2 = ?

[Comment on this hint](#)

6 square inches / 2 = 3 square inches

Please choose B.

[Comment on this hint](#)

Select one:

- A. 2 square inches
- B. 3 square inches
- C. 4 square inches
- D. 5 square inches

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26415

Teresa is covering the floor of her kitchen with tiles. Each square tile covers 4 square feet. If her kitchen floor is a rectangle measuring 16 feet by 10 feet, how many tiles will she need?

[Comment on this question](#)

Request Help

Select one:

- A. 13
- B. 26
- C. 30
- D. 40

Submit Answer

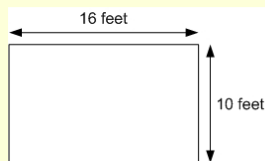
Let's move on and figure out this problem

First, what is the total area of the kitchen floor?

[Comment on this question](#)

Draw a picture.

[Comment on this hint](#)



[Comment on this hint](#)

To find the area of the figure we need to use the following formula:

Area = length \* width

[Comment on this hint](#)

Area = 16 feet \* 10 feet = ?

[Comment on this hint](#)

Area = 16 feet \* 10 feet = 160 square feet

Please choose D.

[Comment on this hint](#)


Select one:

- A. 16 square feet
- B. 10 square feet
- C. 26 square feet
- D. 160 square feet

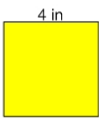
Submit Answer

✔ Correct!

Which one of these tiles is square and has area 4sq feet?

A.  4 in 1 in

B.  2 in 2 in

C.  4 in 4 in

D.  1 in 1 in

[Comment on this question](#)

To find the area of the figure we need to use the following formula:

Area = length \* width

[Comment on this hint](#)

Choice A has an area of 4sq feet, but is not a square.

Thus Choice A is not correct.

[Comment on this hint](#)

Choice C is a square but it has an area of  $4\text{ft} \times 4\text{ft} = 16\text{sq feet}$ .

Thus Choice C is not correct.

[Comment on this hint](#)

Choice B is a square with area of  $2\text{ft} \times 2\text{ft} = 4\text{sq feet}$ .

Please choose B.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

Let's do a problem with a smaller area to make sense of this question.

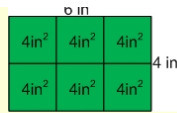
Each square tile covers 4 square feet. If the floor was 6 feet by 4 feet how many tiles would fit?

[Comment on this question](#)

Draw a picture.

[Comment on this hint](#)





The area of the figure above is  $6\text{ in} \times 4\text{ in} = 24\text{ sq in}$ .

Now you need to find how many times 4 goes into 24.

[Comment on this hint](#)

Using the picture above you can count up all of the tiles, or you can divide 24 by 4:

$$24 \div 4 = 6$$

Please choose C.

[Comment on this hint](#)

Select one:

- A. 24
- B. 4
- C. 6
- D. 10

Submit Answer

✔ Correct!

Now let's go back to the original problem.

Teresa is covering the floor of her kitchen with tiles. Each square tile covers 4 square feet. If her kitchen floor is a rectangle measuring 16 feet by 10 feet, how many tiles will she need?

[Comment on this question](#)

Recount what we already know:

Total Area of the kitchen floor = 160 square feet

Area of each tile = 4 square feet.

[Comment on this hint](#)

Count how many times we can put 4 sq feet tiles into 160 sq ft floor.

[Comment on this hint](#)

To find this we need to divide 160 by 4:

$$160\text{ sq ft} \div 4\text{ sq ft} = ?$$

[Comment on this hint](#)

$$160\text{ sq ft} \div 4\text{ sq ft} = 40\text{ times}$$

Please choose D.

[Comment on this hint](#)

Select one:

- A. 13
- B. 26
- C. 30
- D. 40

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Uri read that a bicycle tire has a radius of 30 centimeters and a diameter of 50 centimeters. How does Uri know that these measurements **cannot** be correct?

[Comment on this question](#)[Request Help](#)

Select one:

- A. The radius should be twice the diameter.
- B. The diameter should be twice the radius.
- C. The radius should be 30
- D. The diameter should be 50

[Submit Answer](#)

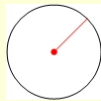
Let's move on and figure out this problem

Let's figure out what each term means.

What is the definition of radius?

[Comment on this question](#)

The red line in the figure below represents radius.

[Comment on this hint](#)

The definition of radius is:

The distance from the center to the circle.

Please choose B.

[Comment on this hint](#)

Select one:

- A. The distance across a circle through its center.
- B. The distance from the center to the circle.
- C. The distance between any two points on the circle.
- D. The distance around the circle

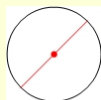
[Submit Answer](#)

✔ Correct!

What is the definition of diameter?

[Comment on this question](#)

The red line in the figure below represents the diameter.

[Comment on this hint](#)

The definition of diameter is:

The distance across a circle through its center.

Please choose A.

[Comment on this hint](#)

Select one:

- A. The distance across a circle through its center.

- A. The distance across a circle through its center.
- B. The distance from the center to the circle.
- C. The distance between any two points on the circle.
- D. The distance around the circle

Submit Answer

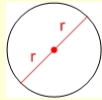
✔ Correct!

Let's go back to the original problem.

Uri read that a bicycle tire has a radius of 30 centimeters and a diameter of 50 centimeters. How does Uri know that these measurements cannot be correct?

[Comment on this question](#)

Each red line below represents the radius of the circle. The the total length of the red line represents the diameter.



[Comment on this hint](#)

If you look carefully you can see that the diameter consists of 2 radii .

[Comment on this hint](#)

This means that if the bicycle tire has a radius of 30 centimeters, it should have a diameter of 60 centimeters.

[Comment on this hint](#)

The diameter should be twice the radius.

Please choose B.

[Comment on this hint](#)

Select one:

- A. The radius should be twice the diameter.
- B. The diameter should be twice the radius.
- C. The radius should be 30
- D. The diameter should be 50

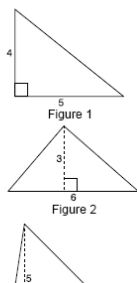
Submit Answer

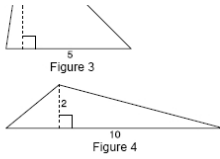
✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which two figures have the same area?





[Comment on this question](#)

Request Help

Select one:

- A. Figures 1 and 4
- B. Figures 1 and 2
- C. Figures 2 and 3
- D. Figures 2 and 4

Submit Answer

Let's move on and figure out this problem

First, let's review our basic formulas.

What is the formula for the area of a triangle?

[Comment on this question](#)

Because the area is measured in squared units, base and height must be multiplied.

The total area is half of the multiplication.

[Comment on this hint](#)

The formula for the area of a triangle is:

Area =  $1/2 * \text{base} * \text{height}$

Please choose B.

[Comment on this hint](#)

Select one:

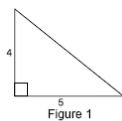
- A. base \* height
- B.  $1/2 * \text{base} * \text{height}$
- C. base + height
- D.  $1/2 * (\text{base} + \text{height})$

Submit Answer

✔ Correct!

Now let's find the area of each triangle that is given to us.

What is the area of the Figure 1 shown below:



[Comment on this question](#)

The base of the triangle is 5 units

The height of the triangle is 4 units

[Comment on this hint](#)

Remember the formula for the area of the triangle is:

Area =  $1/2 * \text{base} * \text{height}$

[Comment on this hint](#)

Area =  $\frac{1}{2} * 4 * 5$

[Comment on this hint](#)

Area =  $\frac{1}{2} * 4 * 5 = 10$

Please choose A.

[Comment on this hint](#)

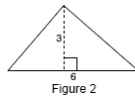
Select one:

- A. 10  
 B. 20  
 C. 9  
 D. 4.5

Submit Answer

✔ Correct!

What is the area of the Figure 2 shown below:



[Comment on this question](#)

Base of the triangle is 6 units.

Height of the triangle is 3 units.

[Comment on this hint](#)

Area =  $\frac{1}{2} * \text{base} * \text{height}$

[Comment on this hint](#)

Area =  $\frac{1}{2} * 6 * 3$

[Comment on this hint](#)

Area =  $\frac{1}{2} * 6 * 3 = 9$

Please choose B.

[Comment on this hint](#)

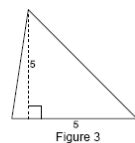
Select one:

- A. 18  
 B. 9  
 C. 4.5  
 D. 6

Submit Answer

✔ Correct!

What is the area of the Figure 3 shown below:



[Comment on this question](#)

The base of the triangle is 5 units.

The height of the triangle is 5 units.

[Comment on this hint](#)

Area =  $1/2 * \text{base} * \text{height}$

[Comment on this hint](#)

Area =  $1/2 * 5 * 5$

[Comment on this hint](#)

Area =  $1/2 * 5 * 5 = 12.5$

Please choose B.

[Comment on this hint](#)

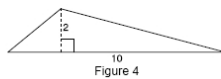
Select one:

- A. 25
- B. 12.5
- C. 10
- D. 5

Submit Answer

✔ Correct!

What is the area of the Figure 4 shown below:



[Comment on this question](#)

The base of the triangle is 10 units

The height of the triangle is 2 units

[Comment on this hint](#)

Area =  $1/2 * \text{base} * \text{height}$

[Comment on this hint](#)

Area =  $1/2 * 10 * 2$

[Comment on this hint](#)

Area =  $1/2 * 10 * 2 = 10$

Please choose D.

[Comment on this hint](#)

Select one:

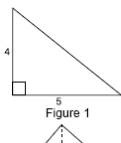
- A. 12
- B. 6
- C. 20
- D. 10

Submit Answer

✔ Correct!

Let's go back to the original problem.

Which two figures have the same area?



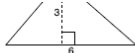


Figure 2

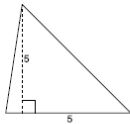


Figure 3

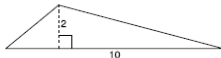


Figure 4

[Comment on this question](#)

The formula for the area of the triangle is:

$$\text{Area} = 1/2 * b * h$$

[Comment on this hint](#)

From our previous calculations we found:

Area of Figure 1 = 10

Area of Figure 2 = 9

Area of Figure 3 = 12.5

Area of Figure 4 = 10

[Comment on this hint](#)

Areas of Figure 1 and Figure 4 equal to 10.

Choice A is the correct answer.

[Comment on this hint](#)

Select one:

- A. Figures 1 and 4
- B. Figures 1 and 2
- C. Figures 2 and 3
- D. Figures 2 and 4

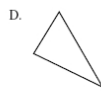
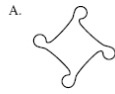
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Which figure below has a single line of symmetry?



[Comment on this question](#)

Request Help

Select one:

A

B

C

D

Submit Answer

Let's move on and figure out this problem

What does it mean for a figure to have a line of symmetry?

[Comment on this question](#)

A line of symmetry is a line that divides a shape in half so that each side is a mirror image of the other.

[Comment on this hint](#)

A line of symmetry is a line that divides a shape in half so that each side is a mirror image of the other.

[Comment on this hint](#)

When you spin something, it is called rotation. So B is not the answer for this question.

[Comment on this hint](#)

When you slide something, it is called translation. So C is not the answer for this question.

[Comment on this hint](#)

A is the right answer.

[Comment on this hint](#)

Select one:

A. It means you can fold it along a certain line and both sides will be exactly the same.

B. It means you can rotate it along a certain line.

C. It means you can slide it along a certain line.

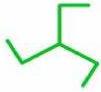
Submit Answer

Correct!



Which of the following figures has exactly one line of symmetry?

A.



B.



C.



D.



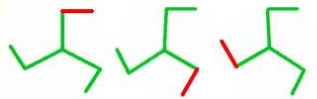
[Comment on this question](#)

A star has 5 lines of symmetry. D is not the right answer.



[Comment on this hint](#)

Figure A has so called rotational symmetry. If you turn it, it will stay the same.



But it does not have a single line of symmetry. A is not the right answer.

[Comment on this hint](#)

The figure C does not have any lines of symmetry.

Smiley face has only one line of symmetry.



Correct answer is B.

[Comment on this hint](#)

Select one:

A

B

C

D

Submit Answer

✔ Correct!

Let's go back to the original problem.

Which figure below has a single line of symmetry?



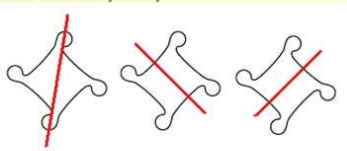
[Comment on this question](#)

There is only one figure that can be folded so that both sides fall perfectly on each other.

[Comment on this hint](#)

There aren't any lines of symmetry in figure A. Even though it looks like the figure can be folded, if you look closer there is no way to fold the figure to get both sides matched up.

It has rotational symmetry.



[Comment on this hint](#)

Choice B does not have any lines of symmetry.

[Comment on this hint](#)

The only figure that has a single line of symmetry is figure C.



Please choose C.

[Comment on this hint](#)

Select one:

- A  
 B  
 C  
 D

Submit Answer

No, try again

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



Which of the following shows the image above reflected over the dotted line?



[Comment on this question](#)

Request Help

Select one:

- A
- B
- C
- D

Submit Answer

Let's move on and figure out this problem

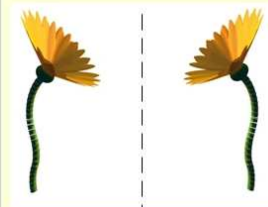
What does it mean for a figure to be reflected over a certain line?

[Comment on this question](#)

When a figure is rotated, the action is called rotation.

[Comment on this hint](#)

Here is an image reflected over the dotted line:



[Comment on this hint](#)

By definition, reflection provides a mirror image of a figure.

The Correct answer is B.

[Comment on this hint](#)

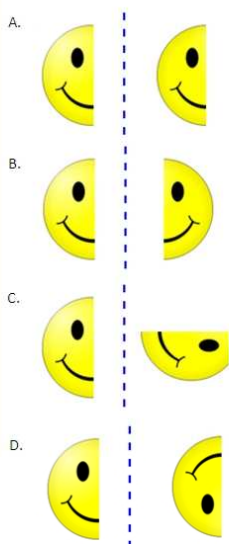
Select one:

- A. It slides with no flips or turns.
- B. The figure flips over the line to create a mirror image.
- C. The figure rotates.

Submit Answer

✔ Correct!

Which of the following pair of figures demonstrates reflection over the dotted line?



[Comment on this question](#)

In your head, fold the images along the dotted lines. The figures should match.

[Comment on this hint](#)

If we were to fold choice A along the dotted line, the two figures would not fall perfectly on each other. Choice A is not the right answer.

[Comment on this hint](#)

If we were to fold choice D along the dotted line, the two figures would not fall perfectly on each other. Choice D is not the right answer.

[Comment on this hint](#)

In choice B the two figures are perfect mirror images of each other.

Please choose choice B.

[Comment on this hint](#)

Select one:

- A  
 B  
 C  
 D

Submit Answer

✔ Correct!

Let's go back to the original problem.



Which of the following shows the image above reflected over the dotted line?

- A. (-: )  
B. : )  
C. : )

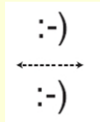
∴  
D. :-)

[Comment on this question](#)

Look for a figure that would be a mirror image of the original.

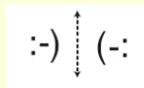
[Comment on this hint](#)

Choice D is a mirror image but over another dotted line:



[Comment on this hint](#)

Choice A is the only choice that is a reflection of the original figure over the dotted line.



[Comment on this hint](#)

Select one:

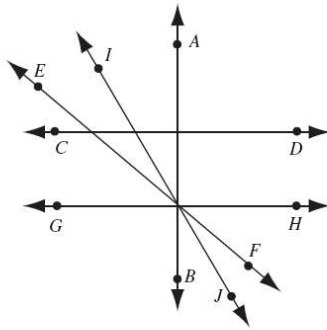
- A
- B
- C
- D

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



Which of the following lines appears to be perpendicular to  $\overleftrightarrow{CD}$ ?

- A.  $\overleftrightarrow{AB}$
- B.  $\overleftrightarrow{EF}$
- C.  $\overleftrightarrow{GH}$
- D.  $\overleftrightarrow{IJ}$

[Comment on this question](#)

Request Help

Select one:

- A
- B
- C
- D

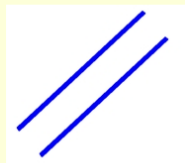
Submit Answer

Let's move on and figure out this problem

What does it mean when two lines are **perpendicular** to each other?

[Comment on this question](#)

The two lines below are **parallel**:



[Comment on this hint](#)

Two **perpendicular** lines can have only one angle between them.

[Comment on this hint](#)

When two lines are **perpendicular** they have a 90 degree angle between them.

Correct answer is C.

[Comment on this hint](#)

Select one:

- A. The two lines are on top of each other.
- B. The two lines never intersect.
- C. The two lines have a 90 degree angle between each other.

D. The two lines can have any angle between them.

Submit Answer

✔ Correct!

Which choice has two lines that are **perpendicular** to each other?

A.



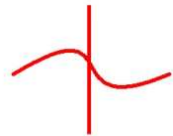
B.



C.



D.



[Comment on this question](#)

The lines in choice B never intersect, this means that they are **parallel**, not **perpendicular**.


Choice B is not the right answer.

[Comment on this hint](#)

Choice D has only one line.

Choice D is not the right answer.

[Comment on this hint](#)

The symbol  means that the two lines have a 90 degree angle between them.

[Comment on this hint](#)

By the definition, choice C is the correct answer because the two lines have a 90 degree angle between them.

Please choose choice C.

[Comment on this hint](#)

Select one:

A

B

C

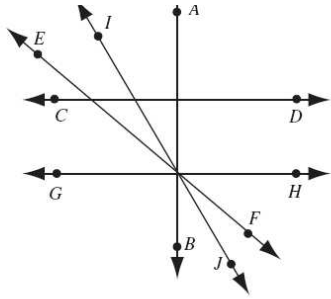
D

Submit Answer

✔ Correct!

[Let's return to our original problem:](#)



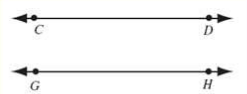


Which of the following lines appears to be perpendicular to  $\overleftrightarrow{CD}$ ?

- A.  $\overleftrightarrow{AB}$
- B.  $\overleftrightarrow{EF}$
- C.  $\overleftrightarrow{GH}$
- D.  $\overleftrightarrow{IJ}$

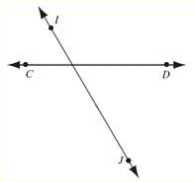
[Comment on this question](#)

$\overleftrightarrow{CD}$  never intersects with  $\overleftrightarrow{GH}$ . This means that they are **parallel**.



[Comment on this hint](#)

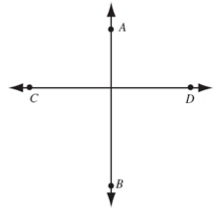
$\overleftrightarrow{CD}$  and  $\overleftrightarrow{IJ}$  intersect, but the angle between them is not 90 degrees.



[Comment on this hint](#)

Only  $\overleftrightarrow{CD}$  and  $\overleftrightarrow{AB}$  have a 90 degree angle between them.

By definition, this means that they are **perpendicular** to each other.



A is the correct answer.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer



✔ Correct!

You are done with this problem!

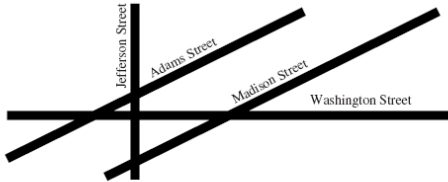
[Comment on this problem](#)

Assistment

You are previewing content.

Assistment #26492

A map of four streets is shown below.



Which two streets appear to be perpendicular?

[Comment on this question](#)

Request Help

Select one:

- A. Jefferson Street and Washington Street
- B. Adams Street and Washington Street
- C. Adams Street and Madison Street
- D. Jefferson Street and Madison Street

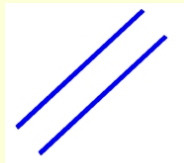
Submit Answer

Let's move on and figure out this problem

What does it mean when two lines are **perpendicular** to each other?

[Comment on this question](#)

The two lines below are **parallel**:



[Comment on this hint](#)

Two **perpendicular** lines can have only one angle between them.

[Comment on this hint](#)

When two lines are **perpendicular** they have a 90 degree angle between them.

Correct answer is C.

[Comment on this hint](#)

Select one:

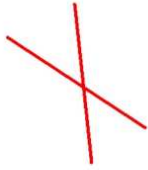
- A. The two lines are on top of each other.
- B. The two lines never intersect.
- C. The two lines have a 90 degree angle between each other.
- D. The two lines can have any angle between them.

Submit Answer

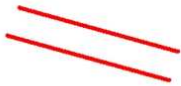
✔ Correct!

Which choice has two lines that are **perpendicular** to each other?

A.



B.



C.



D.



[Comment on this question](#)

The lines in choice B never intersect, this means that they are **parallel**, not **perpendicular**.


Choice B is not the right answer.

[Comment on this hint](#)

Choice D has only one line.

Choice D is not the right answer.

[Comment on this hint](#)

The symbol  means that the two lines have a 90 degree angle between them.

[Comment on this hint](#)

By the definition, choice C is the correct answer because the two lines have a 90 degree angle between them.

Please choose choice C.

[Comment on this hint](#)

Select one:

A

B

C

D

Submit Answer

✔ Correct!

Let's return to our original problem:

A map of four streets is shown below.

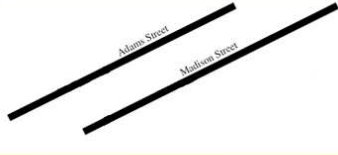




Which two streets appear to be perpendicular?

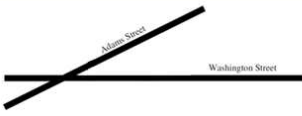
[Comment on this question](#)

Adams Street and Madison Street never intersect. This means that they are parallel.



[Comment on this hint](#)

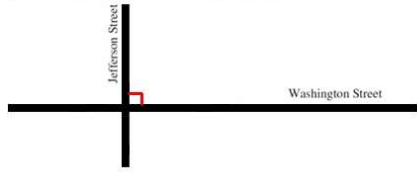
Adams Street and Washington Street intersect, but the angle between them is not 90 degrees.



[Comment on this hint](#)

Only Jefferson Street and Washington Street have a 90 degree angle between them.

By definition, this means that they are perpendicular to each other.



Choice A is the correct answer.

[Comment on this hint](#)

Select one:

- A. Jefferson Street and Washington Street
- B. Adams Street and Washington Street
- C. Adams Street and Madison Street
- D. Jefferson Street and Madison Street

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

## Additional Problems

Grade 6, 2004, Q25 (27194)

Assistment

You are previewing content.

Assistment #27194

What is the sum of the measures of all of the interior angles of a triangle?

[Comment on this question](#)

Request Help

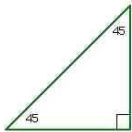
Select one:

- A. 120 degrees
- B. 180 degrees
- C. 240 degrees
- D. 360 degrees

Submit Answer

Let's move on and figure out this problem

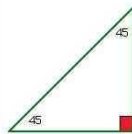
First, let us look at an example.



What is the sum of the measures of all the interior angles of the triangle?

[Comment on this question](#)

The angle in red is a right angle, which means it is a 90-degree angle.



[Comment on this hint](#)

Add up all three interior angles of the triangle:

$$45 + 45 + 90 = ? \text{ degrees}$$

[Comment on this hint](#)

$$45 + 45 + 90 = 180 \text{ degrees}$$

The sum of measures of all the interior angles of the triangle is 180 degrees.

Select B.

[Comment on this hint](#)

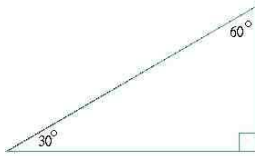
Select one:

- A. 120 degrees
- B. 180 degrees
- C. 240 degrees
- D. 360 degrees

Submit Answer

✔ Correct!

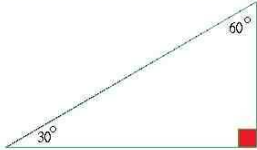
Let us look at a different triangle.



What is the sum of the measures of all the interior angles of the triangle?

[Comment on this question](#)

The angle in red is a right angle, meaning that the angle is 90 degrees.



[Comment on this hint](#)

Add up all the interior angles of the triangle:

$$30 + 60 + 90 = ? \text{ degrees}$$

[Comment on this hint](#)

$$30 + 60 + 90 = 180 \text{ degrees}$$

The sum of the measures of all the interior angles of the triangle is 180 degrees.

Select B.

[Comment on this hint](#)

Select one:

- A. 120 degrees
- B. 180 degrees
- C. 240 degrees
- D. 360 degrees

Submit Answer

✔ Correct!

Now, let us return to the original problem.

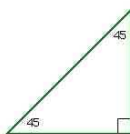
What is the sum of the measures of all of the interior angles of a triangle?

[Comment on this question](#)

Take a look at the two previous examples. Find the similarity between them.

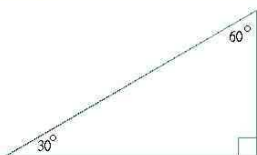
[Comment on this hint](#)

Example 1:



The sum of the measures of all the interior angles of triangle 1 is 180 degrees.

Example 2:



The sum of the measures of all the interior angles of triangle 2 is also **180 degrees**. [Comment on this hint](#)

The sum of the measures of all the interior angles of any triangle is **180 degrees**.  
Select B. [Comment on this hint](#)

Select one:

A. 120 degrees

B. 180 degrees

C. 240 degrees

D. 360 degrees

[Submit Answer](#)

✔ Correct!

You are done with this problem! [Comment on this problem](#)

Grade 6, 2003, Q36 (27195)

Assistment

You are previewing content.

Assistment #27195

The radius of a circular table is 13 inches.  
What is the diameter of the table? [Comment on this question](#)

[Request Help](#)

Select one:

A. 6.5 inches

B. 13 inches

C. 15 inches


D. 26 inches


[Submit Answer](#)


Let's move on and figure out this problem


First we have to understand the terms in the problem.

Which of the following is the radius?

A) 

B) 

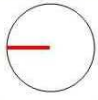
C) 

D) 

[Comment on this question](#)

The radius of a circle is a line segment from the center to the perimeter of the circle. [Comment on this hint](#)

This is a radius:



Select A.

[Comment on this hint](#)

Select one:

A

B

C

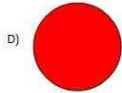
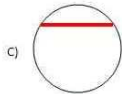
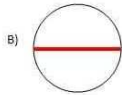
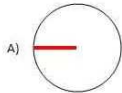
D

Submit Answer

✔ Correct!

Now we know what a radius is, then we need to know what a diameter is.

Which is a diameter?



[Comment on this question](#)

The diameter of a circle is a straight line segment that passes through the center of the circle and whose endpoints are on the circle.

[Comment on this hint](#)

This is a diameter:



Select B.

[Comment on this hint](#)

Select one:

A

B

C

D

Submit Answer

✔ Correct!

Now we know what the radius and diameter of a circle are, we must find out the formula for calculating the diameter to solve the problem.

What is the formula to calculate the diameter of a circle?

- A.  $D = 2r$
- B.  $D = 2\pi r$
- C.  $D = \pi D$
- D.  $D = \pi r^2$

[Comment on this question](#)

Find the link between these two figures of the radius and the diameter:



Radius



Diameter

[Comment on this hint](#)

Notice that the diameter is twice the length of the radius.  
 $D = 2r$

Select A.

[Comment on this hint](#)

Select one:

- A
- B
- C
- D

Submit Answer

✔ Correct!

Since we know the formula for calculating the diameter of a circle, we can now solve the original problem.

The radius of a circular table is 13 inches.  
What is the diameter of the table?

[Comment on this question](#)

Remember the formula for calculating the diameter of a circle is:  
 $D = 2r$

[Comment on this hint](#)

From the question, we know that:  
 $r = 13$  feet

Substitute the number into the formula to get the answer.

[Comment on this hint](#)

$D = 2r$   
 $= 2 \cdot 13$   
 $= 26$   
The diameter of the circle is 26 feet.

Select D.

[Comment on this hint](#)

Select one:

- A. 6.5 inches
- B. 13 inches
- C. 15 inches
- D. 26 inches

Submit Answer

✔ Correct!



You are done with this problem!

[Comment on this problem](#)

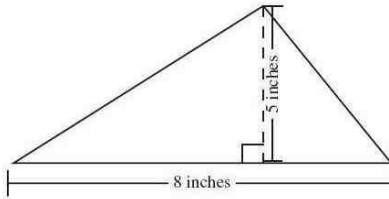
Grade 6, 2003, Q24 (27196)

Assistment

You are previewing content.

Assistment #27196

What is the area of the triangle shown below?



[Comment on this question](#)

Request Help

Select one:

- A. 10 square inches
- B. 12.5 square inches
- C. 20 square inches
- D. 40 square inches

Submit Answer

Let's move on and figure out this problem

First we need to understand the terms in the problem.

What is the definition of an area?

[Comment on this question](#)

Select one:

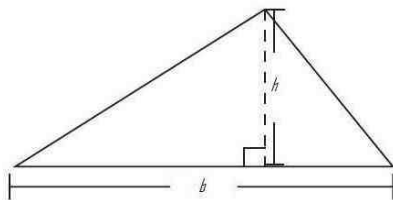
- A. The sum of the lengths of the sides of the polygon
- B. The amount of space taken up in a plane by a figure

Submit Answer

✔ Correct!

Now that we know the definition of an area, we need to know how to calculate the area of a triangle.

What is the formula to calculate the area of a triangle?

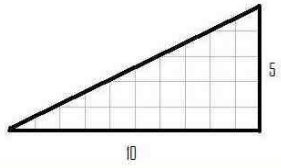


[Comment on this question](#)

Recall that the area is the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

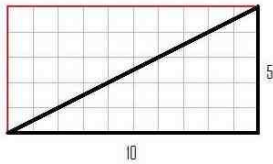
Let us look at an example.



To find the area of the triangle, we can count the number of squares (25 squares).

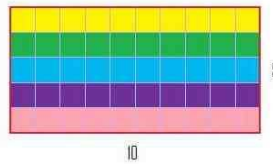
[Comment on this hint](#)

This process can be simplified.



Notice the triangle takes up half of the red rectangle.

As shown below, to calculate the area of the red rectangle, we need to count 10 squares 5 times, which is the same as  $10 * 5$ .



So to calculate the area of a triangle, we need to half the area of a rectangle, which is the same as  $1/2 * 10 * 5$ .

[Comment on this hint](#)

In general, the area of a triangle is  $1/2 * b * h$ .

Select D.  $A = 1/2 * b * h$

[Comment on this hint](#)

Select one:

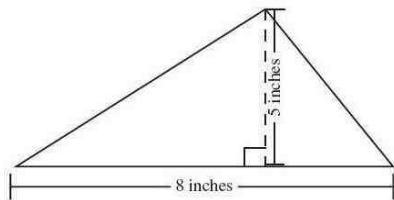
- A.  $A = b + h$
- B.  $A = 1/2 * (b + h)$
- C.  $A = b * h$
- D.  $A = 1/2 * b * h$

Submit Answer

✔ Correct!

Since we know the formula for calculating the area of a triangle, we can now return to the original problem.

What is the area of the triangle shown below?



[Comment on this question](#)

Remember the formula for calculating the area of a triangle is:  
 $A = 1/2 * b * h$

[Comment on this hint](#)

In this problem,  
b = 8 inches  
h = 5 inches

Substitute the numbers into the formula.

[Comment on this hint](#)

$$\begin{aligned} A &= 1/2 * b * h \\ &= 1/2 * 8 * 5 \\ &= 20 \text{ square inches} \end{aligned}$$

The area of the triangle is 20 square inches.

Select C.

[Comment on this hint](#)

Select one:

- A. 10 square inches
- B. 12.5 square inches
- C. 20 square inches
- D. 26 inches

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

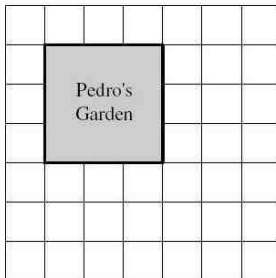
Grade 6, 2003, Q27a (26197)

Assistment

You are previewing content.

Assistment #27197

In the grid below, each square represents one square yard of land. Twenty carrot plants can fit in one square yard of land.



represents 1 square yard.

How many plants can fit in Pedro's garden?

[Comment on this question](#)

Request Help

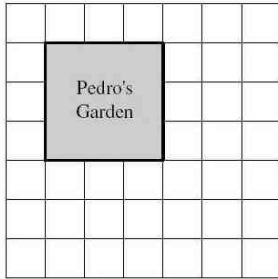
Type your answer below:

Submit Answer

Let's move on and figure out this problem

First we have to figure out the number of square yards are in Pedro's land.

How many square yards are in Pedro's land?



represents 1 square yard.

[Comment on this question](#)

Count the number of  that will fit into the shaded area labeled "Pedro's Garden".

A 10x10 grid with a 3x3 shaded square in the center. The shaded square is labeled "Pedro's Garden".

[Comment on this hint](#)

Each square yard is now in a different color. Count the number of square yards.

A 10x10 grid with a 3x3 shaded square in the center. The shaded square is divided into 9 smaller colored squares: red, yellow, green, blue, orange, pink, cyan, magenta, and black.

[Comment on this hint](#)

There are 9 square yards in Pedro's Garden.

Type in 9.

[Comment on this hint](#)

Type your answer below:

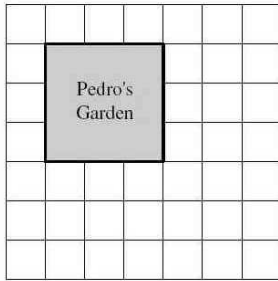
9

Submit Answer

✔ Correct!

Now that we know that there are 9 square yards in Pedro's garden. We can answer the original problem.

In the grid below, each square represents one square yard of land. Twenty carrot plants can fit in one square yard of land. How many plants can fit in Pedro's garden?



represents 1 square yard.

[Comment on this question](#)

Remember that we found out that there are **9 square yards** in Pedro's garden.  
 And from the problem, we know that **twenty plants can fit into one square yard.**

[Comment on this hint](#)

This means that 20 plants can fit into each  of Pedro's garden.

represents 1 square yard.

[Comment on this hint](#)

So to calculate the number of plants that can fit into Pedro's garden:  
 Number of plants = 9 square yard \* 20 plants per square yard  
 = ? plants?

[Comment on this hint](#)

Number of plants = 9 square yard \* 20 plants per square yard  
 = 180 plants

180 plants can fit into Pedro's garden.

Type in 180.

[Comment on this hint](#)

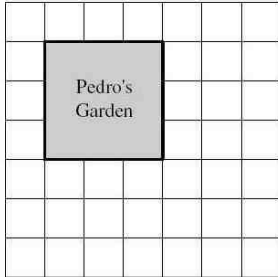
Type your answer below:

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

In the grid below, each square represents one square yard of land.



represents 1 square yard.

How many yards of fencing does Pedro need to enclose his garden?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

First, we need to understand what  represents 1 square yard. means.

Which of the following represents 1 square yard?

A.  $1 \times \begin{matrix} 1 \\ \square \end{matrix}$

B.  $\frac{1}{2} \times \begin{matrix} \frac{1}{2} \\ \square \end{matrix}$

C.  $\frac{1}{4} \times \begin{matrix} \frac{1}{4} \\ \square \end{matrix}$

D.  $2 \times \begin{matrix} 2 \\ \square \end{matrix}$

[Comment on this question](#)

"Square yard" is the unit for measuring the area of a polygon.

[Comment on this hint](#)

The formula for measuring the area of a square is:

$$A = s^2$$

$$= s \times s$$



So substitute the numbers from the problem into the equation.

[Comment on this hint](#)

Let's look at one of the answers.

For answer D,  $s = 2$  yards:

$$\begin{aligned} A &= s \times s \\ &= 2 \times 2 \\ &= 4 \text{ square yards} \end{aligned}$$

This is not 1 square yard, so D is not correct.

Repeat this process with answer A, B, and C.

[Comment on this hint](#)

For answer A,  $s = 1$  yard

$$\begin{aligned} A &= s \times s \\ &= 1 \times 1 \\ &= 1 \text{ square yard} \end{aligned}$$



represents 1 square yard.

Select A.

[Comment on this hint](#)

Select one:

A.

B.


C.

D.

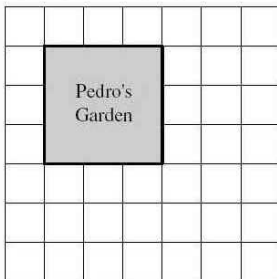
Submit Answer


✔ Correct!



Now that we know  represents 1 square yard, we need to figure out the dimensions of Pedro's garden.

What are the dimensions of Pedro's garden?



 represents 1 square yard.

[Comment on this question](#)

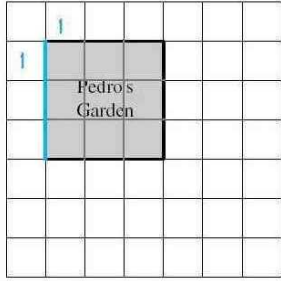


Remember that  represents 1 square yard.

[Comment on this hint](#)

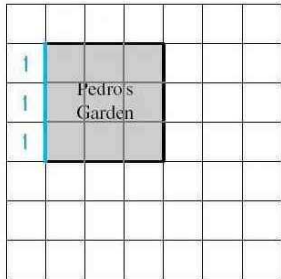
How many of the red lengths of the square yard make up the blue length of Pedro's garden?





[Comment on this hint](#)

Count the number of "1"s



[Comment on this hint](#)

The length of the blue side of Pedro's garden is **3 yards**.  
 Since Pedro's garden is a square, the length of all the sides are the same.  
 So the dimensions of Pedro's garden are **3 yards by 3 yards**.

Select C.

[Comment on this hint](#)

Select one:

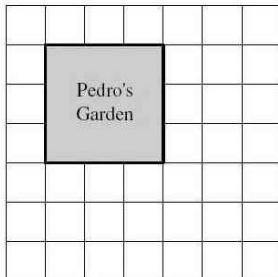
- A. 1 yard by 1 yard
- B. 2 yards by 2 yards
- C. 3 yards by 3 yards
- D. 4 yards by 4 yards

Submit Answer

✔ Correct!

Now that we know the dimensions of Pedro's garden, we can answer the original problem.

How many yards of fencing does Pedro need to enclose his garden?

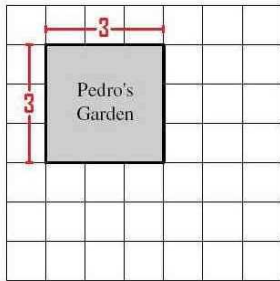


represents 1 square yard.

[Comment on this question](#)



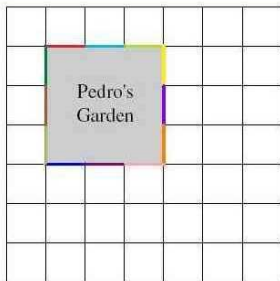
Remember the dimensions of Pedro's garden are 3 yards by 3 yards.



represents 1 square yard.

[Comment on this hint](#)

Each yard around Pedro's garden is in a different color. Count the number of colors.



represents 1 square yard.

[Comment on this hint](#)

There are **3 yards** on each side and **4 sides**.

So to calculate the number of square yards around Pedro's garden, we need to add 3 yards four times :  $3 + 3 + 3 + 3$

[Comment on this hint](#)

There are **12 yards** around Pedro's garden.

So Pedro needs **12 yards** of fencing to enclose his garden.

Type in 12.

[Comment on this hint](#)

Type your answer below:

12

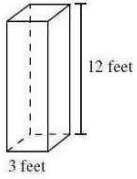
Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

The base of the rectangular prism shown below is a 3-foot square.



What is the volume of the prism?

[Comment on this question](#)

Request Help

Select one:

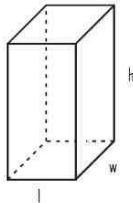
- A. 108 cubic feet
- B. 144 cubic feet
- C. 324 cubic feet
- D. 432 cubic feet

Submit Answer

Let's move on and figure out this problem

First we need to know how to calculate the volume of a rectangular prism.

What is the formula for calculating the volume of the rectangular prism below?

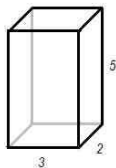


[Comment on this question](#)

The volume is the amount of space a three-dimensional shape takes up.

[Comment on this hint](#)

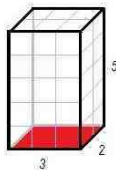
Let's look at an example to figure out how to calculate the volume of a rectangular prism:



To find the volume of the rectangular prism, we must find the area of the base and multiply it with the height of the prism.

[Comment on this hint](#)

This is how we find the area of the base in red:





The area of the base is  $2 \times 3 = 6$ . This is the same as:  
 $A = l \times w$

[Comment on this hint](#)

This base layer in red must be multiplied by the height (or the number of rows) to find the volume.  
 $V = 6 \times 5$   
 $= 30$  squares

So, the formula for the volume of a rectangular prism is:  
 $V = l \times w \times h$

Select B.

[Comment on this hint](#)

Select one:

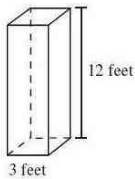
- A.  $V = l + w + h$
- B.  $V = l \times w \times h$
- C.  $V = 2(w + h)$
- D.  $V = w \times h$

Submit Answer

✔ Correct!

Now let's go back to the original problem.

The base of the rectangular prism shown below is a 3-foot square.



What is the volume of the prism?

[Comment on this question](#)

Remember the formula for calculating the volume of a rectangular prism is:  
 $V = l \times w \times h$

[Comment on this hint](#)

Looking at the figure, we can see that:  
 $w = 3$  feet  
 $h = 12$  feet

But what is the length of the rectangular prism?  
Since the base of the rectangular prism is a square (from the question), the sides of the base must be equal.  
So...  
 $l = 3$  feet

Substitute the numbers into the formula to find the volume of the rectangular prism.

[Comment on this hint](#)

$$V = 3 \times 3 \times 12$$
$$= 108 \text{ cubic feet}$$

The volume of the rectangular prism is **108 cubic feet**.

Select A.

[Comment on this hint](#)

Select one:

- A. 108 cubic feet
- B. 144 cubic feet
- C. 324 cubic feet
- D. 432 cubic feet

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Grade 6, 2002, Q 13a (27255)

Assistment

You are previewing content.

Assistment #27255

Todd is making a poster for art class. He makes his poster on a square with a side that measures 12 inches.



What is the area of Todd's square?

[Comment on this question](#)

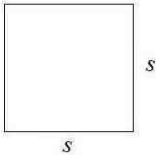
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer this problem, we must first know what the formula for calculating the area of a square is.



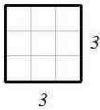
What is the formula for calculating the area of a square?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

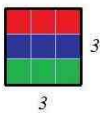
To figure out the formula for the area of a square, let's use an example.



To calculate the area of the square, we can count the number of squares (9 squares).

[Comment on this hint](#)

The process for finding the area of the square can be simplified.



To calculate the area of the square, we need to count 3 squares, 3 times, which is the same as  $3 \times 3$

[Comment on this hint](#)

In general the area of a the square is  $s \cdot s$ .

Select C.  $A = s \cdot s$

[Comment on this hint](#)

Select one:

A.  $A = s + s$

B.  $A = s + s + s + s$

C.  $A = s \cdot s$

D.  $A = s \cdot s \cdot s \cdot s$

Submit Answer

✔ Correct!

Now that we know the formula for calculating the area of a square, let's go back to the original problem.

Todd is making a poster for art class. He makes his poster on a square with a side that measures 12 inches.



What is the area of Todd's square?

[Comment on this question](#)

Remember the area for calculating the area of a square is:  
 $A = s \cdot s$

[Comment on this hint](#)

In this problem,  
 $s = 12$  inches

Substitute this value into the formula to find the area.

[Comment on this hint](#)

$A = 12 \cdot 12$   
 $= 144$  square inches

The area of the square is 144 square inches.

Type in 144.

[Comment on this hint](#)

Type your answer below:

144

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

Todd and Chi are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Chi wants to make his poster on a rectangle with a width of 8 inches.



What would the length of Chi's rectangle need to be in order for the rectangle to have the same area as Todd's poster?

[Comment on this question](#)

Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer this problem, we must first know the formula for calculating the area of a rectangle.



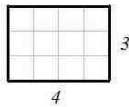
What is the formula for calculating the area of the rectangle?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

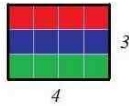
To figure out the formula for the area of a rectangle, let's use an example.



To calculate the area of the rectangle, we can count the number of squares (12 squares).

[Comment on this hint](#)

The process of counting the number of squares can be simplified.



To calculate the area of the rectangle, we need to count 4 squares, 3 times, which is the same as  $4 \times 3$

[Comment on this hint](#)

In general the area of a the rectangle is  $l \times w$ .

Select C.  $A = l \times w$

[Comment on this hint](#)

Select one:

- A.  $A = l + w$
- B.  $A = 2 * (l + w)$
- C.  $A = l * w$
- D.  $A = 2 * (l * w)$

Submit Answer

✔ Correct!

Now that we know the formula for calculating the area of a rectangle, let's look at an example.

If you know the area of a rectangle is 45 square feet and the width of the rectangle is 5 feet. Which operation would you do to find the length?

[Comment on this question](#)

Remember the formula for calculating the area of a rectangle is:  
 $A = l * w$

[Comment on this hint](#)

In this problem, we know:  
 $A = 45$  square feet  
 $l = ?$  feet  
 $w = 5$  feet

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

$A = l * w$   
 $45 = l * 5$   
 $l = ?$

[Comment on this hint](#)

$l = 45 \div 5$

Select D.

*This is the same as:*  
 $l = A \div w$

[Comment on this hint](#)

Select one:

- A.  $45 + 5$
- B.  $45 - 5$
- C.  $45 * 5$
- D.  $45 \div 5$

Submit Answer

✔ Correct!

Now that we have completed an example, let us return to the original problem.

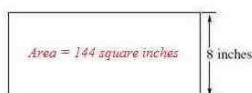
Todd and Chi are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Chi wants to make his poster on a rectangle with a width of 8 inches.



What would the length of Chi's rectangle need to be in order for the rectangle to have the same area as Todd's square?

[Comment on this question](#)

We know the area of the rectangle is 144 square inches.



[Comment on this hint](#)

We also know that the formula for finding the area of a rectangle is:  
 $A = l \cdot w$

[Comment on this hint](#)

In this problem,  
 $A = 144$  square inches  
 $l = 7$  inches  
 $w = 8$  inches

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

Remember from the example before that the formula to find the length is:  
 $l = A \div w$

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

$$l = 144 \div 8 \\ = 18 \text{ inches}$$

The length of the rectangle is **18** inches.

Type in 18.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

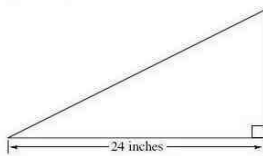
Grade 6, 2002, Q13c (27257)

Assistment

You are previewing content.

Assistment #27257

Todd and Janet are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Janet will use a right triangle with a base of 24 inches.



What would the height of Janet's triangle need to be in order for the triangle to have the same area as Todd's poster?

[Comment on this question](#)

Request Help

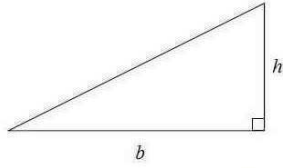
Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer the problem, we must first know the formula for calculating the area of a triangle.





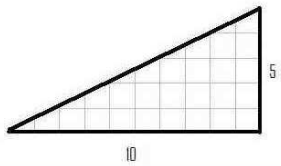
What is the formula for calculating the area of a triangle?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

Let us look at an example.

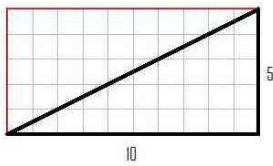


To find the area of the triangle, we can count the number of squares (25 squares).

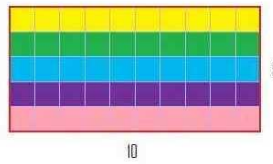
[Comment on this hint](#)

This process can be simplified.

Notice the triangle takes up half of the red rectangle.



As shown below, to calculate the area of the red rectangle, we need to count 10 squares 5 times, which is the same as  $10 \times 5$ .



So to calculate the area of a triangle, we need to half the area of a rectangle, which is the same as  $1/2 \times 10 \times 5$ .

[Comment on this hint](#)

In general, the area of a triangle is  $1/2 \times b \times h$ .

Select D.  $A = 1/2 \times b \times h$

[Comment on this hint](#)

Select one:

- A.  $A = b + h$
- B.  $A = 1/2 \times (b + h)$
- C.  $A = b \times h$
- D.  $A = 1/2 \times b \times h$

Submit Answer

✔ Correct!

Now that we know the formula for the area of a triangle, let us do an example.

If you know the area of a triangle is 20 square feet and its base is 5 feet. Which operation would you do to find the height?

[Comment on this question](#)

Remember the formula for calculating the area of a triangle is:  
 $A = 1/2 * b * h$

[Comment on this hint](#)

In this problem, we know:  
 $A = 20$  square feet  
 $b = 5$  feet  
 $h = ?$

Substitute the values into the formula to find the height of the triangle.

[Comment on this hint](#)

$A = 1/2 * b * h$   
 $20 = 1/2 * 5 * h$   
 $h = ?$

[Comment on this hint](#)

$20 = 1/2 * 5 * h$   
 $20 * 2 = 5 * h$   
 $20 * 2 = 5 * h$   
 $h = 2 * 20 \div 5$

Select D.

*This is the same as:  $h = 2 * A \div b$*

[Comment on this hint](#)

Select one:

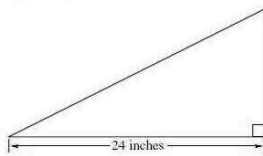
- A.  $2 * (20 + 5)$
- B.  $2 * (20 - 5)$
- C.  $2 * 20 * 5$
- D.  $2 * 20 \div 5$

Submit Answer

✔ Correct!

Now that we have done an example, we can return to the original problem.

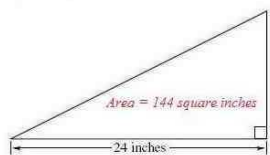
Todd and Janet are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Janet will use a right triangle with a base of 24 inches.



What would the height of Janet's triangle need to be in order for the triangle to have the same area as Todd's poster?

[Comment on this question](#)

We know that the area of the triangle is 144 square inches.



[Comment on this hint](#)

We also know that the formula for calculating the area of a triangle is:  
 $A = 1/2 * b * h$

[Comment on this hint](#)

In this problem, we know:  
 $A = 144$  square inches  
 $b = 24$  inches  
 $h = ?$

Substitute the values into the formula to find the height of the triangle.

[Comment on this hint](#)

Remember from the example that:  
 $h = 2 * A \div b$

Substitute the values into the formula to find the height.

[Comment on this hint](#)

$$h = 2 * 144 \div 24$$
$$= ? \text{ inches}$$

[Comment on this hint](#)

$$h = 2 * 144 \div 24$$
$$= 12 \text{ inches}$$

The height of the triangle is **12** inches.

Type in 12.

[Comment on this hint](#)

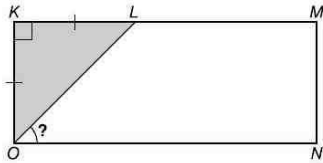
Type your answer below:

Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)



Polygon  $KMNO$  is a rectangle and the lengths of  $\overline{KL}$  and  $\overline{KO}$  are equal. What is the measure of angle  $LON$ ?

[Comment on this question](#)

Request Help

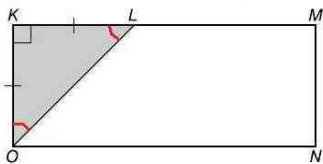
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 90 degrees
- D. 135 degrees

Submit Answer

Let's move on and figure out this problem

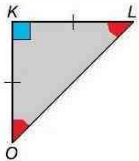
First, let us look at the shaded triangle.



What are the measures of angles  $KOL$  and  $KLO$ ?

[Comment on this question](#)

Triangle  $KLO$  is a right isosceles triangle, which means it has a 90-degree angle and two equal angles.



[Comment on this hint](#)

A property of a triangle is: **The sum of all angles in a triangle must equal 180 degrees.**

[Comment on this hint](#)

This means:

$$90 \text{ degrees} + 2 \text{ red angles} = 180 \text{ degrees}$$

So:

$$\begin{aligned} 2 \text{ red angles} &= 180 - 90 \\ &= 90 \text{ degree} \end{aligned}$$

Since the two red angles are of the same measure (the triangle is an equilateral triangle):

$$\begin{aligned} \text{One red angle} &= 1/2 * 90 \text{ degree} \\ &= ? \end{aligned}$$

[Comment on this hint](#)

The red angles ( $KOL$  and  $KLO$ ) are **45 degrees** each.

Select B.

[Comment on this hint](#)

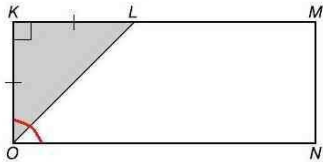
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 60 degrees
- D. 90 degrees

Submit Answer

✔ Correct!

Now, let us look at angle  $KON$ .



What is the measure of angle  $KON$ ?

[Comment on this question](#)

Shape  $KMNO$  is a **rectangle**.

[Comment on this hint](#)

A property of the rectangle is: **All internal angles of a rectangle are 90 degrees.**

So angle  $KON$  is **90 degrees**.

Select D.

[Comment on this hint](#)

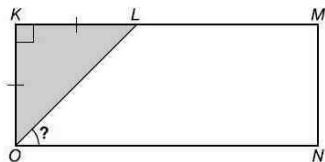
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 60 degrees
- D. 90 degrees

Submit Answer

✔ Correct!

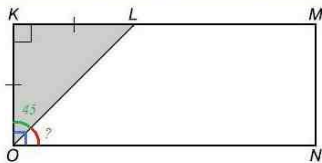
Now that we know the measures of angles  $KOL$  and  $KON$ , we can answer the original problem.



Polygon  $KMNO$  is a rectangle and the lengths of  $\overline{KL}$  and  $\overline{KO}$  are equal. What is the measure of angle  $LON$ ?

[Comment on this question](#)

Remember from the previous problems that angle  $KOL$  is 45 degrees and angle  $KON$  is 90 degrees.



[Comment on this hint](#)

Looking at the diagram:

Angle  $LON$  = Angle  $KON$  - Angle  $KOL$

So substitute in the numbers to find the measure of angle  $LON$ .

[Comment on this hint](#)

$$\begin{aligned}\text{Angle } LON &= 90 \text{ degrees} - 45 \text{ degrees} \\ &= 45 \text{ degrees}\end{aligned}$$

Angle  $LON$  is 45 degrees.

Select B.

[Comment on this hint](#)

Select one:

- A. 30 degrees
- B. 45 degrees
- C. 90 degrees
- D. 135 degrees

Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)

Grade 6, 2002, Q 13a (27255)

Todd is making a poster for art class. He makes his poster on a square with a side that measures 12 inches.



What is the area of Todd's square?

[Comment on this question](#)

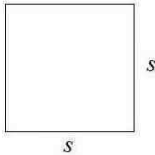
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer this problem, we must first know what the formula for calculating the area of a square is.



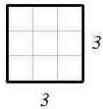
What is the formula for calculating the area of a square?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

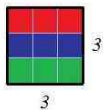
To figure out the formula for the area of a square, let's use an example.



To calculate the area of the square, we can count the number of squares (9 squares).

[Comment on this hint](#)

The process for finding the area of the square can be simplified.



To calculate the area of the square, we need to count 3 squares, 3 times, which is the same as  $3 \times 3$

[Comment on this hint](#)

In general the area of a the square is  $s \cdot s$ .

Select C.  $A = s \cdot s$

[Comment on this hint](#)

Select one:

A.  $A = s + s$

B.  $A = s + s + s + s$

C.  $A = s \cdot s$

D.  $A = s \cdot s \cdot s \cdot s$

Submit Answer

✔ Correct!

Now that we know the formula for calculating the area of a square, let's go back to the original problem.

Todd is making a poster for art class. He makes his poster on a square with a side that measures 12 inches.



What is the area of Todd's square?

[Comment on this question](#)

Remember the area for calculating the area of a square is:  
 $A = s \cdot s$

[Comment on this hint](#)

In this problem,  
 $s = 12$  inches

Substitute this value into the formula to find the area.

[Comment on this hint](#)

$A = 12 \cdot 12$   
 $= 144$  square inches

The area of the square is 144 square inches.

Type in 144.

[Comment on this hint](#)

Type your answer below:

144

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)



Todd and Chi are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Chi wants to make his poster on a rectangle with a width of 8 inches.



What would the length of Chi's rectangle need to be in order for the rectangle to have the same area as Todd's poster?

[Comment on this question](#)

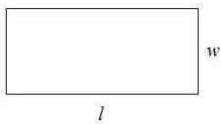
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer this problem, we must first know the formula for calculating the area of a rectangle.



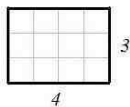
What is the formula for calculating the area of the rectangle?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

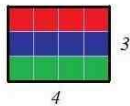
To figure out the formula for the area of a rectangle, let's use an example.



To calculate the area of the rectangle, we can count the number of squares (12 squares).

[Comment on this hint](#)

The process of counting the number of squares can be simplified.



To calculate the area of the rectangle, we need to count 4 squares, 3 times, which is the same as  $4 \times 3$

[Comment on this hint](#)

In general the area of a the rectangle is  $l \times w$ .

Select C.  $A = l \times w$

[Comment on this hint](#)

Select one:

- A.  $A = l + w$
- B.  $A = 2 * (l + w)$
- C.  $A = l * w$
- D.  $A = 2 * (l * w)$

Submit Answer

✔ Correct!

Now that we know the formula for calculating the area of a rectangle, let's look at an example.

If you know the area of a rectangle is 45 square feet and the width of the rectangle is 5 feet. Which operation would you do to find the length?

[Comment on this question](#)

Remember the formula for calculating the area of a rectangle is:  
 $A = l * w$

[Comment on this hint](#)

In this problem, we know:  
 $A = 45$  square feet  
 $l = ?$  feet  
 $w = 5$  feet

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

$A = l * w$   
 $45 = l * 5$   
 $l = ?$

[Comment on this hint](#)

$l = 45 \div 5$

Select D.

*This is the same as:*  
 $l = A \div w$

[Comment on this hint](#)

Select one:

- A.  $45 + 5$
- B.  $45 - 5$
- C.  $45 * 5$
- D.  $45 \div 5$

Submit Answer

✔ Correct!

Now that we have completed an example, let us return to the original problem.

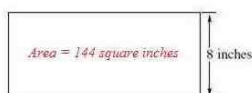
Todd and Chi are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Chi wants to make his poster on a rectangle with a width of 8 inches.



What would the length of Chi's rectangle need to be in order for the rectangle to have the same area as Todd's square?

[Comment on this question](#)

We know the area of the rectangle is 144 square inches.



[Comment on this hint](#)

We also know that the formula for finding the area of a rectangle is:  
 $A = l \cdot w$

[Comment on this hint](#)

In this problem,  
 $A = 144$  square inches  
 $l = 7$  inches  
 $w = 8$  inches

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

Remember from the example before that the formula to find the length is:  
 $l = A \div w$

Substitute the numbers into the formula to find the length.

[Comment on this hint](#)

$$l = 144 \div 8 \\ = 18 \text{ inches}$$

The length of the rectangle is **18** inches.

Type in 18.

[Comment on this hint](#)

Type your answer below:

Submit Answer

✔ Correct!

You are done with this problem!

[Comment on this problem](#)

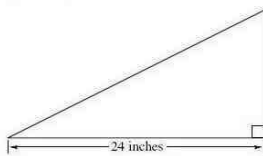
Grade 6, 2002, Q13c (27257)

Assistment

You are previewing content.

Assistment #27257

Todd and Janet are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Janet will use a right triangle with a base of 24 inches.



What would the height of Janet's triangle need to be in order for the triangle to have the same area as Todd's poster?

[Comment on this question](#)

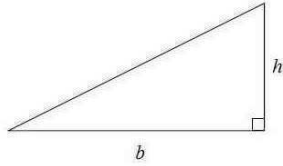
Request Help

Type your answer below:

Submit Answer

Let's move on and figure out this problem

To answer the problem, we must first know the formula for calculating the area of a triangle.



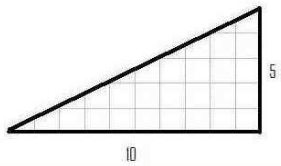
What is the formula for calculating the area of a triangle?

[Comment on this question](#)

Area is defined as the amount of space taken up in a plane by a figure.

[Comment on this hint](#)

Let us look at an example.

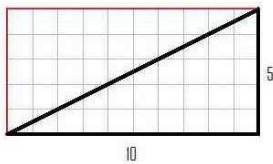


To find the area of the triangle, we can count the number of squares (25 squares).

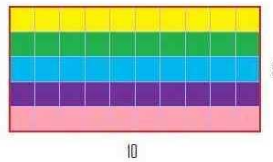
[Comment on this hint](#)

This process can be simplified.

Notice the triangle takes up half of the red rectangle.



As shown below, to calculate the area of the red rectangle, we need to count 10 squares 5 times, which is the same as  $10 * 5$ .



So to calculate the area of a triangle, we need to half the area of a rectangle, which is the same as  $1/2 * 10 * 5$ .

[Comment on this hint](#)

In general, the area of a triangle is  $1/2 * b * h$ .

Select D.  $A = 1/2 * b * h$

[Comment on this hint](#)

Select one:

- A.  $A = b + h$
- B.  $A = 1/2 * (b + h)$
- C.  $A = b * h$
- D.  $A = 1/2 * b * h$

Submit Answer

✔ Correct!

Now that we know the formula for the area of a triangle, let us do an example.

If you know the area of a triangle is 20 square feet and its base is 5 feet. Which operation would you do to find the height?

[Comment on this question](#)

Remember the formula for calculating the area of a triangle is:  
 $A = 1/2 * b * h$

[Comment on this hint](#)

In this problem, we know:  
 $A = 20$  square feet  
 $b = 5$  feet  
 $h = ?$

Substitute the values into the formula to find the height of the triangle.

[Comment on this hint](#)

$A = 1/2 * b * h$   
 $20 = 1/2 * 5 * h$   
 $h = ?$

[Comment on this hint](#)

$20 = 1/2 * 5 * h$   
 $20 * 2 = 5 * h$   
 $20 * 2 = 5 * h$   
 $h = 2 * 20 \div 5$

Select D.

*This is the same as:  $h = 2 * A \div b$*

[Comment on this hint](#)

Select one:

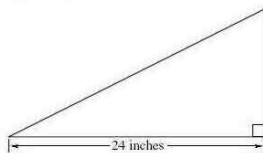
- A.  $2 * (20 + 5)$
- B.  $2 * (20 - 5)$
- C.  $2 * 20 * 5$
- D.  $2 * 20 \div 5$

Submit Answer

✔ Correct!

Now that we have done an example, we can return to the original problem.

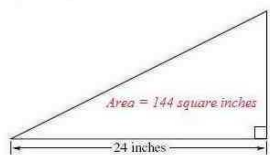
Todd and Janet are making posters for art class. They decide that each poster will have the same area, but different dimensions. Todd makes his poster with an area of 144 square inches. Janet will use a right triangle with a base of 24 inches.



What would the height of Janet's triangle need to be in order for the triangle to have the same area as Todd's poster?

[Comment on this question](#)

We know that the area of the triangle is 144 square inches.



[Comment on this hint](#)

We also know that the formula for calculating the area of a triangle is:  
 $A = 1/2 * b * h$

[Comment on this hint](#)

In this problem, we know:  
 $A = 144$  square inches  
 $b = 24$  inches  
 $h = ?$

Substitute the values into the formula to find the height of the triangle.

[Comment on this hint](#)

Remember from the example that:  
 $h = 2 * A \div b$

Substitute the values into the formula to find the height.

[Comment on this hint](#)

$$h = 2 * 144 \div 24$$
$$= ? \text{ inches}$$

[Comment on this hint](#)

$$h = 2 * 144 \div 24$$
$$= 12 \text{ inches}$$

The height of the triangle is **12** inches.

Type in 12.

[Comment on this hint](#)

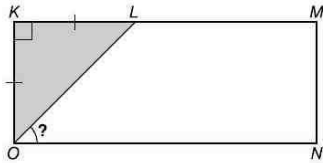
Type your answer below:

Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)



Polygon  $KMNO$  is a rectangle and the lengths of  $\overline{KL}$  and  $\overline{KO}$  are equal. What is the measure of angle  $LON$ ?

[Comment on this question](#)

Request Help

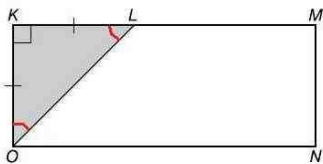
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 90 degrees
- D. 135 degrees

Submit Answer

Let's move on and figure out this problem

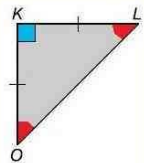
First, let us look at the shaded triangle.



What are the measures of angles  $KOL$  and  $KLO$ ?

[Comment on this question](#)

Triangle  $KLO$  is a right isosceles triangle, which means it has a 90-degree angle and two equal angles.



[Comment on this hint](#)

A property of a triangle is: **The sum of all angles in a triangle must equal 180 degrees.**

[Comment on this hint](#)

This means:

$$90 \text{ degrees} + 2 \text{ red angles} = 180 \text{ degrees}$$

So:

$$\begin{aligned} 2 \text{ red angles} &= 180 - 90 \\ &= 90 \text{ degree} \end{aligned}$$

Since the two red angles are of the same measure (the triangle is an equilateral triangle):

$$\begin{aligned} \text{One red angle} &= 1/2 * 90 \text{ degree} \\ &= ? \end{aligned}$$

[Comment on this hint](#)

The red angles ( $KOL$  and  $KLO$ ) are **45 degrees** each.

Select B.

[Comment on this hint](#)

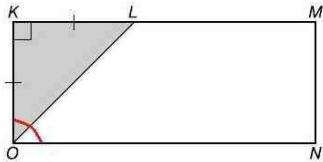
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 60 degrees
- D. 90 degrees

Submit Answer

✔ Correct!

Now, let us look at angle  $KON$ .



What is the measure of angle  $KON$ ?

[Comment on this question](#)

Shape  $KMNO$  is a **rectangle**.

[Comment on this hint](#)

A property of the rectangle is: **All internal angles of a rectangle are 90 degrees.**

So angle  $KON$  is **90 degrees**.

Select D.

[Comment on this hint](#)

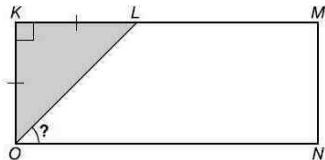
Select one:

- A. 30 degrees
- B. 45 degrees
- C. 60 degrees
- D. 90 degrees

Submit Answer

✔ Correct!

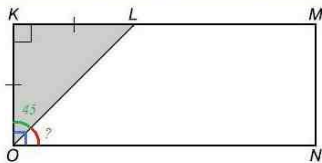
Now that we know the measures of angles  $KOL$  and  $KON$ , we can answer the original problem.



Polygon  $KMNO$  is a rectangle and the lengths of  $\overline{KL}$  and  $\overline{KO}$  are equal. What is the measure of angle  $LON$ ?

[Comment on this question](#)

Remember from the previous problems that angle  $KOL$  is 45 degrees and angle  $KON$  is 90 degrees.



[Comment on this hint](#)

Looking at the diagram:

Angle  $LON$  = Angle  $KON$  - Angle  $KOL$



So substitute in the numbers to find the measure of angle  $LON$ .

[Comment on this hint](#)

$$\begin{aligned}\text{Angle } LON &= 90 \text{ degrees} - 45 \text{ degrees} \\ &= 45 \text{ degrees}\end{aligned}$$

Angle  $LON$  is 45 degrees.

Select B.

[Comment on this hint](#)

Select one:

- A. 30 degrees
- B. 45 degrees
- C. 90 degrees
- D. 135 degrees

Submit Answer

 Correct!

You are done with this problem!

[Comment on this problem](#)

## Appendix B: Curriculum Framework Groups

### GEOMETRY

#### GRADES 5–6 LEARNING STANDARDS

*Students engage in problem solving, communicating, reasoning, connecting, and representing as they:*

- 6.G.1 Identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides, and congruence of sides, e.g., squares, rectangles, rhombuses, parallelograms, trapezoids, and isosceles, equilateral, and right triangles. +
- 6.G.2 Identify three-dimensional shapes (e.g., cubes, prisms, spheres, cones, and pyramids) based on their properties, such as edges and faces. +
- 6.G.3 Identify relationships among points, lines, and planes, e.g., intersecting, parallel, perpendicular. +
- 6.G.4 \*Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants). ●
- 6.G.5 Find the distance between two points on horizontal or vertical number lines. ●
- 6.G.6 Predict, describe, and perform transformations on two-dimensional shapes, e.g., translations, rotations, and reflections. ▲
- 6.G.7 Identify types of symmetry, including line and rotational. ▲
- 6.G.8 Determine if two shapes are congruent by measuring sides or a combination of sides and angles, as necessary; or by motions or series of motions, e.g., translations, rotations, and reflections. ▲
- 6.G.9 Match three-dimensional objects and their two-dimensional representations, e.g., nets, projections, and perspective drawings. ■

# M E A S U R E M E N T

## GRADES 5–6 LEARNING STANDARDS

*Students engage in problem solving, communicating, reasoning, connecting, and representing as they:*

- 6.M.1 Apply the concepts of perimeter and area to the solution of problems. Apply formulas where appropriate. ●
- 6.M.2 Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals. ●
- 6.M.3 Solve problems involving proportional relationships and units of measurement, e.g., same system unit conversions, scale models, maps, and speed. ●
- 6.M.4 Find areas of triangles and parallelograms. Recognize that shapes with the same number of sides but different appearances can have the same area. Develop strategies to find the area of more complex shapes. ●
- 6.M.5 Identify, measure, and describe circles and the relationships of the radius, diameter, circumference, and area (e.g.,  $d = 2r$ ,  $p = C/d$ ), and use the concepts to solve problems. ●
- 6.M.6 Find volumes and surface areas of rectangular prisms. ●
- 6.M.7 Find the sum of the angles in simple polygons (up to eight sides) with and without measuring the angles. ●

**Geometry**

# of Q	Groups	Problem Set	Pre-Test	Post-Test	Scaffold Problems
6	6.G.1	5180	26520	26288	26290 26293 26358 26417
5		5181	26521	26378	26408 26409 26430
3		5182	26522	26289	26321
4	6.G.3	5183	26515	26280	26491 26492
3	6.G.5	5184	26519	26283	24978
6	6.G.7	5185	26516	26286	26274 26271 26488 26489
4	6.G.8	5187	26517	26272	26291 26292
3	6.G.9	5188	26518	26349	26287

**Measurement**

# of Q	Groups	Problem Set	Pre-Test	Post-Test	Scaffold Problems
5	6.M.1	5172	26503	26351	26298 26415 26324
4	6.M.2	5176	26504	26297	26352 26343
4	6.M.3	5177	26510	26412	26323 26411
4	6.M.4	5173	26505	26418	26413 26345
5	6.M.5	5174	26509	26356	26354 26416 26322
4	6.M.6	5178	26525	26315	26344 26316

## Appendix C: Data

### Raw Data

Se qu en ce	Te ac he r	School	U se r ID	N a m e	Stu de nt IRT	Pre-test		Scaffold 1		Scaffold 2		Scaffold 3		Scaffold 4		Post-test		# in Se q.	Co mpl ete ness
						Answer	Cor rec tne ss	Answer	Cor rec tne ss	Answer	Cor rec tne ss	Answer	Cor rec tne ss	Answer	Cor rec tne ss	Answer	Cor rec tne ss		
51 72		Forest Grove Middle School			2.0 436 77	120		B. s*6 1	44 0	No_answer 0	No_data 0	A. 120 0	5	com plet e					
51 72		Forest Grove Middle School			- 0.4 432 5	18		C. s/6 0	54 1	C. 30 0	No_data 0	C. 108 0	5	com plet e					
51 72		Forest Grove Middle School			- 1.3 333 3	108		D. 40 1	54 1	B. s*6 1	No_data 0	D. 20 0	5	com plet e					
51		Forest			0.0	120		B. s*6 1	A. 13 0	44 feet 0	No_data 0	A. 120 0	5	com					

72		Grove Middle School	412														plet e
51		Forest Grove Middle School	1.3 333 29	18		54	1	B. s*6	1	D. 40	1	No_data		B. 18	1	5	com plet e
51		Forest Grove Middle School	2.2 225 84	120		54	1	B. s*6	1	D. 40	1	No_data		No_data		5	inco mpl ete
51		Forest Grove Middle School	2.2 185 53	120		B. s*6	1	D. 40	1	126	0	No_data		A. 120	0	5	com plet e
51		Forest Grove Middle School	0.4 552 62	120		D. 40	1	B. s*6	1	54	1	No_data		A. 120	0	5	com plet e
51		Forest Grove	1.3 333	18		No_data		No_data		No_data		No_data		No_data		5	inco mpl

		Middle School	28														ete
51		Forest Grove Middle School	1.3 330 45	108		B. s*6	1	D. 40	1	54	1	No_data		C. 108	0	5	complete
51		Forest Grove Middle School	0.3 253 14	120		A. s+6	0	D. 40	1	No_answer	0	No_data		C. 108	0	5	complete
51		Forest Grove Middle School	0.9 824 87	108		B. s*6	1	A. 13	0	54	1	No_data		A. 120	0	5	complete
51		Forest Grove Middle School	- 0.4 561 9	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	complete
51		Forest Grove Middle School	3.1 106 78	18		54	1	B. s*6	1	D. 40	1	No_data		B. 18	1	5	complete

	School															
51	Forest Grove Middle School	2.2 196 66	18		54	1	B. s*6	1	D. 40	1	No_data		B. 18	1	5	com plet e
51	Worcester East Middle School	0.1 734 46	18		B. s*6	1	D. 40	1	54	1	No_data		D. 20	0	5	com plet e
51	Forest Grove Middle School	0.4 444 51	18		B. s*6	1	54	1	A. 13	0	No_data		B. 18	1	5	com plet e
51	Forest Grove Middle School	1.6 604 7	120		B. s*6	1	54	1	D. 40	1	No_data		A. 120	0	5	com plet e
51	Forest Grove Middle School	1.3 282 23	120		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com plet e





72	Middle School	17539														plete
51 72	Burncoat Middle School	0.333682	108		B. s*6	1	A. 13	0	54	1	No_data		C. 108	0	5	complete
51 72	Burncoat Middle School	-0.69663	108		A. s+6	0	D. 40	1	54	1	No_data		C. 108	0	5	complete
51 72	Burncoat Middle School	0.696213	20		B. s*6	1	D. 40	1	54	1	No_data		D. 20	0	5	complete
51 72	Burncoat Middle School	-1.11464	120		D. 40	1	5460	0	A. s+6	0	No_data		C. 108	0	5	complete
51 72	Burncoat Middle School	-0.47688	120		A. s+6	0	C. 30	0	No_answer	0	No_data		B. 18	1	5	complete
51	Burncoat	0.4	120		A. s+6	0	D. 40	1	54	1	No_data		A. 120	0	5	com

72		Middle School	42855													plet e	
51 72		Burncoat Middle School	0.519428	120		B. s*6	1	B. 26	0	3,276 feet	0	No_data		B. 18	1	5	com plet e
51 72		Burncoat Middle School	-0.35974	108		B. s*6	1	B. 26	0	54	1	No_data		D. 20	0	5	com plet e
51 72		Burncoat Middle School	-1.41786	No_ans wer		D. 40	1	54	1	A. s+6	0	No_data		A. 120	0	5	com plet e
51 72		Burncoat Middle School	-0.27635	120		D. 40	1	A. s+6	0	252	0	No_data		C. 108	0	5	com plet e
51 72		Burncoat Middle School	-0.57957	120		54	1	B. s*6	1	D. 40	1	No_data		C. 108	0	5	com plet e

51	Forest Grove Middle School	1.333211	108		D. 40	1	54	1	B. s*6	1	No_data		B. 18	1	5	complete
51	Forest Grove Middle School	-0.46274	18		A. s+6	0	D. 40	1	No_answer	0	No_data		B. 18	1	5	complete
51	Burncoat Middle School	-0.60464	108		No_data		No_data		No_data		No_data		No_data		5	incomplete
51	Burncoat Middle School	-1.44169	20		C. 30	0	B. s*6	1	66	0	No_data		C. 108	0	5	complete
51	Forest Grove Middle School	0.077869	18		D. 40	1	54	1	B. s*6	1	No_data		C. 108	0	5	complete
51	Burncoat	-	120		No_answer	0	A. s+6	0	No_answer	0	No_data		C. 108	0	5	com

72		Middle School	1.3 964 3														plet e
51 72		Forest Grove Middle School	1.5 319 98	20		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com plet e
51 72		Forest Grove Middle School	2.2 223 58	108		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com plet e
51 72		Burncoat Middle School	0.3 834 26	120		No_answer	0	No_answer	0	No_answer	0	No_data		No_ans wer	0	5	com plet e
51 72		Burncoat Middle School	1.2 827 41	20		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com plet e
51 72		Burncoat Middle School	0.0 526 32	No_ans wer		No_answer	0	B. s*6	1	B. 26	0	No_data		C. 108	0	5	com plet e
51		Forest	1.3	108		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com

72		Grove Middle School	45298														plete
51 72		Forest Grove Middle School	1.368483	20	B. s*6	1	D. 40	1	54	1	No_data	B. 18	1	5			complete
51 72		Forest Grove Middle School	0.423435	120	A. s+6	0	D. 40	1	No_answer	0	No_data	C. 108	0	5			complete
51 72		Forest Grove Middle School	1.33332	20	B. s*6	1	B. 26	0	54	1	No_data	C. 108	0	5			complete
51 72		Forest Grove Middle School	1.33333	18	D. 40	1	54	1	B. s*6	1	No_data	B. 18	1	5			complete
51 72		Forest Grove	-0.4	108	A. s+6	0	B. 26	0	No_answer	0	No_data	A. 120	0	5			complete

		Middle School	525 1														e
51 72		Forest Grove Middle School	1.8 166 18	18	B. s*6	1	D. 40	1	54	1	No_data	B. 18	1	5			complete
51 72		Forest Grove Middle School	1.2 238 09	120	B. s*6	1	D. 40	1	54	1	No_data	A. 120	0	5			complete
51 72		Forest Grove Middle School	- 0.4 563 3	18	D. 40	1	54	1	B. s*6	1	No_data	B. 18	1	5			complete
51 72		Burncoat Middle School	0.0 849 43	120	B. s*6	1	D. 40	1	54	1	No_data	A. 120	0	5			complete
51 72		Burncoat Middle School	0.2 078 89	108	B. s*6	1	B. 26	0	54	1	No_data	A. 120	0	5			complete
51		Forest	0.4	120	B. s*6	1	D. 40	1	126	0	No_data	D. 20	0	5			com

72		Grove Middle School	444 47														plet e
51 72		Forest Grove Middle School	2.2 259 25	18		B. s*6	1	A. 13	0	54	1	No_data		A. 120	0	5	com plet e
51 72		Forest Grove Middle School	2.2 222 27	18		B. s*6	1	D. 40	1	44	0	No_data		B. 18	1	5	com plet e
51 72		Forest Grove Middle School	0.4 545 53	120		54	1	B. s*6	1	D. 40	1	No_data		A. 120	0	5	com plet e
51 72		Forest Grove Middle School	0.4 545 53	120		54	1	B. s*6	1	A. 13	0	No_data		C. 108	0	5	com plet e
51 72		Worcester East	- 1.2	108		B. s*6	1	C. 30	0	54	1	No_data		B. 18	1	5	com plet



		Middle School	2454													e
51 72		Worcester East Middle School	-0.94083	120	B. 26	0	B. s*6	1	54	1	No_data	A. 120	0	5	complete	
51 72		Worcester East Middle School	-1.04299	18	No_answer	0	No_data		No_data		No_data	No_data		5	incomplete	
51 72		Forest Grove Middle School	0.956559	120	B. s*6	1	54	1	D. 40	1	No_data	C. 108	0	5	complete	
51 72		Forest Grove Middle School	1.694482	18	D. 40	1	B. s*6	1	74	0	No_data	B. 18	1	5	complete	
51 72		Worcester East Middle School	-1.7520	18	A. s+6	0	B. 26	0	No_answer	0	No_data	A. 120	0	5	complete	

		School	4													
51		Burncoat	-													
72		Middle School	1.94732	No_answer	No_answer	0	No_answer	0	No_answer	0	No_data	No_answer	0	5	complete	
51		Forest Grove	0.806047	20	B. s*6	1	D. 40	1	54	1	No_data	C. 108	0	5	complete	
72		Middle School														
51		Worcester East	-													
72		Middle School	0.37095	No_answer	B. s*6	1	C. 30	0	66	0	No_data	A. 120	0	5	complete	
51		Worcester East	N\A	18	A. s+6	0	No_answer	0	No_answer	0	No_data	A. 120	0	5	complete	
72		Middle School														
51		Worcester East	N\A	120	No_data		No_data		No_data		No_data	No_data		5	incomplete	
72		Middle School														

51 72	Worcester East Middle School	N\ A	20	A. s+6	0	B. 26	0	66	0	No_data	B. 18	1	5	complete
51 72	Burncoat Middle School	N\ A	No_answer	No_answer	0	No_data		No_data		No_data	No_data		5	incomplete
51 72	Oak Middle School	N\ A	18	A. s+6	0	A. 13	0	No_answer	0	No_data	D. 20	0	5	complete
51 72	Oak Middle School	N\ A	108	B. s*6	1	D. 40	1	54	1	No_data	C. 108	0	5	complete
51 72	Oak Middle School	N\ A	18	D. 40	1	B. s*6	1	156	0	No_data	A. 120	0	5	complete
51 72	Oak Middle School	N\ A	108	No_data		No_data		No_data		No_data	No_data		5	incomplete
51 72	Worcester East	N\ A	120	C. s/6	0	B. 26	0	54	1	No_data	No_data		5	incomplete

	Middle School																	ete
51 72	Worcester Arts Magnet	N\ A	120		D. 40	1	B. s*6	1	54	1	No_data		A. 120	0	5			complete
51 72	Worcester Arts Magnet	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5			complete
51 72	Worcester Arts Magnet	N\ A	20		No_answer	0	B. s*6	1	D. 40	1	No_data		No_data			5		incomplete
51 72	Worcester Arts Magnet	N\ A	18		54	1	B. s*6	1	D. 40	1	No_data		B. 18	1	5			complete
51 72	Worcester Arts Magnet	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5			complete
51 72	Worcester Arts Magnet	N\ A	No_answer		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5			complete
51	Worcester	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5			com

72		er Arts Magnet	A															plet e
51 72		Worcest er Arts Magnet	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5		com plet e
51 72		Worcest er Arts Magnet	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5		com plet e
51 72		Worcest er Arts Magnet	N\ A	120		No_answer	0	B. s*6	1	54	1	No_data		D. 20	0	5		com plet e
51 72		Worcest er Arts Magnet	N\ A	108		B. s*6	1	A. 13	0	54	1	No_data		B. 18	1	5		com plet e
51 72		Worcest er Arts Magnet	N\ A	20		B. s*6	1	54	1	A. 13	0	No_data		C. 108	0	5		com plet e
51 72		Worcest er Arts Magnet	N\ A	18		B. s*6	1	No_answer	0	54	1	No_data		C. 108	0	5		com plet e
51		Worcest	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5		com

72		er Arts Magnet	A														plet e
51 72		Worcester Arts Magnet	N\ A	120		B. s*6	1	D. 40	1	54	1	No_data		A. 120	0	5	com plet e
51 72		Worcester Arts Magnet	N\ A	108		B. s*6	1	D. 40	1	54	1	No_data		C. 108	0	5	com plet e
51 72		Worcester Arts Magnet	N\ A	18		B. s*6	1	B. 26	0	54	1	No_data		B. 18	1	5	com plet e
51 72		Worcester Arts Magnet	N\ A	120		B. s*6	1	D. 40	1	54	1	No_data		A. 120	0	5	com plet e
51 72		Oak Middle School	N\ A	18		B. s*6	1	D. 40	1	54	1	No_data		B. 18	1	5	com plet e
51 72		Burncoat Middle School	N\ A	No_ans wer		No_answer	0	C. s/6	0	B. 26	0	No_data		C. 108	0	5	com plet e
51		Oak	N\ A	120		No_answer	0	1	0	B. s*6	1	No_data		C. 108	0	5	com

72		Middle School		A														plet e
51		Forest Grove Middle School	2.0 436 77	Figures 1 and 4	40	1	D. 5 square inches	0	No_data		No_data		A. Figures 1 and 4	1	4			com plet e
51		Forest Grove Middle School	1.3 329 37	Figures 1 and 4	40	1	C. 4 square inches	0	No_data		No_data		A. Figures 1 and 4	1	4			com plet e
51		Forest Grove Middle School	1.3 632 32	Figures 1 and 4	B. 3 square inches	1	40	1	No_data		No_data		A. Figures 1 and 4	1	4			com plet e
51		Forest Grove Middle School	- 0.4 433 6	Figures 1 and 4	B. 3 square inches	1	40	1	No_data		No_data		A. Figures 1 and 4	1	4			com plet e
51		Forest Grove Middle School	1.3 333 35	Figures 1 and 4	B. 3 square inches	1	40	1	No_data		No_data		A. Figures 1 and 4	1	4			com plet e

		School															
51 73		Forest Grove Middle School	1.3 052 48	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73		Forest Grove Middle School	1.3 333 33	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73		Forest Grove Middle School	2.2 185 53	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73		Forest Grove Middle School	2.2 224 44	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73		Forest Grove Middle School	0.3 253 14	Figures 1 and 2		40	1	D. 5 square inches	0	No_data		No_data		D. Figures 2 and 4	0	4	com plet e



51 73	Forest Grove Middle School	3.1 106 78	Figures 1 and 4	A. 2 square inches	0	40	1	No_data	No_data	A. Figures 1 and 4	1	4	com plet e
51 73	Forest Grove Middle School	2.2 196 66	Figures 1 and 4	B. 3 square inches	1	40	1	No_data	No_data	A. Figures 1 and 4	1	4	com plet e
51 73	Forest Grove Middle School	0.4 444 51	Figures 1 and 4	40	1	B. 3 square inches	1	No_data	No_data	A. Figures 1 and 4	1	4	com plet e
51 73	Forest Grove Middle School	1.6 604 7	Figures 1 and 4	40	1	B. 3 square inches	1	No_data	No_data	A. Figures 1 and 4	1	4	com plet e
51 73	Forest Grove Middle School	1.3 282 23	Figures 1 and 4	C. 4 square inches	0	40	1	No_data	No_data	A. Figures 1 and 4	1	4	com plet e
51	Forest	1.3	Figures	200	0	B. 3 square	1	No_data	No_data	A.	1	4	com

73		Grove Middle School	33211	1 and 4				inches					Figures 1 and 4			plet e
5173		Forest Grove Middle School	1.531998	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
5173		Forest Grove Middle School	2.222358	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
5173		Forest Grove Middle School	1.345298	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
5173		Forest Grove Middle School	1.368483	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
5173		Forest Grove	1.3333	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures	1	4	com plet

		Middle School	3										1 and 4			e
51 73		Forest Grove Middle School	1.8 166 18	Figures 1 and 4		B. 3 square inches	1	40	1	No_data		No_data	A. Figures 1 and 4	1	4	complete
51 73		Forest Grove Middle School	0.2 424 38	Figures 1 and 2		B. 3 square inches	1	No_answer	0	No_data		No_data	C. Figures 2 and 3	0	4	complete
51 73		Forest Grove Middle School	- 0.4 563 3	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data	A. Figures 1 and 4	1	4	complete
51 73		Forest Grove Middle School	2.2 259 25	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data	A. Figures 1 and 4	1	4	complete
51 73		Forest Grove Middle School	2.2 222 27	Figures 1 and 4		C. 4 square inches	0	40	1	No_data		No_data	A. Figures 1 and 4	1	4	complete

		School															
51		Worcester East Middle School	- 0.8 676 5	Figures 1 and 2	10 cm	0	A. 2 square inches	0	No_data		No_data		C. Figures 2 and 3	0	4		complete
51		Worcester East Middle School	- 1.2 245 4	Figures 1 and 4	A. 2 square inches	0	No_data		No_data		No_data		No_data		4		incomplete
51		Worcester East Middle School	- 0.9 408 3	Figures 1 and 2	19	0	A. 2 square inches	0	No_data		No_data		No_data		4		incomplete
51		Forest Grove Middle School	0.9 565 59	Figures 1 and 4	B. 3 square inches	1	No_data		No_data		No_data		No_data		4		incomplete
51		Forest Grove Middle School	1.6 944 82	Figures 1 and 4	40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4		complete

51 73	Worcester East Middle School	- 1.7 520 4	Figures 2 and 3		C. 4 square inches	0	No_answer	0	No_data		No_data		C. Figures 2 and 3	0	4	complete
51 73	Forest Grove Middle School	- 0.0 543	Figures 1 and 4		No_answer	0	B. 3 square inches	1	No_data		No_data		No_data		4	incomplete
51 73	Forest Grove Middle School	0.3 684 66	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	complete
51 73	Worcester East Middle School	N\ A	Figures 1 and 4		40	1	A. 2 square inches	0	No_data		No_data		B. Figures 1 and 2	0	4	complete
51 73	Worcester East Middle School	N\ A	Figures 1 and 2		14	0	D. 5 square inches	0	No_data		No_data		No_data		4	incomplete
51	Worcester	N\ A	Figures		B. 3 square	1	No_data		No_data		No_data		No_data		4	inco

73		er East Middle School	A	2 and 3		inches												mpl ete
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data	A. Figures 1 and 4	1	4			com plet e
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 4		B. 3 square inches	1	40	1	No_data		No_data	A. Figures 1 and 4	1	4			com plet e
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 2		200	0	B. 3 square inches	1	No_data		No_data	No_data		4			inco mpl ete
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 2		B. 3 square inches	1	200	0	No_data		No_data	No_data		4			inco mpl ete
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data	A. Figures 1 and 4	1	4			com plet e
51 73		Worcest er Arts Magnet	N\ A	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data	A. Figures 1 and 4	1	4			com plet e

51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data		B. Figures 1 and 2	0	4	com plet e
51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		200	0	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		40	1	D. 5 square inches	0	No_data		No_data		No_data		4	inco mpl ete
51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		D. 5 square inches	0	No_data		No_data		No_data		No_data		4	inco mpl ete
51 73	Worcester Arts Magnet	N\ A	Figures 2 and 3		200	0	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	com plet e
51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		D. 5 square inches	0	No_data		No_data		No_data		No_data		4	inco mpl ete

51 73	Worcester Arts Magnet	N\ A	Figures 1 and 4		No_data		No_data		No_data		No_data		No_data		4	incomplete
51 73	Oak Middle School	N\ A	Figures 1 and 4		40	1	B. 3 square inches	1	No_data		No_data		A. Figures 1 and 4	1	4	complete
51 73	Oak Middle School	N\ A	Figures 1 and 4		200	0	C. 4 square inches	0	No_data		No_data		B. Figures 1 and 2	0	4	complete
51 74	Forest Grove Middle School		3.1 106 78	314	No_data		No_data		No_data		No_data		No_data		5	incomplete
51 74	Forest Grove Middle School		2.2 196 66	314	B. 30 inches	1	B. The diameter should be twice the radius.	1	314	0	No_data		314	1	5	complete
51 74	Forest Grove Middle School		0.4 444 51	314	A. 15 inches	0	B. The diameter should be	1	314	0	No_data		314	1	5	complete



	School							twice the radius.								
51 74	Forest Grove Middle School	1.6 604 7	314		A. The radius should be twice the diameter.	0	20	1	B. 30 inches	1	No_data	314	1	5	com plet e	
51 74	Forest Grove Middle School	1.3 282 23	78.5		B. 30 inches	1	B. The diameter should be twice the radius.	1	20	1	No_data	314	1	5	com plet e	
51 74	Forest Grove Middle School	1.3 332 11	6		B. 30 inches	1	B. The diameter should be twice the radius.	1	20	1	No_data	314	1	5	com plet e	
51 74	Forest Grove Middle School	1.5 319 98	314		B. 30 inches	1	A. The radius should be twice the diameter.	1	20	0	No_data	314	1	5	com plet e	
51	Forest	2.2	314		D. 75 inches	0	B. The	1	20	1	No_data	314	1	5	com	

74		Grove Middle School	22358					diameter should be twice the radius.									plet e
5174		Forest Grove Middle School	1.345298	62.8	A. 15 inches	0	B. The diameter should be twice the radius.	1	20	1	No_data	62.8	0	5			complet e
5174		Forest Grove Middle School	1.368483	314	B. 30 inches	1	B. The diameter should be twice the radius.	1	20	1	No_data	314	1	5			complet e
5174		Forest Grove Middle School	1.3333	3143	D. 75 inches	0	B. The diameter should be twice the radius.	1	314	0	No_data	20	0	5			complet e
5174		Forest Grove	1.8166	314	B. The diameter	1	20	1	B. 30 inches	1	No_data	314	1	5			complet

		Middle School	18			should be twice the radius.										e
51 74		Forest Grove Middle School	- 0.4 563 3	314		B. 30 inches	1	20	1	B. The diameter should be twice the radius.	1	No_data	314	1	5	complete
51 74		Forest Grove Middle School	0.3 674 85	31.4		5 feet	0	No_data		No_data	No_data	No_data	No_data		5	incomplete
51 74		Forest Grove Middle School	2.2 259 25	314		B. 30 inches	1	B. The diameter should be twice the radius.	1	314	0	No_data	314	1	5	complete
51 74		Forest Grove Middle School	2.2 222 27	314		B. 30 inches	1	B. The diameter should be twice the	1	20	1	No_data	314	1	5	complete

							radius.									
51 74	Worcest er East Middle School	- 0.8 676 5	30.14		A. 15 inches	0	D. The diameter should be 50	0	10	0	No_data	314	1	5	com plet e	
51 74	Forest Grove Middle School	1.6 944 82	62.8		A. 15 inches	0	B. The diameter should be twice the radius.	1	20	1	No_data	62.8	0	5	com plet e	
51 74	Worcest er East Middle School	N\ A	No_ans wer		No_answer	0	No_data		No_data		No_data	No_data		5	inco mpl ete	
51 74	Worcest er East Middle School	N\ A	No_ans wer		C. 7 1/2 inches	0	C. The radius should be 30	0	No_answer	0	No_data	No_ans wer	0	5	com plet e	
51 74	Oak Middle School	N\ A	62.8		D. 75 inches	0	B. The diameter should be	1	20	1	No_data	314	1	5	com plet e	

							twice the radius.									
51 74	Worcester Arts Magnet	N\ A	31.4		20	1	No_data		No_data		No_data		No_data		5	incomplete
51 74	Worcester Arts Magnet	N\ A	31.4		No_data		No_data		No_data		No_data		No_data		5	incomplete
51 74	Worcester Arts Magnet	N\ A	No_answer		B. The diameter should be twice the radius.	1	B. 30 inches	1	No_answer	0	No_data		20	0	5	complete
51 74	Worcester Arts Magnet	N\ A	31.4		20	1	No_data		No_data		No_data		No_data		5	incomplete
51 74	Worcester Arts Magnet	N\ A	314		B. 30 inches	1	B. The diameter should be twice the radius.	1	314	0	No_data		No_data		5	incomplete

51 74	Worcester Arts Magnet	N\ A	31.4		20	1	A. 15 inches	0	B. The diameter should be twice the radius.	1	No_data	31.4	0	5	complete
51 74	Oak Middle School	N\ A	314		314	0	D. 75 inches	0	A. The radius should be twice the diameter.	0	No_data	314	1	5	complete
51 76	Forest Grove Middle School	1.3 329 37	Obtuse		180	1	B	1	No_data		No_data	C. Obtuse	1	4	complete
51 76	Forest Grove Middle School	0.4 464 82	Obtuse		B	1	180	1	No_data		No_data	C. Obtuse	1	4	complete
51 76	Forest Grove Middle School	2.2 273 33	Obtuse		180	1	B	1	No_data		No_data	C. Obtuse	1	4	complete

51 76	Forest Grove Middle School	1.3 094 66	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	com plet e
51 76	Forest Grove Middle School	3.1 106 78	Obtuse	180	0	B	1	No_data	No_data	C. Obtuse	1	4	com plet e
51 76	Forest Grove Middle School	2.2 196 66	Obtuse	180	0	B	1	No_data	No_data	C. Obtuse	1	4	com plet e
51 76	Forest Grove Middle School	0.4 444 51	Obtuse	180	0	B	1	No_data	No_data	C. Obtuse	1	4	com plet e
51 76	Forest Grove Middle School	1.6 604 7	Obtuse	180	0	B	1	No_data	No_data	D. Straight	0	4	com plet e
51	Forest	1.3	Obtuse	180	0	B	1	No_data	No_data	C.	1	4	com

76		Grove Middle School	282 23										Obtuse			plet e
51 76		Forest Grove Middle School	1.3 332 11	Obtuse	180	0	B	1	No_data		No_data		C. Obtuse	1	4	com plet e
51 76		Forest Grove Middle School	1.5 319 98	Acute	180	0	B	1	No_data		No_data		C. Obtuse	1	4	com plet e
51 76		Forest Grove Middle School	2.2 223 58	Obtuse	180	0	B	1	No_data		No_data		C. Obtuse	1	4	com plet e
51 76		Forest Grove Middle School	1.3 452 98	Obtuse	B	1	180	0	No_data		No_data		C. Obtuse	1	4	com plet e
51 76		Forest Grove	1.3 684	Obtuse	180	0	B	1	No_data		No_data		C. Obtuse	1	4	com plet



		Middle School	83														e
51 76		Forest Grove Middle School	1.3 333 32	Obtuse	B	1	240	0	No_data	No_data		C. Obtuse	1	4			complete
51 76		Forest Grove Middle School	1.3 333 3	Obtuse	180	0	B	1	No_data	No_data		C. Obtuse	1	4			complete
51 76		Forest Grove Middle School	1.8 166 18	Obtuse	180	0	B	1	No_data	No_data		C. Obtuse	1	4			complete
51 76		Forest Grove Middle School	- 0.4 563 3	Obtuse	180	0	B	1	No_data	No_data		C. Obtuse	1	4			complete
51 76		Forest Grove Middle School	2.2 259 25	Obtuse	180	0	B	1	No_data	No_data		C. Obtuse	1	4			complete

		School															
51		Forest Grove Middle School	2.2 222 27	Obtuse	180	0	B	1	No_data	No_data		C. Obtuse	1	4	com plet e		
51		Forest Grove Middle School	0.4 545 53	Obtuse	No_answer	0	B	1	No_data	No_data		D. Straight	0	4	com plet e		
51		Worcester East Middle School	- 1.2 245 4	Obtuse	90	0	B	1	No_data	No_data		B. Acute	0	4	com plet e		
51		Worcester East Middle School	- 0.9 408 3	Obtuse	B	1	180	1	No_data	No_data		A. Right	0	4	com plet e		
51		Forest Grove Middle School	1.6 944 82	Obtuse	B	1	180	0	No_data	No_data		C. Obtuse	1	4	com plet e		

51 76	Worcester East Middle School	- 1.7 520 4	Acute	No_answer	0	C	0	No_data	No_data	A. Right	0	4	complete
51 76	Worcester East Middle School	N\ A	No_answer	A	0	No_answer	0	No_data	No_data	B. Acute	0	4	complete
51 76	Worcester East Middle School	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	No_answer	0	B	1	No_data	No_data	C. Obtuse	1	4	complete

51 76	Worcester Arts Magnet	N\ A	Obtuse	No_answer	0	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Straight	80	0	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Straight	C	0	No_data	No_data	No_data	No_data	No_data		4	incomplete

51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	No_answer	0	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete
51 76	Worcester Arts Magnet	N\ A	Obtuse	180	1	B	1	No_data	No_data	C. Obtuse	1	4	complete

51 76	Oak Middle School	N\ A	Obtuse		180	1	B	1	No_data		No_data		C. Obtuse	1	4	com plet e
51 77	Forest Grove Middle School	1.3 329 37	25		B. 1/3 of 800	1	150	1	No_data		No_data		No_data		4	inco mpl ete
51 77	Forest Grove Middle School	1.3 632 32	25		B. 1/3 of 800	1	150	1	No_data		No_data		No_data		4	inco mpl ete
51 77	Forest Grove Middle School	1.3 333 29	25		125	0	B. 1/3 of 800	1	No_data		No_data		No_data		4	inco mpl ete
51 77	Forest Grove Middle School	1.3 333 33	25		D. 1/3 of 900	0	150	1	No_data		No_data		No_data		4	inco mpl ete
51 77	Forest Grove	1.3 094	25		150	1	B. 1/3 of 800	1	No_data		No_data		No_data		4	inco mpl



	School															
51 77	Forest Grove Middle School	1.5 319 98	25		D. 1/3 of 900	0	150	1	No_data	No_data	No_data			4	inco mpl ete	
51 77	Forest Grove Middle School	2.2 223 58	25		B. 1/3 of 800	1	150	1	No_data	No_data	No_data			4	inco mpl ete	
51 77	Forest Grove Middle School	1.3 452 98	20		B. 1/3 of 800	1	150	1	No_data	No_data	No_data			4	inco mpl ete	
51 77	Forest Grove Middle School	1.3 684 83	25		B. 1/3 of 800	1	25	0	No_data	No_data	No_data			4	inco mpl ete	
51 77	Forest Grove Middle School	1.3 333 3	25		150	1	C. 1/4 of 900	0	No_data	No_data	No_data			4	inco mpl ete	





77		Grove Middle School	545 53													complete
51 78		Forest Grove Middle School	3.1 106 78	40	No_data	No_data	No_data	No_data	No_data	No_data	No_data	4				incomplete
51 78		Forest Grove Middle School	2.2 196 66	16900	No_data	No_data	No_data	No_data	No_data	No_data	No_data	4				incomplete
51 78		Forest Grove Middle School	0.4 444 51	110	No_data	No_data	No_data	No_data	No_data	No_data	No_data	4				incomplete
51 78		Forest Grove Middle School	1.6 604 7	220	200	1	72	1	No_data	No_data	220	1	4			complete
51 78		Forest Grove	1.3 282	1200	72	1	200	1	No_data	No_data	1200	0	4			complete

		Middle School	23														e
51 78		Forest Grove Middle School	1.3 332 11	180		200	1	72	1	No_data	No_data	220	1	4			complete
51 78		Forest Grove Middle School	1.3 452 98	220		72	1	200	1	No_data	No_data	No_data		4			incomplete
51 78		Forest Grove Middle School	- 0.4 563 3	40		200	1	72	1	No_data	No_data	40	0	4			complete
51 78		Forest Grove Middle School	2.2 259 25	220		No_data		No_data		No_data	No_data	No_data		4			incomplete
51 78		Worcester East Middle	0.9 033 7	19		26	0	200	1	No_data	No_data	220	1	4			complete

	School															
51 78	Forest Grove Middle School	2.2 222 27	40		No_data		No_data		No_data		No_data		No_data		4	inco mpl ete
51 78	Oak Middle School	N\ A	220		200	1	108	0	No_data		No_data		220	1	4	com plet e
51 80	Forest Grove Middle School	2.0 436 77	B. Scalene		B. They are both isosceles triangles.	1	D. They are both scalene triangles.	1	B. They are both obtuse triangles.	1	B. Acute and scalene triangle	0	B. Scalene	0	6	com plet e
51 80	Forest Grove Middle School	- 0.5 418 9	C. Right		B. Acute and scalene triangle	0	No_data		No_data		No_data		No_data		6	inco mpl ete
51 80	Forest Grove Middle School	- 1.3 271 7	A. Equilate ral		C. They are both right triangles.	0	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	B. Acute and scalene triangle	0	A. Equilate ral	1	6	com plet e
51	Forest	-	B.		C. They are	0	B. They are	1	A. They are	0	No_answer	0	D.	0	6	com

80		Grove Middle School	0.75581	Scalene		both right triangles.		both isosceles triangles.		both acute triangles.			Obtuse			complete	
5180		Forest Grove Middle School	0.041252	A. Equilateral		B. They are both isosceles triangles.	1	D. They are both scalene triangles.	1	B. They are both obtuse triangles.	1	C. Obtuse and equilateral triangle	0	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	0.446482	A. Equilateral		D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	0	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.33329	A. Equilateral		B. They are both obtuse triangles.	1	B. They are both isosceles triangles.	0	B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.33333	C. Right		B. They are both isosceles triangles.	0	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	B. They are both isosceles triangles.	1	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.3330	A. Equilateral		D. They are both scalene triangles.	1	D. They are both scalene triangles.	0	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	B. Scalene	0	6	complete

		Middle School	45	ral		triangles.		triangles.		triangles.		triangle				e	
51 80		Forest Grove Middle School	2.2 196 66	A. Equilate ral		B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	1	B. They are both obtuse triangles.	1	A. Equilate ral	1	6	com plet e
51 80		Worcester East Middle School	2.3 200 99	A. Equilate ral		D. Obtuse and scalene triangle	1	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	No_data		No_data		6	inco mpl ete
51 80		Worcester East Middle School	- 0.3 556 4	A. Equilate ral		B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	D. They are both scalene triangles.	1	A. Equilate ral	1	6	com plet e
51 80		Worcester East Middle School	1.3 218 64	B. Scalene		B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	A. Equilate ral	1	6	com plet e
51 80		Worcester East Middle School	- 0.5 925	A. Equilate ral		D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	0	No_data		No_data		No_data		6	inco mpl ete

	School	5															
51 80	Worcester East Middle School	- 0.1 841 1	A. Equilateral		C. They are both right triangles.	0	A. They are both equilateral triangles.	0	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	A. Equilateral	1	6	complete	
51 80	Worcester East Middle School	0.3 088 05	A. Equilateral		D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	1	B. They are both obtuse triangles.	1	A. Equilateral	1	6	complete	
51 80	Forest Grove Middle School	0.4 444 51	A. Equilateral		B. Acute and scalene triangle	0	No_data		No_data		No_data		No_data		6	incomplete	
51 80	Forest Grove Middle School	1.6 604 7	A. Equilateral		D. They are both scalene triangles.	1	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilateral	1	6	complete	
51 80	Forest Grove Middle School	1.3 282 23	A. Equilateral		D. They are both scalene triangles.	1	D. They are both scalene triangles.	0	D. They are both scalene triangles.	0	C. Obtuse and equilateral triangle	0	A. Equilateral	1	6	complete	

51 80	Forest Grove Middle School	- 0.3 27	A. Equilate ral		B. They are both isosceles triangles.	0	D. They are both scalene triangles.	0	B. They are both obtuse triangles.	1	A. Acute and equilateral triangle	0	A. Equilate ral	1	6	com plet e
51 80	Forest Grove Middle School	0.9 061 81	A. Equilate ral		D. They are both scalene triangles.	1	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e
51 80	Forest Grove Middle School	1.3 332 11	A. Equilate ral		D. They are both scalene triangles.	1	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. They are both equilateral triangles.	0	A. Equilate ral	1	6	com plet e
51 80	Forest Grove Middle School	1.5 319 98	A. Equilate ral		D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	A. Equilate ral	1	6	com plet e
51 80	Forest Grove Middle School	1.5 319 98	A. Equilate ral		D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e
51	Forest	2.2	A.		D. They are	1	D. They are	0	B. They are	1	D. Obtuse	1	A.	1	6	com



80		Grove Middle School	22358	Equilateral		both scalene triangles.		both scalene triangles.		both obtuse triangles.		and scalene triangle		Equilateral			complete
5180		Forest Grove Middle School	1.345298	A. Equilateral		B. They are both obtuse triangles.	1	B. They are both isosceles triangles.	1	B. They are both isosceles triangles.	0	D. Obtuse and scalene triangle	1	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.345298	A. Equilateral		No_answer	0	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.368483	A. Equilateral		B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	B. They are both obtuse triangles.	1	D. They are both scalene triangles.	1	A. Equilateral	1	6	complete
5180		Forest Grove Middle School	1.368483	A. Equilateral		B. They are both obtuse triangles.	1	C. They are both right triangles.	0	A. They are both equilateral triangles.	0	B. Acute and scalene triangle	0	A. Equilateral	1	6	complete
5180		Forest Grove	1.3333	A. Equilateral		D. They are both scalene	1	D. They are both scalene	0	B. They are both obtuse	1	D. Obtuse and scalene	1	A. Equilateral	1	6	complete

		Middle School	3	ral		triangles.		triangles.		triangles.		triangle		ral			e
51 80		Forest Grove Middle School	1.8 166 18	A. Equilate ral		D. They are both scalene triangles.	1	D. Obtuse and scalene triangle	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	A. Equilate ral	1	6	com plet e
51 80		Forest Grove Middle School	- 0.4 563 3	A. Equilate ral		D. They are both scalene triangles.	1	C. They are both isosceles triangles.	0	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	0	A. Equilate ral	1	6	com plet e
51 80		Forest Grove Middle School	0.4 444 47	A. Equilate ral		B. They are both isosceles triangles.	0	B. They are both obtuse triangles.	1	B. Acute and scalene triangle	0	D. They are both scalene triangles.	0	B. Scalene	0	6	com plet e
51 80		Forest Grove Middle School	2.2 259 25	A. Equilate ral		D. They are both scalene triangles.	0	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e
51 80		Forest Grove Middle School	2.2 259 25	A. Equilate ral		D. They are both scalene triangles.	1	B. They are both isosceles	1	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e

		School					triangles.										
51 80		Worcester East Middle School	0.9 033 7	C. Right		B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	C. They are both right triangles.	0	C. They are both isosceles triangles.	0	B. Scalene	0	6	complete
51 80		Worcester East Middle School	2.4 658 06	No_answer		No_answer	0	D. They are both scalene triangles.	0	A. They are both acute triangles.	0	No_answer	0	B. Scalene	0	6	complete
51 80		Forest Grove Middle School	2.2 222 27	A. Equilateral		D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	No_data		No_data		No_data		6	incomplete
51 80		Forest Grove Middle School	2.2 222 27	A. Equilateral		B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	1	A. Equilateral	1	6	complete
51 80		Worcester East Middle School	- 1.8 332 4	D. Obtuse		B. They are both isosceles triangles.	0	A. Acute and equilateral triangle	0	D. They are both scalene triangles.	0	A. They are both acute triangles.	0	B. Scalene	0	6	complete

51 80	Worcester East Middle School	- 1.4 226 5	D. Obtuse		D. They are both scalene triangles.	0	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	C. Obtuse and equilateral triangle	0	A. Equilateral	1	6	complete
51 80	Worcester East Middle School	- 0.9 716 4	B. Scalene		A. They are both equilateral triangles.	0	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	A. Acute and equilateral triangle	0	A. Equilateral	1	6	complete
51 80	Worcester East Middle School	- 1.1 276 4	A. Equilateral		D. They are both scalene triangles.	1	D. Obtuse and scalene triangle	1	A. They are both equilateral triangles.	0	B. They are both obtuse triangles.	1	B. Scalene	0	6	complete
51 80	Worcester East Middle School	- 0.4 027 9	B. Scalene		A. They are both equilateral triangles.	0	A. They are both equilateral triangles.	0	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	C. Right	0	6	complete
51 80	Worcester East Middle School	- 1.1 308 5	D. Obtuse		B. They are both isosceles triangles.	0	B. Acute and scalene triangle	0	D. They are both scalene triangles.	0	B. They are both obtuse triangles.	1	B. Scalene	0	6	complete
51	Worcester	-	D.		D. They are	0	C. Obtuse	0	B. They are	0	B. They are	1	D.	0	6	com

80		er East Middle School		1.4 226 5	Obtuse		both scalene triangles.		and equilateral triangle		both isosceles triangles.		both obtuse triangles.		Obtuse		plet e	
51 80		Worcest er East Middle School		- 1.7 104	A. Equilate ral		C. Obtuse and equilateral triangle	0	No_data		No_data		No_data		No_data		6	inco mpl ete
51 80		Worcest er East Middle School		- 0.3 838 4	A. Equilate ral		C. They are both right triangles.	0	A. They are both acute triangles.	0	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	0	D. Obtuse	0	6	com plet e
51 80		Worcest er East Middle School		- 1.2 245 4	A. Equilate ral		C. They are both right triangles.	0	A. They are both equilateral triangles.	0	C. Obtuse and equilateral triangle	0	A. They are both acute triangles.	0	A. Equilate ral	1	6	com plet e
51 80		Forest Grove Middle School		1.6 944 82	D. Obtuse		D. They are both scalene triangles.	1	D. Obtuse and scalene triangle	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	A. Equilate ral	1	6	com plet e
51 80		Worcest er East		- 1.7	B. Scalene		A. They are both	0	B. They are both obtuse	1	C. Obtuse and	0	A. They are both	0	C. Right	0	6	com plet

		Middle School	5204			equilateral triangles.		triangles.		equilateral triangle		equilateral triangles.				e	
5180		Forest Grove Middle School	0.398449	A. Equilateral		C. They are both right triangles.	0	No_answer	0	B. They are both obtuse triangles.	1	C. Obtuse and equilateral triangle	0	A. Equilateral	1	6	complete
5180		Worcester East Middle School	0.754483	C. Right		A. Acute and equilateral triangle	0	No_data		No_data		No_data		No_data		6	incomplete
5180		Worcester East Middle School	N\A	C. Right		B. They are both isosceles triangles.	1	C. They are both right triangles.	0	C. They are both isosceles triangles.	0	A. Acute and equilateral triangle	0	D. Obtuse	0	6	complete
5180		Worcester East Middle School	N\A	A. Equilateral		C. They are both right triangles.	0	B. They are both obtuse triangles.	1	A. They are both equilateral triangles.	0	B. Acute and scalene triangle	0	C. Right	0	6	complete
5180		Worcester East Middle School	N\A	C. Right		B. They are both obtuse triangles.	1	D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	D. They are both scalene	1	C. Right	0	6	complete



80	er Arts Magnet	A	Scalene		scalene triangle		both scalene triangles.		both equilateral triangles.		both scalene triangles.		Equilateral			plete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		D. They are both scalene triangles.	1	B. Acute and scalene triangle	0	B. They are both isosceles triangles.	1	No_answer	0	B. Scalene	0	6	complete
51 80	Worcester Arts Magnet	N\ A	No_answer		D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	C. They are both isosceles triangles.	0	B. Acute and scalene triangle	0	C. Right	0	6	complete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. They are both isosceles triangles.	1	No_answer	0	D. They are both scalene triangles.	1	D. Obtuse and scalene triangle	1	B. Scalene	0	6	complete
51 80	Worcester Arts Magnet	N\ A	B. Scalene		B. Acute and scalene triangle	0	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	B. Scalene	0	6	complete
51 80	Worcester Arts	N\ A	A. Equilateral		C. They are both right	0	D. They are both scalene	0	B. Acute and scalene	0	No_data		No_data		6	incomplete



	Magnet		ral		triangles.		triangles.		triangle							ete
51 80	Worcest er Arts Magnet	N\ A	A. Equilate ral		B. They are both obtuse triangles.	1	B. Acute and scalene triangle	0	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	A. Equilate ral	1	6	com plet e
51 80	Worcest er Arts Magnet	N\ A	B. Scalene		B. Acute and scalene triangle	0	B. They are both isosceles triangles.	0	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	B. Scalene	0	6	com plet e
51 80	Worcest er Arts Magnet	N\ A	D. Obtuse		D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e
51 80	Worcest er Arts Magnet	N\ A	B. Scalene		B. They are both isosceles triangles.	0	D. They are both scalene triangles.	0	A. Acute and equilateral triangle	0	D. They are both scalene triangles.	0	D. Obtuse	0	6	com plet e
51 80	Worcest er Arts Magnet	N\ A	A. Equilate ral		D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	No_data		No_data		No_data		6	inco mpl ete
51	Worcest	N\ A	A.		D. They are	1	B. They are	1	B. They are	1	B. Acute	0	A.	1	6	com

80	er Arts Magnet	A	Equilateral		both scalene triangles.		both isosceles triangles.		both obtuse triangles.		and scalene triangle		Equilateral			complete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. They are both isosceles triangles.	0	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	No_data		6	incomplete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. They are both isosceles triangles.	1	B. Acute and scalene triangle	0	D. They are both scalene triangles.	1	A. They are both acute triangles.	0	B. Scalene	0	6	complete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. They are both obtuse triangles.	1	D. They are both scalene triangles.	1	B. They are both isosceles triangles.	1	D. Obtuse and scalene triangle	1	B. Scalene	0	6	complete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. Acute and scalene triangle	0	No_answer	0	B. They are both obtuse triangles.	1	No_data		No_data		6	incomplete
51 80	Worcester Arts Magnet	N\ A	B. Scalene		D. They are both scalene triangles.	1	D. Obtuse and scalene triangle	1	B. They are both isosceles triangles.	1	B. They are both obtuse triangles.	1	A. Equilateral	1	6	complete

									triangles.		triangles.					
51 80	Oak Middle School	N\ A	A. Equilate ral		D. They are both scalene triangles.	0	B. They are both isosceles triangles.	0	B. They are both obtuse triangles.	1	D. Obtuse and scalene triangle	1	A. Equilate ral	1	6	com plet e
51 81	Forest Grove Middle School	- 1.3 271 7	A. Equilate ral Triangle		A. Equilateral Triangle	1	B. Rhombus	1	D. Trapezoid	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e
51 81	Forest Grove Middle School	- 0.7 558 1	C. Right Isoscele s Triangle		D. Trapezoid	1	A. Equilateral Triangle	1	D. Trapezoid	0	No_data		A. Equilate ral Triangle	0	5	com plet e
51 81	Worcest er East Middle School	- 0.3 556 4	C. Right Isoscele s Triangle		B. Rhombus	1	D. Trapezoid	1	A. Equilateral Triangle	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e
51 81	Worcest er East Middle School	1.3 218 64	C. Right Isoscele s Triangle		B. Rhombus	0	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e

51 81	Worcester East Middle School	0.308805	C. Right Isosceles Triangle		B. Rhombus	1	A. Equilateral Triangle	1	D. Trapezoid	1	No_data		A. Equilateral Triangle	0	5	complete
51 81	Burncoat Middle School	-0.45676	C. Right Isosceles Triangle		A. Equilateral Triangle	1	D. Trapezoid	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
51 81	Forest Grove Middle School	1.531998	C. Right Isosceles Triangle		D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
51 81	Forest Grove Middle School	1.345298	C. Right Isosceles Triangle		D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
51 81	Worcester East Middle School	0.90337	B. Rhombus		A. Equilateral Triangle	1	B. Rhombus	0	A. Equilateral Triangle	0	No_data		A. Equilateral Triangle	0	5	complete
51	Worcester	2.4	A.		C. Right	0	A. Equilateral	0	D. Trapezoid	0	No_data		No_data		5	inco

81		er East Middle School	658 06	Equilate ral Triangle		Isosceles Triangle		Triangle									mpl ete
51 81		Worcest er East Middle School	- 1.4 226 5	C. Right Isoscele s Triangle		A. Equilateral Triangle	1	D. Trapezoid	1	B. Rhombus	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e
51 81		Worcest er East Middle School	- 1.1 276 4	C. Right Isoscele s Triangle		A. Equilateral Triangle	1	D. Trapezoid	1	B. Rhombus	1	No_data		A. Equilate ral Triangle	0	5	com plet e
51 81		Worcest er East Middle School	- 0.4 027 9	No_ans wer		A. Equilateral Triangle	1	D. Trapezoid	1	B. Rhombus	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e
51 81		Worcest er East Middle School	- 1.1 308 5	A. Equilate ral Triangle		D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isoscele s Triangle	1	5	com plet e
51 81		Worcest er East	- 1.4	D. Trapezoi		B. Rhombus	0	A. Equilateral Triangle	1	B. Rhombus	1	No_data		B. Rhombu	0	5	com plet

		Middle School	2265	d									s			e
5181		Worcester East Middle School	-0.38384	D. Trapezoid	B. Rhombus	0	A. Equilateral Triangle	1	C. Right Isosceles Triangle	0	No_data		C. Right Isosceles Triangle	1	5	complete
5181		Worcester East Middle School	-1.22454	A. Equilateral Triangle	D. Trapezoid	1	C. Right Isosceles Triangle	0	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
5181		Worcester East Middle School	-0.94083	C. Right Isosceles Triangle	D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
5181		Worcester East Middle School	-1.75204	B. Rhombus	C. Right Isosceles Triangle	0	B. Rhombus	1	C. Right Isosceles Triangle	0	No_data		C. Right Isosceles Triangle	1	5	complete
5181		Worcester East Middle School	N\A	C. Right Isosceles	B. Rhombus	1	A. Equilateral Triangle	1	D. Trapezoid	1	No_data		B. Rhombus	0	5	complete

		School		Triangle												
51 81		Worcester East Middle School	N\ A	C. Right Isosceles Triangle	B. Rhombus	1	No_answer	0	A. Equilateral Triangle	1	No_data		No_data		5	incomplete
51 81		Oak Middle School	N\ A	C. Right Isosceles Triangle	A. Equilateral Triangle	1	B. Rhombus	0	D. Trapezoid	0	No_data		C. Right Isosceles Triangle	1	5	complete
51 81		Worcester Arts Magnet	N\ A	C. Right Isosceles Triangle	D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete
51 81		Worcester Arts Magnet	N\ A	C. Right Isosceles Triangle	D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data		A. Equilateral Triangle	0	5	complete
51 81		Worcester Arts Magnet	N\ A	A. Equilateral Triangle	B. Rhombus	0	A. Equilateral Triangle	1	B. Rhombus	1	No_data		C. Right Isosceles Triangle	1	5	complete

51 81	Worcester Arts Magnet	N\ A	A. Equilateral Triangle	C. Right Isosceles Triangle	0	A. Equilateral Triangle	1	B. Rhombus	1	No_data	C. Right Isosceles Triangle	1	5	complete
51 81	Worcester Arts Magnet	N\ A	A. Equilateral Triangle	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	incomplete	
51 81	Worcester Arts Magnet	N\ A	D. Trapezoid	D. Trapezoid	1	A. Equilateral Triangle	1	D. Trapezoid	0	No_data	C. Right Isosceles Triangle	1	5	complete
51 81	Worcester Arts Magnet	N\ A	C. Right Isosceles Triangle	D. Trapezoid	1	A. Equilateral Triangle	1	B. Rhombus	1	No_data	C. Right Isosceles Triangle	1	5	complete
51 81	Worcester Arts Magnet	N\ A	C. Right Isosceles Triangle	D. Trapezoid	1	B. Rhombus	1	A. Equilateral Triangle	1	No_data	C. Right Isosceles Triangle	1	5	complete
51	Worcester	N\ A	C. Right	D. Trapezoid	1	A. Equilateral	1	B. Rhombus	1	No_data	C. Right	1	5	com



81		er Arts Magnet	A	Isosceles Triangle			Triangle						Isosceles Triangle			plete
5181		Worcester Arts Magnet	N\A	C. Right Isosceles Triangle	No_data		No_data		No_data		No_data		No_data	5		incomplete
5181		Worcester Arts Magnet	N\A	C. Right Isosceles Triangle	A. Equilateral Triangle	1	B. Rhombus	1	D. Trapezoid	1	No_data		C. Right Isosceles Triangle	1	5	complete
5181		Oak Middle School	N\A	A. Equilateral Triangle	A. Equilateral Triangle	1	D. Trapezoid	0	D. Trapezoid	1	No_data		A. Equilateral Triangle	0	5	complete
5182		Forest Grove Middle School	-1.32717	D. quadrilateral	D	0	No_data		No_data		No_data		C. parallelogram	0	3	complete
5182		Forest Grove	-0.7	D. quadrilateral	D	0	No_data		No_data		No_data		D. quadrilateral	1	3	complete

		Middle School	5581	teral									teral			e
5182		Forest Grove Middle School	0.444391	C. parallel ogram	D	0	No_data	No_data	No_data				C. parallel ogram	0	3	complete
5182		Forest Grove Middle School	2.218553	D. quadrilateral	C	1	No_data	No_data	No_data				D. quadrilateral	1	3	complete
5182		Worcester East Middle School	-0.35564	C. parallel ogram	C	1	No_data	No_data	No_data				C. parallel ogram	0	3	complete
5182		Worcester East Middle School	1.321864	C. parallel ogram	C	1	No_data	No_data	No_data				D. quadrilateral	1	3	complete
5182		Worcester East Middle School	0.308805	C. parallel ogram	C	1	No_data	No_data	No_data				D. quadrilateral	1	3	complete

		School															
51		Forest Grove Middle School	-0.4444	D. quadrilateral	C	1	No_data	No_data	No_data	A. triangle	0	3	complete				
51		Forest Grove Middle School	0.4448	C. parallelogram	C	1	No_data	No_data	No_data	D. quadrilateral	1	3	complete				
51		Worcester East Middle School	0.9037	D. quadrilateral	D	0	No_data	No_data	No_data	C. parallelogram	0	3	complete				
51		Worcester East Middle School	-1.42265	A. triangle	A	0	No_data	No_data	No_data	A. triangle	0	3	complete				
51		Worcester East Middle School	-1.12764	D. quadrilateral	D	0	No_data	No_data	No_data	C. parallelogram	0	3	complete				

51 82	Worcester East Middle School	- 0.4 027 9	A. triangle		A	0	No_data		No_data		No_data		No_data		3	incomplete
51 82	Worcester East Middle School	- 1.1 308 5	D. quadrilateral		D	0	No_data		No_data		No_data		C. parallelogram	0	3	complete
51 82	Worcester East Middle School	- 1.4 226 5	B. rectangle		C	1	No_data		No_data		No_data		D. quadrilateral	1	3	complete
51 82	Worcester East Middle School	- 0.3 838 4	B. rectangle		B	0	No_data		No_data		No_data		B. rectangle	0	3	complete
51 82	Worcester East Middle School	- 1.2 245 4	D. quadrilateral		C	1	No_data		No_data		No_data		D. quadrilateral	1	3	complete
51	Worcester	-	A.		A	0	No_data		No_data		No_data		D.	1	3	com

82		er East Middle School	0.9 408 3	triangle									quadrila teral			plet e
51 82		Worcest er East Middle School	- 1.7 520 4	B. rectangl e	C	1	No_data	No_data	No_data				B. rectangl e	0	3	com plet e
51 82		Forest Grove Middle School	0.4 593 65	D. quadrila teral	C	1	No_data	No_data	No_data				D. quadrila teral	1	3	com plet e
51 82		Worcest er East Middle School	N\ A	C. parallel ogram	C	1	No_data	No_data	No_data				D. quadrila teral	1	3	com plet e
51 82		Worcest er East Middle School	N\ A	A. triangle	C	1	No_data	No_data	No_data				C. parallel ogram	0	3	com plet e
51 82		Oak Middle	N\ A	D. quadrila	C	1	No_data	No_data	No_data				D. quadrila	1	3	com plet

	School		teral									teral			e
51 82	Worcester Arts Magnet	N\ A	D. quadrilateral		No_answer	0	No_data		No_data		No_data	D. quadrilateral	1	3	complete
51 82	Worcester Arts Magnet	N\ A	D. quadrilateral		C	1	No_data		No_data		No_data	B. rectangle	0	3	complete
51 82	Worcester Arts Magnet	N\ A	D. quadrilateral		D	0	No_data		No_data		No_data	No_answer	0	3	complete
51 82	Worcester Arts Magnet	N\ A	D. quadrilateral		C	1	No_data		No_data		No_data	D. quadrilateral	1	3	complete
51 82	Worcester Arts Magnet	N\ A	D. quadrilateral		C	1	No_data		No_data		No_data	D. quadrilateral	1	3	complete
51 82	Oak Middle School	N\ A	C. parallelogram		D	0	No_data		No_data		No_data	C. parallelogram	0	3	complete
51 83	Forest Grove	- 1.3	D. Adams		No_data		No_data		No_data		No_data	No_data		4	incomplete

		Middle School	2717	and Revere												ete
5183		Forest Grove Middle School	-1.23988	B. Broadway and Plymouth	No_data		No_data		No_data		No_data		No_data		4	incomplete
5183		Forest Grove Middle School	-0.75581	D. Adams and Revere	A. Jefferson Street and Washington Street	1	C	0	No_data		No_data		B. Broadway and Plymouth	0	4	complete
5183		Forest Grove Middle School	2.222093	D. Adams and Revere	A. Jefferson Street and Washington Street	1	A	1	No_data		No_data		D. Adams and Revere	1	4	complete
5183		Forest Grove Middle School	1.33328	D. Adams and Revere	A	1	A. Jefferson Street and Washington Street	1	No_data		No_data		D. Adams and Revere	1	4	complete
51		Forest	1.3	C.	No_data		No_data		No_data		No_data		No_data		4	inco

83		Grove Middle School	09466	Adams and Plymouth												complete
5183		Forest Grove Middle School	-0.43224	A. Broadway and Adams	A. Jefferson Street and Washington Street	1	A	1	No_data		No_data		D. Adams and Revere	1	4	complete
5183		Forest Grove Middle School	0.44451	D. Adams and Revere	A. Jefferson Street and Washington Street	1	A	1	No_data		No_data		D. Adams and Revere	1	4	complete
5183		Forest Grove Middle School	1.66047	D. Adams and Revere	B	0	A. Jefferson Street and Washington Street	1	No_data		No_data		D. Adams and Revere	1	4	complete
5183		Forest Grove Middle School	1.333211	D. Adams and Revere	A. Jefferson Street and Washington Street	1	A	1	No_data		No_data		D. Adams and Revere	1	4	complete
51		Forest	1.5	D.	A	1	A. Jefferson	1	No_data		No_data		D.	1	4	com



83		Grove Middle School	31998	Adams and Revere				Street and Washington Street					Adams and Revere			plet e
5183		Forest Grove Middle School	2.222358	D. Adams and Revere	A	1		A. Jefferson Street and Washington Street	1	No_data		No_data	D. Adams and Revere	1	4	complet e
5183		Forest Grove Middle School	1.368483	D. Adams and Revere			A. Jefferson Street and Washington Street	1	A	1	No_data	No_data	D. Adams and Revere	1	4	complet e
5183		Forest Grove Middle School	1.368483	D. Adams and Revere			A. Jefferson Street and Washington Street	1	A	1	No_data	No_data	D. Adams and Revere	1	4	complet e
5183		Forest Grove Middle School	1.33333	D. Adams and Revere			A. Jefferson Street and Washington Street	1	A	1	No_data	No_data	D. Adams and Revere	1	4	complet e
5183		Forest Grove	-0.4	B. Broadw			A. Jefferson Street and	1	C	0	No_data	No_data	D. Adams	1	4	complet

		Middle School	5251	ay and Plymouth		Washington Street							and Revere			e
5183		Forest Grove Middle School	-0.45633	B. Broadway and Plymouth		A. Jefferson Street and Washington Street	1	B	0	No_data		No_data	B. Broadway and Plymouth	0	4	complete
5183		Worcester East Middle School	0.90337	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data		No_data	D. Adams and Revere	1	4	complete
5183		Forest Grove Middle School	2.22227	D. Adams and Revere		A	1	A. Jefferson Street and Washington Street	1	No_data		No_data	D. Adams and Revere	1	4	complete
5183		Worcester East Middle School	-1.42265	D. Adams and Revere		C. Adams Street and Madison Street	0	C	0	No_data		No_data	B. Broadway and Plymouth	0	4	complete

51 83	Worcester East Middle School	- 1.1 276 4	D. Adams and Revere		No_data		No_data		No_data		No_data		No_data		4	incomplete
51 83	Worcester East Middle School	- 1.1 308 5	B. Broadway and Plymouth h		C. Adams Street and Madison Street	0	A	1	No_data		No_data		D. Adams and Revere	1	4	complete
51 83	Worcester East Middle School	- 1.4 226 5	C. Adams and Plymouth h		A. Jefferson Street and Washington Street	1	A	1	No_data		No_data		B. Broadway and Plymouth h	0	4	complete
51 83	Worcester East Middle School	- 0.3 838 4	D. Adams and Revere		C. Adams Street and Madison Street	0	A	1	No_data		No_data		B. Broadway and Plymouth h	0	4	complete
51 83	Worcester East	- 1.2	D. Adams		A. Jefferson Street and	1	A	1	No_data		No_data		C. Adams	0	4	complete

		Middle School	2454	and Revere		Washington Street							and Plymouth			e
5183		Worcester East Middle School	-0.94083	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data	No_data		D. Adams and Revere	1	4	complete
5183		Worcester East Middle School	-1.04299	D. Adams and Revere		A. Jefferson Street and Washington Street	1	C	0	No_data	No_data		No_answer	0	4	complete
5183		Forest Grove Middle School	1.694482	D. Adams and Revere		A	1	A. Jefferson Street and Washington Street	1	No_data	No_data		D. Adams and Revere	1	4	complete
5183		Worcester East Middle School	-1.75204	C. Adams and Plymouth		B. Adams Street and Washington Street	0	B	0	No_data	No_data		B. Broadway and Plymouth	0	4	complete
51		Forest	-	C.		A. Jefferson	1	C	0	No_data	No_data		D.	1	4	com

83		Grove Middle School		0.5 806 2	Adams and Plymouth		Street and Washington Street							Adams and Revere			plet e
51 83		Oak Middle School		1.1 310 23	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data	No_data		D. Adams and Revere	1	4	com plet e
51 83		Worcester East Middle School		N\ A	D. Adams and Revere		A	1	A. Jefferson Street and Washington Street	1	No_data	No_data		D. Adams and Revere	1	4	com plet e
51 83		Worcester East Middle School		N\ A	C. Adams and Plymouth		A	1	A. Jefferson Street and Washington Street	1	No_data	No_data		C. Adams and Plymouth	0	4	com plet e
51 83		Oak Middle School		N\ A	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data	No_data		D. Adams and Revere	1	4	com plet e

51 83	Oak Middle School	N\ A	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data	No_data		D. Adams and Revere	1	4	com plet e
51 83	Worcest er Arts Magnet	N\ A	D. Adams and Revere		A. Jefferson Street and Washington Street	1	C	0	No_data	No_data		A. Broadw ay and Adams	0	4	com plet e
51 83	Worcest er Arts Magnet	N\ A	D. Adams and Revere		A. Jefferson Street and Washington Street	1	A	1	No_data	No_data		D. Adams and Revere	1	4	com plet e
51 83	Worcest er Arts Magnet	N\ A	D. Adams and Revere		No_answer	0	No_data		No_data	No_data		No_data		4	inco mpl ete
51 83	Oak Middle School	N\ A	D. Adams and Revere		B	0	A. Jefferson Street and Washington Street	1	No_data	No_data		D. Adams and Revere	1	4	com plet e
51	Forest	3.1	15		4	1	No_data		No_data	No_data		15	1	3	com

84		Grove Middle School	10678														plet e
51 84		Forest Grove Middle School	1.66047	15		4	1	No_data	No_data	No_data	15	1	3				com plet e
51 84		Forest Grove Middle School	1.333211	15		4	1	No_data	No_data	No_data	15	1	3				com plet e
51 84		Forest Grove Middle School	0.077869	15		4	1	No_data	No_data	No_data	15	1	3				com plet e
51 84		Burncoat Middle School	-0.45676	15		4	1	No_data	No_data	No_data	15	1	3				com plet e
51 84		Forest Grove	1.5319	15		4	1	No_data	No_data	No_data	15	1	3				com plet

		Middle School	98														e
51 84		Forest Grove Middle School	1.5 319 98	15	-4	0	No_data	No_data	No_data	15	1	3	com plet e				
51 84		Burncoat Middle School	1.2 827 41	15	4	1	No_data	No_data	No_data	15	1	3	com plet e				
51 84		Forest Grove Middle School	1.3 684 83	15	4	1	No_data	No_data	No_data	15	1	3	com plet e				
51 84		Forest Grove Middle School	1.3 333 3	35	4	1	No_data	No_data	No_data	35	0	3	com plet e				
51 84		Forest Grove Middle School	- 0.4 525 1	35	7	0	No_data	No_data	No_data	No_ans wer	0	3	com plet e				





84		er East	1.1															plet
		Middle	308															e
		School	5															
51		Worcest	-															com
84		er East	1.4	35 miles	0	0	No_data	No_data	No_data	35	0	3						plet
		Middle	226															e
		School	5															
51		Worcest	-															com
84		er East	0.3	15\	2	0	No_data	No_data	No_data	35	0	3						plet
		Middle	838															e
		School	4															
51		Worcest	-															com
84		er East	1.2	10	4	1	No_data	No_data	No_data	15	1	3						plet
		Middle	245															e
		School	4															
51		Worcest	-															com
84		er East	0.9	15	4	1	No_data	No_data	No_data	20	0	3						plet
		Middle	408															e
		School	3															
51		Worcest	-															com
84		er East	1.0	15	3	0	No_data	No_data	No_data	35	0	3						plet

		Middle School	4299													e
5184		Worcester East Middle School	-1.75204	No_answer	No_answer	0	No_data	No_data	No_data	No_data	No_answer	0	3	complete		
5184		Forest Grove Middle School	0.806047	15	4	1	No_data	No_data	No_data	No_data	15	1	3	complete		
5184		Worcester East Middle School	-0.37095	20	4	1	No_data	No_data	No_data	No_data	15	1	3	complete		
5184		Forest Grove Middle School	-0.58062	35	No_data	No_data	No_data	No_data	No_data	No_data	No_data		3	incomplete		
5184		Worcester East Middle School	N\A	15	5	0	No_data	No_data	No_data	No_data	15	1	3	complete		

		School															
51 84		Worcester East Middle School	N\ A	35v		3	0	No_data		No_data		No_data		No_data		3	incomplete
51 84		Oak Middle School	N\ A	15		4	1	No_data		No_data		No_data		15	1	3	complete
51 84		Oak Middle School	N\ A	15		4	1	No_data		No_data		No_data		15	1	3	complete
51 84		Worcester Arts Magnet	N\ A	15		4	1	No_data		No_data		No_data		15	1	3	complete
51 84		Oak Middle School	N\ A	35		4	1	No_data		No_data		No_data		35	0	3	complete
51 85		Forest Grove Middle School	2.0 436 77	A		A	1	C	1	C.	1	B	1	A	1	6	complete



85		Grove Middle School	63232														plet e
5185		Forest Grove Middle School	2.222584	A	A	1	C	1	C.	1	B	1	A	1	6		com plet e
5185		Forest Grove Middle School	0.444391	A	C	1	A	1	C.	1	A	0	C	0	6		com plet e
5185		Forest Grove Middle School	1.3333	A	C	1	B	1	A	1	C.	1	A	1	6		com plet e
5185		Forest Grove Middle School	-0.43224	D	No_data		No_data		No_data		No_data		No_data		6		inco mpl ete
5185		Forest Grove	2.2196	A	A	1	C	1	C.	1	B	1	A	1	6		com plet

		Middle School	66														e
51 85		Forest Grove Middle School	0.4 444 51	A		D	0	C.	1	A	1	B	1	D	0	6	complete
51 85		Forest Grove Middle School	1.6 604 7	D		C.	1	A	1	D	0	C	1	D	0	6	complete
51 85		Forest Grove Middle School	1.6 604 7	A		A	1	C	1	B	1	C.	1	A	1	6	complete
51 85		Forest Grove Middle School	0.9 061 81	A		No_data		No_data		No_data		No_data		No_data		6	incomplete
51 85		Forest Grove Middle School	1.3 332 11	A		B	1	D	0	C	1	C.	1	A	1	6	complete

	School																
51 85	Burncoat Middle School	- 0.4 567 6	A	A	1	C.	1	C	1	B	1	C	0	6	com plet e		
51 85	Forest Grove Middle School	1.5 319 98	A	A	1	C	1	C.	1	D	0	A	1	6	com plet e		
51 85	Burncoat Middle School	1.2 247 56	C	A	1	C.	1	C	1	B	1	A	1	6	com plet e		
51 85	Burncoat Middle School	1.2 827 41	A	B	1	A	1	A	0	C.	1	A	1	6	com plet e		
51 85	Forest Grove Middle School	1.3 452 98	A	A	1	C	1	C.	1	B	1	A	1	6	com plet e		
51 85	Forest Grove	1.3 684	A	No_data		No_data		No_data		No_data		No_data		6	inco mpl		





		School															
51		Worcester East Middle School	- 1.4 226 5	D	B	0	C	1	C.	1	C	0	A	1	6	complete	
51		Worcester East Middle School	- 1.1 308 5	C	B	0	A.	0	D	0	No_data		No_data		6	incomplete	
51		Worcester East Middle School	- 1.4 226 5	A	A	1	C	1	A.	0	B	1	A	1	6	complete	
51		Worcester East Middle School	- 0.3 838 4	B	B	1	A	1	A.	0	A	0	D	0	6	complete	
51		Forest Grove Middle School	0.4 545 53	A	C.	1	A	1	C	1	B	1	A	1	6	complete	

51	Worcester East Middle School	-																com
85		1.2	C		B	1	C	1	C.	1	A	1	D	0	6			plet
		245																e
		4																
51	Worcester East Middle School	-																com
85		1.2	B		A	1	B	0	A	0	C.	1	C	0	6			plet
		056																e
		4																
51	Worcester East Middle School	-																com
85		0.9	C		A	1	C	1	B.	0	B	1	C	0	6			plet
		408																e
		3																
51	Worcester East Middle School	-																com
85		1.0	A		D	0	C	1	C.	1	B	1	A	1	6			plet
		429																e
		9																
51	Forest Grove Middle School	0.9																com
85		565	A		C	1	B	1	A	1	C.	1	A	1	6			plet
		59																e
51	Worcester	-	A		C.	1	C	0	A	0	A	0	C	0	6			com

85		er East Middle School	1.7 520 4															plet e
51 85		Forest Grove Middle School	0.4 593 65	A		A	1	C.	1	C	1	B	1	A	1	6		com plet e
51 85		Worcest er East Middle School	- 0.3 709 5	D		D	0	D	0	B	1	C.	1	D	0	6		com plet e
51 85		Worcest er East Middle School	N\ A	A		C.	1	A	1	C	1	B	1	A	1	6		com plet e
51 85		Oak Middle School	N\ A	A		C.	1	B	1	A	1	C	1	A	1	6		com plet e
51 85		Oak Middle School	N\ A	A		A	1	C.	1	C	1	B	1	A	1	6		com plet e

51 85	Oak Middle School	N\ A	B		A	1	C	1	C.	1	B	1	A	1	6	com plet e
51 85	Oak Middle School	N\ A	D		A	1	A	0	C.	1	D	0	D	0	6	com plet e
51 87	Forest Grove Middle School	- 1.5 671 2	B		B	1	No_data		No_data		No_data		No_data		4	inco mpl ete
51 87	Forest Grove Middle School	- 0.7 558 1	C		C	0	C. K, L, M, and N	0	No_data		No_data		D	1	4	com plet e
51 87	Forest Grove Middle School	1.3 333 33	D		C	0	A. K and M only	0	No_data		No_data		D	1	4	com plet e
51 87	Forest Grove Middle School	1.3 094 66	D		C	0	B. L and N only	1	No_data		No_data		D	1	4	com plet e

	School															
51 87	Forest Grove Middle School	1.3 330 45	C		B. L and N only	1	B	1	No_data	No_data	C	0	4	com plet e		
51 87	Forest Grove Middle School	1.6 604 7	D		C	0	D. No two figures shown are congruent.	0	No_data	No_data	D	1	4	com plet e		
51 87	Burncoat Middle School	- 1.1 563 7	B		B. L and N only	1	B	1	No_data	No_data	B	0	4	com plet e		
51 87	Forest Grove Middle School	1.5 319 98	D		D. No two figures shown are congruent.	0	B	1	No_data	No_data	D	1	4	com plet e		
51 87	Burncoat Middle School	1.2 827 41	D		B. L and N only	1	C	0	No_data	No_data	D	1	4	com plet e		
51	Burncoat	0.0	D		A. K and M	0	B	1	No_data	No_data	D	1	4	com		

87		Middle School	526 32			only											plet e
51 87		Forest Grove Middle School	1.3 333 3	D		B	1	D. No two figures shown are congruent.	0	No_data	No_data	D	1	4			com plet e
51 87		Forest Grove Middle School	- 0.4 525 1	B		C. K, L, M, and N	0	B	1	No_data	No_data	D	1	4			com plet e
51 87		Forest Grove Middle School	1.8 166 18	C		B. L and N only	1	D	0	No_data	No_data	D	1	4			com plet e
51 87		Forest Grove Middle School	1.2 238 09	B		D. No two figures shown are congruent.	0	C	0	No_data	No_data	C	0	4			com plet e
51 87		Forest Grove Middle School	- 0.4 563	C		C	0	C. K, L, M, and N	0	No_data	No_data	C	0	4			com plet e

	School	3														
51 87	Worcester East Middle School	N\A	D		B. L and N only	1	B	1	No_data	No_data	C	0	4	complete		
51 87	Worcester East Middle School	-1.42265	C		No_data		No_data		No_data	No_data	No_data		4	incomplete		
51 87	Worcester East Middle School	-0.38384	A		A. K and M only	0	C	0	No_data	No_data	B	0	4	complete		
51 87	Forest Grove Middle School	0.45453	D		B. L and N only	1	B	1	No_data	No_data	D	1	4	complete		
51 87	Worcester East Middle School	-1.22454	D		B	1	C. K, L, M, and N	0	No_data	No_data	A	0	4	complete		



51 87	Worcest er East Middle School	- 1.2 056 4	B		B. L and N only	1	C	0	No_data	No_data	B	0	4	com plet e
51 87	Worcest er East Middle School	- 0.9 408 3	B		C	0	A. K and M only	0	No_data	No_data	A	0	4	com plet e
51 87	Worcest er East Middle School	- 1.0 429 9	D		D. No two figures shown are congruent.	0	B	1	No_data	No_data	D	1	4	com plet e
51 87	Worcest er East Middle School	- 1.7 520 4	B		A. K and M only	0	No_answer	0	No_data	No_data	B	0	4	com plet e
51 87	Worcest er East Middle School	- 0.3 709 5	C		D. No two figures shown are congruent.	0	C	0	No_data	No_data	A	0	4	com plet e
51	Worcest	N\	C		D. No two	0	D	0	No_data	No_data	C	0	4	com

87		er East Middle School	A			figures shown are congruent.												plet e
51 87		Burncoat Middle School	N\ A	A		No_data		No_data		No_data		No_data		No_data			4	inco mpl ete
51 87		Oak Middle School	N\ A	D		B. L and N only	1	B	1	No_data		No_data		D	1	4	com plet e	
51 87		Oak Middle School	N\ A	D		No_data		No_data		No_data		No_data		No_data			4	inco mpl ete
51 87		Oak Middle School	N\ A	D		B. L and N only	1	B	1	No_data		No_data		D	1	4	com plet e	
51 87		Oak Middle School	N\ A	D		C. K, L, M, and N	0	B	1	No_data		No_data		B	0	4	com plet e	
51 87		Oak Middle School	N\ A	D		B. L and N only	1	B	1	No_data		No_data		D	1	4	com plet e	





		Middle School	44														e
51 88		Forest Grove Middle School	0.2 579 77	C		12	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88		Worcester East Middle School	0.1 734 46	C		6	0	No_data	No_data	No_data	No_data		3	inco mpl ete			
51 88		Worcester East Middle School	0.3 708 8	C		6	0	No_data	No_data	No_data	D	0	3	com plet e			
51 88		Worcester East Middle School	- 0.3 556 4	C		12	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88		Burncoat Middle School	- 0.5 804	C		No_answer	0	No_data	No_data	No_data	B	0	3	com plet e			

		4														
51 88	Burncoat Middle School	0.5 245 61	C		18	1	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Burncoat Middle School	- 0.3 930 4	D		32	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Burncoat Middle School	0.4 563 13	C		2	0	No_data	No_data	No_data	D	0	3	com plet e			
51 88	Burncoat Middle School	0.4 575 66	D		12	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Burncoat Middle School	0.1 175 39	C		18	1	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Burncoat Middle School	0.3 336 82	C		6	0	No_data	No_data	No_data	C	1	3	com plet e			
51	Burncoat	-	D		No_answer	0	No_data	No_data	No_data	C	1	3	com			

88		Middle School	0.69663															plete
5188		Burncoat Middle School	0.696213	C		6	0	No_data		No_data		No_data		D	0	3		complete
5188		Burncoat Middle School	-0.47688	A		8	0	No_data		No_data		No_data		A	0	3		complete
5188		Burncoat Middle School	0.442855	D		8	0	No_data		No_data		No_data		D	0	3		complete
5188		Burncoat Middle School	0.519428	D		6	0	No_data		No_data		No_data		C	1	3		complete
5188		Burncoat Middle School	-1.41786	C		6	0	No_data		No_data		No_data		C	1	3		complete
51		Burncoat	-	C		8	0	No_data		No_data		No_data		D	0	3		com

88		Middle School	0.27635															plete
5188		Forest Grove Middle School	1.333211	C	18	1	No_data	No_data	No_data	C	1	3						complete
5188		Burncoat Middle School	-0.45676	C	18	1	No_data	No_data	No_data	C	1	3						complete
5188		Burncoat Middle School	-1.15637	B	No_answer	0	No_data	No_data	No_data	B	0	3						complete
5188		Forest Grove Middle School	2.222358	C	18	1	No_data	No_data	No_data	C	1	3						complete
5188		Burncoat Middle School	1.2827	C	12	0	No_data	No_data	No_data	C	1	3						complete



		School	41														e
51		Burncoat	0.0														com
88		Middle	526	C		18	1	No_data		No_data		No_data		C	1	3	plet
		School	32														e
51		Forest	1.3														com
88		Grove	684	C		6	0	No_data		No_data		No_data		C	1	3	plet
		Middle	83														e
		School															
51		Forest	1.2														com
88		Grove	238	D		6	0	No_data		No_data		No_data		B	0	3	plet
		Middle	09														e
		School															
51		Burncoat	0.0														com
88		Middle	849	D		12	0	No_data		No_data		No_data		C	1	3	plet
		School	43														e
51		Worcest	N\														com
88		er East	A	C		18	1	No_data		No_data		No_data		C	1	3	plet
		Middle															e
		School															
51		Worcest	-														inco
88		er East	0.3	C		6	0	No_data		No_data		No_data		No_data		3	mpl



	School	4														
51 88	Forest Grove Middle School	0.4 593 65	C		6	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Worcest er East Middle School	- 1.2 394 7	D		6	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Worcest er East Middle School	- 0.3 709 5	D		7	0	No_data	No_data	No_data	C	1	3	com plet e			
51 88	Worcest er East Middle School	N\ A	A		12	0	No_data	No_data	No_data	A	0	3	com plet e			
51 88	Burncoat Middle School	N\ A	D		No_data		No_data	No_data	No_data	No_data		3	inco mpl ete			
51	Oak	N\ A	D		18	1	No_data	No_data	No_data	D	0	3	com			

88		Middle School	A															plet e
51 88		Oak Middle School	N\ A	C		18	1	No_data		No_data		No_data		C	1	3		com plet e
51 88		Oak Middle School	N\ A	C		7	0	No_data		No_data		No_data		No_data		3		inco mpl ete
51 88		Worcest er East Middle School	N\ A	A		6	0	No_data		No_data		No_data		No_data		3		inco mpl ete
51 88		Oak Middle School	N\ A	C		18	1	No_data		No_data		No_data		C	1	3		com plet e
51 88		Burncoat Middle School	N\ A	D		3	0	No_data		No_data		No_data		C	1	3		com plet e

### Excluded Data (Incompleted)

Se qu enc e	Te ac he r	School	Us er ID	N a m e	St ud en t IR T	Pre-test		Scaffold 1		Scaffold 2		Scaffold 3		Scaffold 4		Post-test		# in S e q .	Com plet enes s
						Answer	Co rre ct ne ss	Answer	Co rre ct ne ss	Answer	Corr ect nes s	Answer	Corr ectn ess	Answer	Corr ectn ess	Answer	Corr ectn ess		
51 72		Forest Grove Middle School			2.2 22 58 4	120	54	1	B. s*6	1	D. 40	1	No_data		No_dat a		5	inco mpl ete	
51 72		Forest Grove Middle School			1.3 33 32 8	18	No_data		No_data		No_data		No_data		No_dat a		5	inco mpl ete	
51 72		Burnco at Middle School			- 0.6 04 64	108	No_data		No_data		No_data		No_data		No_dat a		5	inco mpl ete	
51		Worces			-	18	No_answer	0	No_data		No_data		No_data		No_dat		5	inco	

72		ter East Middle School		1.0 42 99												a			mpl ete
51 72		Worces ter East Middle School	N\ A	120	No_data		No_data		No_data		No_data		No_data		No_data		No_dat a	5	inco mpl ete
51 72		Burnco at Middle School	N\ A	No_answ er	No_answer	0	No_data		No_data		No_data		No_data		No_data		No_dat a	5	inco mpl ete
51 72		Oak Middle School	N\ A	108	No_data		No_data		No_data		No_data		No_data		No_data		No_dat a	5	inco mpl ete
51 72		Worces ter East Middle School	N\ A	120	C. s/6	0	B. 26	0	54	1	No_data		No_data		No_data		No_dat a	5	inco mpl ete
51 72		Worces ter Arts Magnet	N\ A	20	No_answer	0	B. s*6	1	D. 40	1	No_data		No_data		No_data		No_dat a	5	inco mpl ete

51 73	Worces ter East Middle School	- 1.2 24 54	Figures 1 and 4		A. 2 square inches	0	No_data		No_data		No_data		No_dat a	4	inco mpl ete
51 73	Worces ter Arts Magnet	N\ A	Figures 1 and 4	1	40	1	D. 5 square inches	0	No_data		No_data		No_dat a	4	inco mpl ete
51 73	Worces ter East Middle School	- 0.9 40 83	Figures 1 and 2		19	0	A. 2 square inches	0	No_data		No_data		No_dat a	4	inco mpl ete
51 73	Forest Grove Middle School	0.9 56 55 9	Figures 1 and 4		B. 3 square inches	1	No_data		No_data		No_data		No_dat a	4	inco mpl ete
51 73	Forest Grove Middle School	- 0.0 54 3	Figures 1 and 4		No_answer	0	B. 3 square inches	1	No_data		No_data		No_dat a	4	inco mpl ete
51 73	Worces ter East	N\ A	Figures 1 and 2		14	0	D. 5 square inches	0	No_data		No_data		No_dat a	4	inco mpl





51 74	Forest Grove Middle School	3.1 10 67 8	314	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete
51 74	Forest Grove Middle School	0.3 67 48 5	31.4	5 feet	0	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete
51 74	Worces ter East Middle School	N\ A	No_answ er	No_answer	0	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete
51 74	Worces ter Arts Magnet	N\ A	31.4	20	1	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete
51 74	Worces ter Arts Magnet	N\ A	31.4	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete
51 74	Worces ter Arts Magnet	N\ A	31.4	20	1	No_data	No_data	No_data	No_data	No_data	No_data	No_data	5	inco mpl ete

51 74	Worcester Arts Magnet	N\ A	314		B. 30 inches	1	B. The diameter should be twice the radius.	1	314	0	No_data	No_data		5	incomplete
51 76	Worcester Arts Magnet	N\ A	Straight		C	0	No_data		No_data		No_data	No_data		4	incomplete
51 77	Forest Grove Middle School	1.3 32 93 7	25		B. 1/3 of 800	1	150	1	No_data		No_data	No_data		4	incomplete
51 77	Forest Grove Middle School	1.3 63 23 2	25		B. 1/3 of 800	1	150	1	No_data		No_data	No_data		4	incomplete
51 77	Forest Grove Middle School	1.3 33 32 9	25		125	0	B. 1/3 of 800	1	No_data		No_data	No_data		4	incomplete
51	Forest	1.3	25		D. 1/3 of 900	0	150	1	No_data		No_data	No_data		4	incomplete

77		Grove	33											a			mpl
		Middle	33														ete
		School	3														
51		Forest	0.3														
77		Grove	25	15	10	0	No_data		No_data		No_data			No_dat		4	inco
		Middle	31											a			mpl
		School	4														ete
51		Forest	1.3														
77		Grove	09	25	150	1	B. 1/3 of 800	1	No_data		No_data			No_dat		4	inco
		Middle	46											a			mpl
		School	6														ete
51		Forest	2.2														
77		Grove	19	25	D. 1/3 of 900	0	150	1	No_data		No_data			No_dat		4	inco
		Middle	66											a			mpl
		School	6														ete
51		Forest	1.6														
77		Grove	60	25	150	1	B. 1/3 of 800	1	No_data		No_data			No_dat		4	inco
		Middle	47											a			mpl
		School															ete
51		Forest	1.3														
77		Grove	28	25	60	0	B. 1/3 of 800	1	No_data		No_data			No_dat		4	inco
														a			mpl



		School	3														
51		Forest	1.3														
77		Grove	33	25		150	1	C. 1/4 of 900	0	No_data		No_data		No_data		4	incomplete
		Middle	33														
		School															
51		Forest	1.8														
77		Grove	16	25		150	1	B. 1/3 of 800	1	No_data		No_data		No_data		4	incomplete
		Middle	61														
		School	8														
51		Forest	0.2														
77		Grove	42	25		C. 1/4 of 900	0	150	1	No_data		No_data		No_data		4	incomplete
		Middle	43														
		School	8														
51		Forest	-														
77		Grove	0.4	15		A. 1/4 of 800	0	150	1	No_data		No_data		No_data		4	incomplete
		Middle	56														
		School	33														
51		Forest	2.2														
77		Grove	25	25		150	1	B. 1/3 of 800	1	No_data		No_data		No_data		4	incomplete
		Middle	92														
		School	5														



78		Grove Middle School	45298										a			mpl ete
5178		Forest Grove Middle School	2.225925	220	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data		4	incomplete
5178		Forest Grove Middle School	2.22227	40	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data	No_data		4	incomplete
5180		Forest Grove Middle School	-0.54189	C. Right	B. Acute and scalene triangle	0	No_data	No_data	No_data	No_data	No_data	No_data	No_data		6	incomplete
5180		Worcester East Middle School	2.32099	A. Equilateral	D. Obtuse and scalene triangle	1	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	No_data	No_data	No_data		6	incomplete
5180		Worcester East Middle School	-0.5	A. Equilateral	D. Obtuse and scalene triangle	1	D. They are both scalene triangles.	0	No_data	No_data	No_data	No_data	No_data		6	incomplete

		Middle School	9255	al		triangle		triangles.								ete
5180		Forest Grove Middle School	0.44451	A. Equilateral		B. Acute and scalene triangle	0	No_data		No_data		No_data		No_data		incomplete
5180		Forest Grove Middle School	2.2227	A. Equilateral		D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	No_data		No_data		No_data		incomplete
5180		Worcester East Middle School	-1.7104	A. Equilateral		C. Obtuse and equilateral triangle	0	No_data		No_data		No_data		No_data		incomplete
5180		Worcester East Middle School	0.75483	C. Right		A. Acute and equilateral triangle	0	No_data		No_data		No_data		No_data		incomplete
5180		Oak Middle School	N\A	A. Equilateral		B. Acute and scalene triangle	0	No_data		No_data		No_data		No_data		incomplete



51 80	Worcester Arts Magnet	N\ A	A. Equilateral		C. They are both right triangles.	0	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	No_data	No_data	6	incomplete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		D. They are both scalene triangles.	0	D. Obtuse and scalene triangle	1	No_data		No_data	No_data	6	incomplete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. They are both isosceles triangles.	0	B. They are both isosceles triangles.	1	D. They are both scalene triangles.	0	B. Acute and scalene triangle	0	6	incomplete
51 80	Worcester Arts Magnet	N\ A	A. Equilateral		B. Acute and scalene triangle	0	No_answer	0	B. They are both obtuse triangles.	1	No_data	No_data	6	incomplete
51 81	Worcester East Middle School	2.4 65 80 6	A. Equilateral Triangle		C. Right Isosceles Triangle	0	A. Equilateral Triangle	0	D. Trapezoid	0	No_data	No_data	5	incomplete
51 81	Worcester East Middle School	N\ A	C. Right Isosceles Triangle		B. Rhombus	1	No_answer	0	A. Equilateral Triangle	1	No_data	No_data	5	incomplete
51	Worcester	N\ A	A.		No_data		No_data		No_data		No_data	No_data	5	incomplete





		School														
51		Forest	-													
85		Grove	0.4	A	C	1	C.	1	A	0	No_data	No_data		6	incomplete	
		Middle	44													
		School	44													
51		Forest	-													
85		Grove	0.4	D	No_data		No_data		No_data		No_data	No_data		6	incomplete	
		Middle	32													
		School	24													
51		Forest	0.9													
85		Grove	06	A	No_data		No_data		No_data		No_data	No_data		6	incomplete	
		Middle	18													
		School	1													
51		Forest	1.3													
85		Grove	68	A	No_data		No_data		No_data		No_data	No_data		6	incomplete	
		Middle	48													
		School	3													
51		Worces	-													
85		ter East	1.1	C	B	0	A.	0	D	0	No_data	No_data		6	incomplete	
		Middle	30													
		School	85													





				23								
5172	Measurement		Worcester East Middle School	- 1.7520 38	1	0	0	0		0	0	5
5172	Measurement		Burncoat Middle School	- 1.4416 91	0	0	1	0		0	0	5
5172	Measurement		Burncoat Middle School	- 1.4178 62	0	1	1	0		0	-1	5
5172	Measurement		Burncoat Middle School	- 1.3964 34	0	0	0	0		0	0	5
5172	Measurement		Forest Grove Middle School	- 1.3333	0	1	1	1		0	0	5

				29								
5172	Measurement		Worcester East Middle School	- 1.2245 36	0	1	0	1		1	0	5
5172	Measurement		Burncoat Middle School	- 1.1146 43	0	1	0	0		0	0	5
5172	Measurement		Worcester East Middle School	- 0.9408 28	0	0	1	1		0	-1	5
5172	Measurement		Burncoat Middle School	- 0.6966 25	0	0	1	1		0	-1	5
5172	Measurement		Burncoat Middle School	- 0.5804	0	1	1	0		0	0	5



				36								
5172	Measurement		Burncoat Middle School	- 0.5795 67	0	1	1	1		0	0	5
5172	Measurement		Burncoat Middle School	- 0.4768 83	0	0	0	0		1	1	5
5172	Measurement		Forest Grove Middle School	- 0.4627 37	1	0	1	0		1	0	5
5172	Measurement		Forest Grove Middle School	- 0.4563 29	1	1	1	1		1	0	5
5172	Measurement		Forest Grove Middle School	- 0.4561	1	1	1	1		1	0	5

				94								
5172	Measurement		Forest Grove Middle School	- 0.4525 12	0	0	0	0		0	0	5
5172	Measurement		Forest Grove Middle School	- 0.4432 5	1	0	1	0		0	0	5
5172	Measurement		Burncoat Middle School	- 0.3930 36	0	0	0	1		1	0	5
5172	Measurement		Worcester East Middle School	- 0.3709 47	0	1	0	0		0	0	5
5172	Measurement		Burncoat Middle School	- 0.3597	0	1	0	1		0	0	5

				39								
5172	Measurement		Burncoat Middle School	- 0.2763 5	0	1	0	0		0	0	5
5172	Measurement		Forest Grove Middle School	0.0412 52	0	1	0	0		0	0	5
5172	Measurement		Burncoat Middle School	0.0526 32	0	0	1	0		0	0	5
5172	Measurement		Forest Grove Middle School	0.0778 69	1	1	1	1		0	0	5
5172	Measurement		Burncoat Middle School	0.0849 43	0	1	1	1		0	0	5
5172	Measurement		Burncoat Middle School	0.1175 39	0	0	1	1		0	0	5
5172	Measurement		Worcester East	0.1734	1	1	1	1		0	0	5

	ment		Middle School	46								
5172	Measure ment		Burncoat Middle School	0.2078 89	0	1	0	1		0	-1	5
5172	Measure ment		Forest Grove Middle School	0.3253 14	0	0	1	0		0	0	5
5172	Measure ment		Burncoat Middle School	0.3336 82	0	1	0	1		0	0	5
5172	Measure ment		Burncoat Middle School	0.3834 26	0	0	0	0		0	0	5
5172	Measure ment		Forest Grove Middle School	0.4234 35	0	0	1	0		0	-1	5
5172	Measure ment		Burncoat Middle School	0.4300 68	0	1	1	1		0	0	5
5172	Measure ment		Burncoat Middle School	0.4428 55	0	0	1	1		0	0	5

5172	Measure ment		Forest Grove Middle School	0.4444 47	0	1	1	0		0	0	5
5172	Measure ment		Forest Grove Middle School	0.4444 51	1	1	1	0		1	1	5
5172	Measure ment		Forest Grove Middle School	0.4545 53	0	1	1	1		0	0	5
5172	Measure ment		Forest Grove Middle School	0.4545 53	0	1	1	0		0	0	5
5172	Measure ment		Forest Grove Middle School	0.4552 62	0	1	1	1		0	0	5
5172	Measure ment		Burncoat Middle School	0.4563 13	1	1	1	1		1	0	5
5172	Measure ment		Burncoat Middle School	0.4575 66	0	1	1	0		0	0	5
5172	Measure		Burncoat Middle	0.5194	0	1	0	0		1	0	5

	ment		School	28								
5172	Measure ment		Burncoat Middle School	0.5245 61	1	1	1	1		1	0	5
5172	Measure ment		Burncoat Middle School	0.6962 13	0	1	1	1		0	0	5
5172	Measure ment		Forest Grove Middle School	0.8060 47	0	1	1	1		0	1	5
5172	Measure ment		Forest Grove Middle School	0.9565 59	0	1	1	1		0	0	5
5172	Measure ment		Forest Grove Middle School	0.9824 87	0	1	0	1		0	0	5
5172	Measure ment		Forest Grove Middle School	1.2238 09	0	1	1	1		0	0	5
5172	Measure ment		Burncoat Middle School	1.2827 41	0	1	1	1		1	-1	5

5172	Measure ment		Forest Grove Middle School		1.3282 23	0	1	1	1		1	0	5
5172	Measure ment		Forest Grove Middle School		1.3330 45	0	1	1	1		0	0	5
5172	Measure ment		Forest Grove Middle School		1.3332 11	0	1	1	1		1	0	5
5172	Measure ment		Forest Grove Middle School		1.3333 29	1	1	1	1		1	-1	5
5172	Measure ment		Forest Grove Middle School		1.3333 3	1	1	1	1		1	1	5
5172	Measure ment		Forest Grove Middle School		1.3333 32	0	1	0	1		0	-1	5
5172	Measure ment		Forest Grove Middle School		1.3452 98	0	1	1	1		1	-1	5
5172	Measure		Forest Grove		1.3684	0	1	1	1		1	0	5

	ment		Middle School	83								
5172	Measure ment		Forest Grove Middle School	1.5319 98	0	1	1	1		1	0	5
5172	Measure ment		Forest Grove Middle School	1.6604 7	0	1	1	1		0	0	5
5172	Measure ment		Forest Grove Middle School	1.6944 82	1	1	1	0		1	0	5
5172	Measure ment		Forest Grove Middle School	1.8166 18	1	1	1	1		1	0	5
5172	Measure ment		Forest Grove Middle School	2.0436 77	0	1	0	0		0	-1	5
5172	Measure ment		Forest Grove Middle School	2.2185 53	0	1	1	0		0	0	5
5172	Measure ment		Forest Grove Middle School	2.2196 66	1	1	1	1		1	-1	5



5172	Measurement		Forest Grove Middle School		2.2222 27	1	1	1	0		1	0	5
5172	Measurement		Forest Grove Middle School		2.2223 58	0	1	1	1		1	-1	5
5172	Measurement		Forest Grove Middle School		2.2259 25	1	1	0	1		0	1	5
5172	Measurement		Forest Grove Middle School		3.1106 78	1	1	1	1		1	0	5
5172	Measurement		Burncoat Middle School		N/A	0	0	0	0		0	0	5
5172	Measurement		Worcester Arts Magnet		N/A	1	1	1	1		1	0	5
5172	Measurement		Worcester Arts Magnet		N/A	1	1	1	1		1	0	5
5172	Measurement		Worcester Arts		N/A	1	1	0	1		1	0	5

	ment		Magnet									
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	1	1		0	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	1	1		1	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	0	1	1		0	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	0	1		1	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	1	0		0	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	1	1		0	0	5
5172	Measure ment		Worcester Arts Magnet	N\A	0	1	1	1		0	0	5

5172	Measure ment		Worcester Arts Magnet		N\A	0	1	1	1		0	0	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	1	1		1	-1	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	1	1		1	1	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	1	1		1	0	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	1	1		1	0	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	0	1		0	1	5
5172	Measure ment		Worcester Arts Magnet		N\A	1	1	1	1		1	0	5
5172	Measure		Oak Middle School		N\A	1	0	0	0		0	0	5

	ment											
5172	Measurement		Oak Middle School	N\A	0	1	1	1		0	0	5
5172	Measurement		Oak Middle School	N\A	1	1	1	0		0	0	5
5172	Measurement		Oak Middle School	N\A	0	0	0	1		0	-1	5
5172	Measurement		Oak Middle School	N\A	1	1	1	1		1	0	5
5172	Measurement		Worcester East Middle School	N\A	0	0	0	0		1	-1	5
5172	Measurement		Worcester East Middle School	N\A	1	0	0	0		0	1	5
5173	Measurement		Worcester East Middle School	- 1.7520	0	0	0			0	0	4

				38								
5173	Measurement		Worcester East Middle School	- 0.8676 52	0	0	0			0	1	4
5173	Measurement		Forest Grove Middle School	- 0.4563 29	1	1	1			1	0	4
5173	Measurement		Forest Grove Middle School	- 0.4433 61	1	1	1			1	0	4
5173	Measurement		Forest Grove Middle School	0.2424 38	0	1	0			0	-1	4
5173	Measurement		Forest Grove Middle School	0.3253 14	0	1	0			0	0	4
5173	Measurement		Forest Grove	0.3684	1	1	1			1	0	4

	ment		Middle School		66								
5173	Measure ment		Forest Grove		0.4444	1	1	1			1	0	4
			Middle School		51								
5173	Measure ment		Forest Grove		1.3052	1	1	1			1	0	4
			Middle School		48								
5173	Measure ment		Forest Grove		1.3282	1	0	1			1	0	4
			Middle School		23								
5173	Measure ment		Forest Grove		1.3329	1	1	0			1	0	4
			Middle School		37								
5173	Measure ment		Forest Grove		1.3332	1	0	1			1	0	4
			Middle School		11								
5173	Measure ment		Forest Grove		1.3333	1	1	1			1	0	4
			Middle School		3								
5173	Measure ment		Forest Grove		1.3333	1	1	1			1	1	4
			Middle School		33								

5173	Measure ment		Forest Grove Middle School		1.3333 35	1	1	1			1	1	4
5173	Measure ment		Forest Grove Middle School		1.3452 98	1	1	1			1	0	4
5173	Measure ment		Forest Grove Middle School		1.3632 32	1	1	1			1	0	4
5173	Measure ment		Forest Grove Middle School		1.3684 83	1	1	1			1	0	4
5173	Measure ment		Forest Grove Middle School		1.5319 98	1	1	1			1	0	4
5173	Measure ment		Forest Grove Middle School		1.6604 7	1	1	1			1	-1	4
5173	Measure ment		Forest Grove Middle School		1.6944 82	1	1	1			1	-1	4
5173	Measure		Forest Grove		1.8166	1	1	1			1	1	4

	ment		Middle School		18								
5173	Measure ment		Forest Grove		2.0436								
			Middle School		77	1	1	0			1	0	4
5173	Measure ment		Forest Grove		2.2185								
			Middle School		53	1	1	1			1	1	4
5173	Measure ment		Forest Grove		2.2196								
			Middle School		66	1	1	1			1	0	4
5173	Measure ment		Forest Grove		2.2222								
			Middle School		27	1	0	1			1	0	4
5173	Measure ment		Forest Grove		2.2223								
			Middle School		58	1	1	1			1	0	4
5173	Measure ment		Forest Grove		2.2224								
			Middle School		44	1	1	1			1	0	4
5173	Measure ment		Forest Grove		2.2259								
			Middle School		25	1	0	1			1	-1	4



5173	Measurement		Forest Grove Middle School		3.1106 78	1	0	1			1	0	4
5173	Measurement		Worcester Arts Magnet		N/A	1	0	1			1	0	4
5173	Measurement		Worcester Arts Magnet		N/A	0	0	1			1	0	4
5173	Measurement		Worcester Arts Magnet		N/A	1	0	1			1	-1	4
5173	Measurement		Worcester Arts Magnet		N/A	1	1	1			1	-1	4
5173	Measurement		Worcester Arts Magnet		N/A	1	0	1			1	0	4
5173	Measurement		Worcester Arts Magnet		N/A	1	1	1			1	0	4
5173	Measurement		Worcester Arts		N/A	1	0	1			0	0	4

	ment		Magnet									
5173	Measure ment		Worcester Arts Magnet	N\A	1	0	1			1	1	4
5173	Measure ment		Oak Middle School	N\A	1	1	1			1	0	4
5173	Measure ment		Oak Middle School	N\A	1	0	0			0	0	4
5173	Measure ment		Worcester East Middle School	N\A	1	1	0			0	0	4
5174	Measure ment		Worcester East Middle School	- 0.8676 52	0	0	0	0		1	0	5
5174	Measure ment		Forest Grove Middle School	- 0.4563 29	1	1	1	1		1	0	5

5174	Measure ment		Forest Grove Middle School	0.4444 51	1	0	1	0		1	0	5
5174	Measure ment		Forest Grove Middle School	1.3282 23	0	1	1	1		1	0	5
5174	Measure ment		Forest Grove Middle School	1.3332 11	0	1	1	1		1	0	5
5174	Measure ment		Forest Grove Middle School	1.3333 3	1	0	1	0		0	0	5
5174	Measure ment		Forest Grove Middle School	1.3452 98	0	0	1	1		0	-1	5
5174	Measure ment		Forest Grove Middle School	1.3684 83	1	1	1	1		1	-1	5
5174	Measure ment		Forest Grove Middle School	1.5319 98	1	1	1	0		1	0	5
5174	Measure		Forest Grove	1.6604	1	0	1	1		1	0	5

	ment		Middle School	7								
5174	Measure ment		Forest Grove Middle School	1.6944 82	0	0	1	1		0	0	5
5174	Measure ment		Forest Grove Middle School	1.8166 18	1	1	1	1		1	0	5
5174	Measure ment		Forest Grove Middle School	2.2196 66	1	1	1	0		1	0	5
5174	Measure ment		Forest Grove Middle School	2.2222 27	1	1	1	1		1	0	5
5174	Measure ment		Forest Grove Middle School	2.2223 58	1	0	1	1		1	0	5
5174	Measure ment		Forest Grove Middle School	2.2259 25	1	1	1	0		1	-1	5
5174	Measure ment		Worcester Arts Magnet	N/A	0	1	1	0		0	0	5

5174	Measure ment		Worcester Arts Magnet		N\A	0	1	0	1		0	0	5
5174	Measure ment		Oak Middle School		N\A	0	0	1	1		1	0	5
5174	Measure ment		Oak Middle School		N\A	1	0	0	0		1	0	5
5174	Measure ment		Worcester East Middle School		N\A	0	0	0	0		0	0	5
5176	Measure ment		Worcester East Middle School		- 1.7520 38	0	0	0			0	0	4
5176	Measure ment		Worcester East Middle School		- 1.2245 36	1	0	1			0	0	4
5176	Measure		Worcester East		-	1	1	1			0	0	4

	ment		Middle School		0.9408								
					28								
5176	Measure ment		Forest Grove Middle School		- 0.4563 29	1	0	1			1	0	4
5176	Measure ment		Forest Grove Middle School		0.4444 51	1	0	1			1	0	4
5176	Measure ment		Forest Grove Middle School		0.4464 82	1	1	1			1	0	4
5176	Measure ment		Forest Grove Middle School		0.4545 53	1	0	1			0	0	4
5176	Measure ment		Forest Grove Middle School		1.3094 66	1	1	1			1	-1	4
5176	Measure ment		Forest Grove Middle School		1.3282 23	1	0	1			1	0	4

5176	Measure ment		Forest Grove Middle School	1.3329 37	1	1	1			1	0	4
5176	Measure ment		Forest Grove Middle School	1.3332 11	1	0	1			1	0	4
5176	Measure ment		Forest Grove Middle School	1.3333 3	1	0	1			1	-1	4
5176	Measure ment		Forest Grove Middle School	1.3333 32	1	1	0			1	0	4
5176	Measure ment		Forest Grove Middle School	1.3452 98	1	1	0			1	0	4
5176	Measure ment		Forest Grove Middle School	1.3684 83	1	0	1			1	1	4
5176	Measure ment		Forest Grove Middle School	1.5319 98	0	0	1			1	-1	4
5176	Measure		Forest Grove	1.6604	1	0	1			0	0	4

	ment		Middle School	7								
5176	Measure ment		Forest Grove	1.6944	1	1	0			1	-1	4
			Middle School	82								
5176	Measure ment		Forest Grove	1.8166	1	0	1			1	0	4
			Middle School	18								
5176	Measure ment		Forest Grove	2.2196	1	0	1			1	0	4
			Middle School	66								
5176	Measure ment		Forest Grove	2.2222	1	0	1			1	0	4
			Middle School	27								
5176	Measure ment		Forest Grove	2.2223	1	0	1			1	0	4
			Middle School	58								
5176	Measure ment		Forest Grove	2.2259	1	0	1			1	0	4
			Middle School	25								
5176	Measure ment		Forest Grove	2.2273	1	1	1			1	-1	4
			Middle School	33								



5176	Measurement		Forest Grove Middle School		3.1106 78	1	0	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	0	0	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	1	1	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	1	1	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	1	1	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	1	0	1			1	0	4
5176	Measurement		Worcester Arts Magnet		N/A	1	0	1			1	0	4
5176	Measurement		Worcester Arts		N/A	1	1	1			1	0	4

	ment		Magnet									
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	0	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	0	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	1	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	0	1			1	0	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	0	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	0	4
5176	Measure ment		Worcester Arts Magnet	N\A	1	1	1			1	-1	4

5176	Measure ment		Worcester Arts Magnet		N\A	1	1	1			1	0	4
5176	Measure ment		Worcester Arts Magnet		N\A	1	1	1			1	0	4
5176	Measure ment		Oak Middle School		N\A	1	1	1			1	0	4
5176	Measure ment		Worcester East Middle School		N\A	0	0	0			0	0	4
5176	Measure ment		Worcester East Middle School		N\A	1	1	1			1	1	4
5178	Measure ment		Forest Grove Middle School		- 0.4563 29	0	1	1			0	0	4
5178	Measure ment		Worcester East Middle School		0.9033 7	0	0	1			1	0	4

5178	Measurement		Forest Grove Middle School		1.3282 23	0	1	1			0	0	4
5178	Measurement		Forest Grove Middle School		1.3332 11	0	1	1			1	1	4
5178	Measurement		Forest Grove Middle School		1.6604 7	1	1	1			1	1	4
5178	Measurement		Oak Middle School		N\A	1	1	0			1	0	4
5180	Geometry		Worcester East Middle School		- 1.8332 37	0	0	0	0	0	0	-1	6
5180	Geometry		Worcester East Middle School		- 1.7520 38	0	0	1	0	0	0	0	6
5180	Geometry		Worcester East		-	0	0	0	1	0	1	0	6

	y		Middle School		1.4226								
					45								
5180	Geometr y		Worcester East Middle School		- 1.4226 45	1	0	0	0	1	0	0	6
5180	Geometr y		Forest Grove Middle School		- 1.3271 74	1	0	0	1	0	1	0	6
5180	Geometr y		Worcester East Middle School		- 1.2245 36	0	0	0	0	0	1	0	6
5180	Geometr y		Worcester East Middle School		- 1.1308 46	1	0	0	0	1	0	1	6
5180	Geometr		Worcester East		-	1	1	1	0	1	0	1	6

	y		Middle School		1.1276								
					44								
5180	Geometr y		Worcester East Middle School		- 0.9716 41	0	0	0	1	0	1	1	6
5180	Geometr y		Forest Grove Middle School		- 0.7558 14	0	0	1	0	0	0	0	6
5180	Geometr y		Forest Grove Middle School		- 0.4563 29	1	1	0	1	0	1	0	6
5180	Geometr y		Worcester East Middle School		- 0.4027 86	1	0	0	0	0	0	0	6
5180	Geometr		Worcester East		-	0	0	0	1	0	0	0	6

	y		Middle School		0.3838								
					38								
5180	Geometr y		Worcester East Middle School		- 0.3556 35	1	1	0	0	1	1	0	6
5180	Geometr y		Forest Grove Middle School		- 0.3269 96	1	0	0	1	0	1	0	6
5180	Geometr y		Worcester East Middle School		- 0.1841 07	1	0	0	0	0	1	0	6
5180	Geometr y		Forest Grove Middle School		0.0412 52	1	1	1	1	0	1	0	6
5180	Geometr y		Worcester East Middle School		0.3088 05	1	0	1	1	1	1	0	6

5180	Geometr y		Forest Grove Middle School		0.3984 49	1	0	0	1	0	1	1	6
5180	Geometr y		Forest Grove Middle School		0.4444 47	1	0	1	0	0	0	0	6
5180	Geometr y		Forest Grove Middle School		0.4464 82	1	1	1	1	0	1	0	6
5180	Geometr y		Worcester East Middle School		0.9033 7	0	1	1	0	0	0	1	6
5180	Geometr y		Forest Grove Middle School		0.9061 81	1	1	0	1	1	1	0	6
5180	Geometr y		Worcester East Middle School		1.3218 64	0	1	1	1	1	1	0	6
5180	Geometr y		Forest Grove Middle School		1.3282 23	1	1	0	0	0	1	0	6
5180	Geometr		Forest Grove		1.3330	1	1	0	0	0	0	0	6



	y		Middle School		45								
5180	Geometr		Forest Grove		1.3332								
	y		Middle School		11	1	1	1	1	0	1	1	6
5180	Geometr		Forest Grove		1.3333								
	y		Middle School		29	1	1	0	1	1	1	-1	6
5180	Geometr		Forest Grove		1.3333								
	y		Middle School		3	1	1	0	1	1	1	1	6
5180	Geometr		Forest Grove		1.3333								
	y		Middle School		33	0	0	0	0	1	1	0	6
5180	Geometr		Forest Grove		1.3452								
	y		Middle School		98	1	1	1	0	1	1	1	6
5180	Geometr		Forest Grove		1.3452								
	y		Middle School		98	1	0	1	1	1	1	1	6
5180	Geometr		Forest Grove		1.3684								
	y		Middle School		83	1	1	1	1	1	1	1	6

5180	Geometr y		Forest Grove Middle School		1.3684 83	1	1	0	0	0	1	0	6
5180	Geometr y		Forest Grove Middle School		1.5319 98	1	1	1	1	1	1	0	6
5180	Geometr y		Forest Grove Middle School		1.5319 98	1	1	1	0	1	1	0	6
5180	Geometr y		Forest Grove Middle School		1.6604 7	1	1	0	1	1	1	0	6
5180	Geometr y		Forest Grove Middle School		1.6944 82	1	1	1	1	1	1	0	6
5180	Geometr y		Forest Grove Middle School		1.8166 18	1	1	1	1	1	1	-1	6
5180	Geometr y		Forest Grove Middle School		2.0436 77	0	1	1	1	0	0	-1	6
5180	Geometr		Forest Grove		2.2196	1	1	1	1	1	1	0	6

	y		Middle School		66								
5180	Geometr		Forest Grove		2.2222								
	y		Middle School		27	1	1	1	1	1	1	0	6
5180	Geometr		Forest Grove		2.2223								
	y		Middle School		58	1	1	0	1	1	1	0	6
5180	Geometr		Forest Grove		2.2259								
	y		Middle School		25	1	0	1	1	1	1	0	6
5180	Geometr		Forest Grove		2.2259								
	y		Middle School		25	1	1	1	1	1	1	0	6
5180	Geometr		Worcester East		2.4658								
	y		Middle School		06	0	0	0	0	0	0	1	6
5180	Geometr		Worcester Arts		N/A								
	y		Magnet			0	1	1	1	1	1	1	6
5180	Geometr		Worcester Arts		N/A								
	y		Magnet			0	0	1	0	0	1	0	6

5180	Geometr y		Worcester Arts Magnet		N\A	0	1	1	0	0	0	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	1	1	0	1	1	0	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	0	0	1	1	1	0	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	1	1	0	1	1	1	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	0	0	0	1	0	0	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	0	0	0	0	0	0	0	6
5180	Geometr y		Worcester Arts Magnet		N\A	1	1	0	1	0	0	0	6
5180	Geometr		Worcester Arts		N\A	1	1	1	1	1	0	0	6

	y		Magnet									
5180	Geometr y		Worcester Arts Magnet	N\A	0	1	1	1	1	1	0	6
5180	Geometr y		Worcester Arts Magnet	N\A	0	1	0	0	0	0	0	6
5180	Geometr y		Worcester Arts Magnet	N\A	0	1	1	1	0	0	0	6
5180	Geometr y		Worcester Arts Magnet	N\A	1	1	0	1	0	0	1	6
5180	Geometr y		Worcester Arts Magnet	N\A	0	1	1	1	1	1	0	6
5180	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1	0	1	0	6
5180	Geometr y		Oak Middle School	N\A	1	1	1	1	1	1	-1	6

5180	Geometr y		Oak Middle School	N\A	1	0	0	1	1	1	0	6
5180	Geometr y		Worcester East Middle School	N\A	0	1	0	0	0	0	-1	6
5180	Geometr y		Worcester East Middle School	N\A	1	0	1	0	0	0	0	6
5180	Geometr y		Worcester East Middle School	N\A	0	1	0	1	1	0	0	6
5181	Geometr y		Worcester East Middle School	- 1.7520 38	0	0	1	0		1	1	5
5181	Geometr y		Worcester East Middle School	- 1.4226 45	1	1	1	1		1	-1	5
5181	Geometr		Worcester East	-	0	0	1	1		0	1	5

	y		Middle School		1.4226								
					45								
5181	Geometr y		Forest Grove Middle School		- 1.3271 74	0	1	1	1		1	0	5
5181	Geometr y		Worcester East Middle School		- 1.2245 36	0	1	0	1		1	0	5
5181	Geometr y		Worcester East Middle School		- 1.1308 46	0	1	1	1		1	0	5
5181	Geometr y		Worcester East Middle School		- 1.1276 44	1	1	1	1		0	1	5
5181	Geometr		Worcester East		-	1	1	1	1		1	0	5

	y		Middle School		0.9408								
					28								
5181	Geometr y		Forest Grove Middle School		- 0.7558 14	1	1	1	0		0	0	5
5181	Geometr y		Burncoat Middle School		- 0.4567 55	1	1	1	1		1	0	5
5181	Geometr y		Worcester East Middle School		- 0.4027 86	0	1	1	1		1	0	5
5181	Geometr y		Worcester East Middle School		- 0.3838 38	0	0	1	0		1	1	5
5181	Geometr		Worcester East		-	1	1	1	1		1	1	5



	y		Middle School		0.3556 35								
5181	Geometr y		Worcester East Middle School		0.3088 05	1	1	1	1		0	-1	5
5181	Geometr y		Worcester East Middle School		0.9033 7	0	1	0	0		0	-1	5
5181	Geometr y		Worcester East Middle School		1.3218 64	1	0	1	1		1	0	5
5181	Geometr y		Forest Grove Middle School		1.3452 98	1	1	1	1		1	0	5
5181	Geometr y		Forest Grove Middle School		1.5319 98	1	1	1	1		1	1	5
5181	Geometr y		Worcester Arts Magnet		N\A	1	1	1	1		0	0	5
5181	Geometr		Worcester Arts		N\A	0	0	1	1		1	0	5

	y		Magnet									
5181	Geometr y		Worcester Arts Magnet	N\A	0	1	1	0		1	1	5
5181	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1		1	1	5
5181	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1		1	1	5
5181	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1		1	0	5
5181	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1		1	0	5
5181	Geometr y		Worcester Arts Magnet	N\A	0	0	1	1		1	1	5
5181	Geometr y		Worcester Arts Magnet	N\A	1	1	1	1		1	1	5

5181	Geometr y		Oak Middle School	N\A	1	1	0	0		1	1	5
5181	Geometr y		Oak Middle School	N\A	0	1	0	1		0	-1	5
5181	Geometr y		Worcester East Middle School	N\A	1	1	1	1		0	0	5
5182	Geometr y		Worcester East Middle School	- 1.7520 38	0	1				0	0	3
5182	Geometr y		Worcester East Middle School	- 1.4226 45	0	0				0	0	3
5182	Geometr y		Worcester East Middle School	- 1.4226 45	0	1				1	0	3

5182	Geometr y		Forest Grove Middle School	- 1.3271 74	1	0				0	0	3
5182	Geometr y		Worcester East Middle School	- 1.2245 36	1	1				1	1	3
5182	Geometr y		Worcester East Middle School	- 1.1308 46	1	0				0	0	3
5182	Geometr y		Worcester East Middle School	- 1.1276 44	1	0				0	0	3
5182	Geometr y		Worcester East Middle School	- 0.9408 28	0	0				1	0	3

5182	Geometr y	Forest Grove Middle School	- 0.7558 14	1	0				1	0	3
5182	Geometr y	Forest Grove Middle School	- 0.4444 43	1	1				0	0	3
5182	Geometr y	Worcester East Middle School	- 0.3838 38	0	0				0	0	3
5182	Geometr y	Worcester East Middle School	- 0.3556 35	0	1				0	1	3
5182	Geometr y	Worcester East Middle School	0.3088 05	0	1				1	0	3
5182	Geometr	Forest Grove	0.4443	0	0				0	0	3

	y		Middle School		91								
5182	Geometr		Forest Grove		0.4444								
	y		Middle School		48	0	1				1	0	3
5182	Geometr		Forest Grove		0.4593								
	y		Middle School		65	1	1				1	0	3
5182	Geometr		Worcester East		0.9033								
	y		Middle School		7	1	0				0	-1	3
5182	Geometr		Worcester East		1.3218								
	y		Middle School		64	0	1				1	1	3
5182	Geometr		Forest Grove		2.2185								
	y		Middle School		53	1	1				1	1	3
5182	Geometr		Worcester Arts		N/A								
	y		Magnet			1	0				1	0	3
5182	Geometr		Worcester Arts		N/A								
	y		Magnet			1	0				0	0	3

5182	Geometr y		Worcester Arts Magnet		N\A	1	1					1	1	3
5182	Geometr y		Worcester Arts Magnet		N\A	1	1					0	1	3
5182	Geometr y		Worcester Arts Magnet		N\A	1	1					1	0	3
5182	Geometr y		Oak Middle School		N\A	1	1					1	-1	3
5182	Geometr y		Oak Middle School		N\A	0	0					0	0	3
5182	Geometr y		Worcester East Middle School		N\A	0	1					1	1	3
5182	Geometr y		Worcester East Middle School		N\A	0	1					0	0	3
5183	Geometr		Worcester East		-	0	0	0				0	0	4

	y		Middle School		1.7520								
					38								
5183	Geometr y		Worcester East Middle School		- 1.4226 45	1	0	0			0	0	4
5183	Geometr y		Worcester East Middle School		- 1.4226 45	1	1	1			0	0	4
5183	Geometr y		Worcester East Middle School		- 1.2245 36	1	1	1			0	0	4
5183	Geometr y		Worcester East Middle School		- 1.1308 46	0	0	1			1	0	4
5183	Geometr		Worcester East		-	1	1	0			0	0	4



	y		Middle School		1.0429								
					87								
5183	Geometr y		Worcester East Middle School		- 0.9408 28	1	1	1			1	0	4
5183	Geometr y		Forest Grove Middle School		- 0.7558 14	1	1	0			0	0	4
5183	Geometr y		Forest Grove Middle School		- 0.5806 23	0	1	0			1	-1	4
5183	Geometr y		Forest Grove Middle School		- 0.4563 29	0	1	0			0	0	4
5183	Geometr		Forest Grove		-	0	1	0			1	0	4

	y		Middle School		0.4525								
					12								
5183	Geometr y		Forest Grove Middle School		- 0.4322 43	0	1	1			1	0	4
5183	Geometr y		Worcester East Middle School		- 0.3838 38	1	0	1			0	0	4
5183	Geometr y		Forest Grove Middle School		0.4444 51	1	1	1			1	0	4
5183	Geometr y		Worcester East Middle School		0.9033 7	1	1	1			1	1	4
5183	Geometr y		Oak Middle School		1.1310 23	1	1	1			1	0	4
5183	Geometr		Forest Grove		1.3332	1	1	1			1	0	4

	y		Middle School		11								
5183	Geometr		Forest Grove		1.3333								
	y		Middle School		28	1	1	1			1	0	4
5183	Geometr		Forest Grove		1.3333								
	y		Middle School		3	1	1	1			1	0	4
5183	Geometr		Forest Grove		1.3684								
	y		Middle School		83	1	1	1			1	0	4
5183	Geometr		Forest Grove		1.3684								
	y		Middle School		83	1	1	1			1	0	4
5183	Geometr		Forest Grove		1.5319								
	y		Middle School		98	1	1	1			1	-1	4
5183	Geometr		Forest Grove		1.6604								
	y		Middle School		7	1	0	1			1	1	4
5183	Geometr		Forest Grove		1.6944								
	y		Middle School		82	1	1	1			1	0	4

5183	Geometr y		Forest Grove Middle School		2.2220 93	1	1	1			1	0	4
5183	Geometr y		Forest Grove Middle School		2.2222 27	1	1	1			1	0	4
5183	Geometr y		Forest Grove Middle School		2.2223 58	1	1	1			1	0	4
5183	Geometr y		Worcester Arts Magnet		N\A	1	1	0			0	0	4
5183	Geometr y		Worcester Arts Magnet		N\A	1	1	1			1	0	4
5183	Geometr y		Oak Middle School		N\A	1	1	1			1	0	4
5183	Geometr y		Oak Middle School		N\A	1	1	1			1	-1	4
5183	Geometr		Oak Middle School		N\A	1	0	1			1	0	4

	y											
5183	Geometr y		Worcester East Middle School	N\A	1	1	1			1	-1	4
5183	Geometr y		Worcester East Middle School	N\A	0	1	1			0	1	4
5184	Geometr y		Worcester East Middle School	- 1.7520 38	0	0				0	0	3
5184	Geometr y		Worcester East Middle School	- 1.4226 45	0	0				1	0	3
5184	Geometr y		Worcester East Middle School	- 1.4226 45	0	0				0	-1	3
5184	Geometr		Worcester East	-	0	1				1	0	3

	y		Middle School		1.2245								
					36								
5184	Geometr y		Worcester East Middle School		- 1.1308 46	0	1				1	1	3
5184	Geometr y		Worcester East Middle School		- 1.0429 87	1	0				0	0	3
5184	Geometr y		Worcester East Middle School		- 0.9408 28	1	1				0	0	3
5184	Geometr y		Burncoat Middle School		- 0.4567 55	1	1				1	0	3
5184	Geometr		Forest Grove		-	1	0				1	0	3

	y		Middle School		0.4563								
					29								
5184	Geometr y		Forest Grove Middle School		- 0.4563 29	1	1				1	0	3
5184	Geometr y		Forest Grove Middle School		- 0.4525 12	0	0				0	0	3
5184	Geometr y		Worcester East Middle School		- 0.3838 38	1	0				0	0	3
5184	Geometr y		Worcester East Middle School		- 0.3709 47	0	1				1	0	3
5184	Geometr		Forest Grove		0.0778	1	1				1	0	3

	y		Middle School		69								
5184	Geometr		Forest Grove		0.8060								
	y		Middle School		47	1	1				1	-1	3
5184	Geometr		Burncoat Middle		1.2827								
	y		School		41	1	1				1	0	3
5184	Geometr		Forest Grove		1.3332								
	y		Middle School		11	1	1				1	-1	3
5184	Geometr		Forest Grove		1.3333								
	y		Middle School		3	0	1				0	0	3
5184	Geometr		Forest Grove		1.3684								
	y		Middle School		83	1	1				1	0	3
5184	Geometr		Forest Grove		1.5319								
	y		Middle School		98	1	1				1	0	3
5184	Geometr		Forest Grove		1.5319								
	y		Middle School		98	1	0				1	-1	3



5184	Geometr y		Forest Grove Middle School		1.6604 7	1	1				1	0	3
5184	Geometr y		Forest Grove Middle School		1.8166 18	1	1				1	-1	3
5184	Geometr y		Forest Grove Middle School		3.1106 78	1	1				1	0	3
5184	Geometr y		Worcester Arts Magnet		N\A	1	1				1	0	3
5184	Geometr y		Oak Middle School		N\A	1	1				1	1	3
5184	Geometr y		Oak Middle School		N\A	1	1				1	0	3
5184	Geometr y		Oak Middle School		N\A	0	1				0	-1	3
5184	Geometr		Worcester East		N\A	1	0				1	1	3

	y		Middle School										
5185	Geometr y		Worcester East Middle School	- 1.7520 38	1	1	0	0	0	0	0	0	6
5185	Geometr y		Worcester East Middle School	- 1.4226 45	0	0	1	1	0	1	0	0	6
5185	Geometr y		Worcester East Middle School	- 1.4226 45	1	1	1	0	1	1	0	0	6
5185	Geometr y		Forest Grove Middle School	- 1.3271 74	0	0	1	1	1	0	0	0	6
5185	Geometr y		Forest Grove Middle School	- 1.2398	0	0	1	0	0	1	0	0	6

				83								
5185	Geometr y		Worcester East Middle School	- 1.2245 36	0	1	1	1	1	0	0	6
5185	Geometr y		Worcester East Middle School	- 1.2056 39	0	1	0	0	1	0	0	6
5185	Geometr y		Worcester East Middle School	- 1.0429 87	1	0	1	1	1	1	0	6
5185	Geometr y		Worcester East Middle School	- 0.9408 28	0	1	1	0	1	0	0	6
5185	Geometr y		Forest Grove Middle School	- 0.7558	1	0	1	1	0	0	0	6

				14									
5185	Geometr y		Forest Grove Middle School	- 0.5418 9	0	0	1	0	0	0	0	0	6
5185	Geometr y		Burncoat Middle School	- 0.4567 55	1	1	1	1	1	0	0	0	6
5185	Geometr y		Forest Grove Middle School	- 0.4563 29	0	1	1	1	1	1	0	0	6
5185	Geometr y		Worcester East Middle School	- 0.3838 38	0	1	1	0	0	0	0	0	6
5185	Geometr y		Worcester East Middle School	- 0.3709	0	0	0	1	1	0	-1	0	6

				47								
5185	Geometr y	Forest Grove Middle School		0.4443 91	1	1	1	1	0	0	0	6
5185	Geometr y	Forest Grove Middle School		0.4444 51	1	0	1	1	1	0	0	6
5185	Geometr y	Forest Grove Middle School		0.4545 53	1	1	1	1	1	1	0	6
5185	Geometr y	Forest Grove Middle School		0.4593 65	1	1	1	1	1	1	0	6
5185	Geometr y	Forest Grove Middle School		0.9565 59	1	1	1	1	1	1	-1	6
5185	Geometr y	Burncoat Middle School		1.2247 56	0	1	1	1	1	1	0	6
5185	Geometr y	Burncoat Middle School		1.2827 41	1	1	1	0	1	1	0	6

5185	Geometr y		Forest Grove Middle School		1.3332 11	1	1	0	1	1	1	0	6
5185	Geometr y		Forest Grove Middle School		1.3333 3	1	1	1	1	1	1	0	6
5185	Geometr y		Forest Grove Middle School		1.3333 33	1	1	1	1	1	1	0	6
5185	Geometr y		Forest Grove Middle School		1.3452 98	1	1	1	1	1	1	-1	6
5185	Geometr y		Forest Grove Middle School		1.3632 32	1	1	1	1	1	1	0	6
5185	Geometr y		Forest Grove Middle School		1.5319 98	1	1	1	1	0	1	-1	6
5185	Geometr y		Forest Grove Middle School		1.6604 7	0	1	1	0	1	0	-1	6
5185	Geometr		Forest Grove		1.6604	1	1	1	1	1	1	1	6

	y		Middle School		7								
5185	Geometr		Forest Grove		1.8166								
	y		Middle School		18	1	1	1	1	0	1	-1	6
5185	Geometr		Forest Grove		2.0436								
	y		Middle School		77	1	1	1	1	1	1	1	6
5185	Geometr		Forest Grove		2.2196								
	y		Middle School		66	1	1	1	1	1	1	0	6
5185	Geometr		Forest Grove		2.2222								
	y		Middle School		27	1	1	1	1	1	1	0	6
5185	Geometr		Forest Grove		2.2225								
	y		Middle School		84	1	1	1	1	1	1	0	6
5185	Geometr		Forest Grove		2.2259								
	y		Middle School		25	1	1	1	1	1	1	0	6
5185	Geometr		Oak Middle School		N/A	1	1	1	1	1	1	0	6

5185	Geometr y		Oak Middle School		N\A	1	1	1	1	1	1	0	6
5185	Geometr y		Oak Middle School		N\A	0	1	1	1	1	1	0	6
5185	Geometr y		Oak Middle School		N\A	0	1	0	1	0	0	0	6
5185	Geometr y		Worcester East Middle School		N\A	1	1	1	1	1	1	0	6
5187	Geometr y		Worcester East Middle School		- 1.7520 38	0	0	0			0	0	4
5187	Geometr y		Worcester East Middle School		- 1.2245 36	1	1	0			0	0	4
5187	Geometr		Worcester East		-	0	1	0			0	1	4



	y		Middle School		1.2056								
					39								
5187	Geometr y		Burncoat Middle School		- 1.1563 65	0	1	1			0	1	4
5187	Geometr y		Worcester East Middle School		- 1.0429 87	1	0	1			1	0	4
5187	Geometr y		Worcester East Middle School		- 0.9408 28	0	0	0			0	1	4
5187	Geometr y		Forest Grove Middle School		- 0.7558 14	0	0	0			1	0	4
5187	Geometr		Forest Grove		-	0	0	0			0	0	4

	y		Middle School		0.4563								
					29								
5187	Geometr y		Forest Grove Middle School		- 0.4525 12	0	0	1			1	0	4
5187	Geometr y		Worcester East Middle School		- 0.3838 38	0	0	0			0	-1	4
5187	Geometr y		Worcester East Middle School		- 0.3709 47	0	0	0			0	-1	4
5187	Geometr y		Burncoat Middle School		0.0526 32	1	0	1			1	0	4
5187	Geometr y		Forest Grove Middle School		0.4545 53	1	1	1			1	0	4

5187	Geometr y		Forest Grove Middle School		1.2238 09	0	0	0			0	0	4
5187	Geometr y		Burncoat Middle School		1.2827 41	1	1	0			1	0	4
5187	Geometr y		Forest Grove Middle School		1.3094 66	1	0	1			1	0	4
5187	Geometr y		Forest Grove Middle School		1.3330 45	0	1	1			0	0	4
5187	Geometr y		Forest Grove Middle School		1.3333 3	1	1	0			1	0	4
5187	Geometr y		Forest Grove Middle School		1.3333 33	1	0	0			1	1	4
5187	Geometr y		Forest Grove Middle School		1.5319 98	1	0	1			1	1	4
5187	Geometr		Forest Grove		1.6604	1	0	0			1	0	4

	y		Middle School		7								
5187	Geometr y		Forest Grove Middle School		1.8166 18	0	1	0			1	1	4
5187	Geometr y		Oak Middle School		N\A	1	1	1			1	0	4
5187	Geometr y		Oak Middle School		N\A	1	1	1			1	0	4
5187	Geometr y		Oak Middle School		N\A	1	0	1			0	0	4
5187	Geometr y		Oak Middle School		N\A	1	1	1			1	0	4
5187	Geometr y		Worcester East Middle School		N\A	1	1	1			0	0	4
5187	Geometr y		Worcester East Middle School		N\A	0	0	0			0	0	4

5188	Geometr y		Worcester East Middle School	- 1.7520 38	0	0				0	1	3
5188	Geometr y		Forest Grove Middle School	- 1.5671 19	0	0				0	0	3
5188	Geometr y		Burncoat Middle School	- 1.4178 62	1	0				1	0	3
5188	Geometr y		Forest Grove Middle School	- 1.2398 83	0	0				1	0	3
5188	Geometr y		Worcester East Middle School	- 1.2394 66	0	0				1	0	3

5188	Geometr y		Worcester East Middle School	- 1.2245 36	0	0				1	0	3
5188	Geometr y		Burncoat Middle School	- 1.1563 65	0	0				0	0	3
5188	Geometr y		Worcester East Middle School	- 1.0429 87	0	0				0	0	3
5188	Geometr y		Worcester East Middle School	- 0.9408 28	0	0				1	0	3
5188	Geometr y		Forest Grove Middle School	- 0.7558 14	0	0				1	0	3

5188	Geometr y		Burncoat Middle School		- 0.6966 25	0	0				1	0	3
5188	Geometr y		Burncoat Middle School		- 0.5804 36	1	0				0	-1	3
5188	Geometr y		Burncoat Middle School		- 0.4768 83	0	0				0	-1	3
5188	Geometr y		Burncoat Middle School		- 0.4567 55	1	1				1	0	3
5188	Geometr y		Forest Grove Middle School		- 0.4432 5	0	0				0	0	3

5188	Geometr y		Burncoat Middle School	- 0.3930 36	0	0				1	0	3
5188	Geometr y		Worcester East Middle School	- 0.3709 47	0	0				1	1	3
5188	Geometr y		Worcester East Middle School	- 0.3556 35	1	0				1	-1	3
5188	Geometr y		Burncoat Middle School	- 0.2763 5	1	0				0	0	3
5188	Geometr y		Burncoat Middle School	0.0526 32	1	1				1	0	3
5188	Geometr		Burncoat Middle	0.0849	0	0				1	1	3



	y		School	43								
5188	Geometr y		Burncoat Middle School	0.1175 39	1	1				1	0	3
5188	Geometr y		Forest Grove Middle School	0.2579 77	1	0				1	0	3
5188	Geometr y		Forest Grove Middle School	0.3036 72	1	0				1	0	3
5188	Geometr y		Burncoat Middle School	0.3336 82	1	0				1	0	3
5188	Geometr y		Worcester East Middle School	0.3708 8	1	0				0	0	3
5188	Geometr y		Burncoat Middle School	0.4428 55	0	0				0	0	3
5188	Geometr y		Burncoat Middle School	0.4563 13	1	0				0	0	3

5188	Geometr y		Burncoat Middle School		0.4575 66	0	0				1	0	3
5188	Geometr y		Forest Grove Middle School		0.4593 65	1	0				1	1	3
5188	Geometr y		Burncoat Middle School		0.5194 28	0	0				1	1	3
5188	Geometr y		Burncoat Middle School		0.5245 61	1	1				1	0	3
5188	Geometr y		Burncoat Middle School		0.6962 13	1	0				0	0	3
5188	Geometr y		Forest Grove Middle School		1.2104 27	0	1				1	0	3
5188	Geometr y		Forest Grove Middle School		1.2238 09	0	0				0	0	3
5188	Geometr		Burncoat Middle		1.2827	1	0				1	1	3

	y		School	41								
5188	Geometr		Forest Grove	1.3330								
	y		Middle School	45	1	1				1	0	3
5188	Geometr		Forest Grove	1.3332								
	y		Middle School	11	1	1				1	0	3
5188	Geometr		Forest Grove	1.3333								
	y		Middle School	28	1	1				1	0	3
5188	Geometr		Forest Grove	1.3397								
	y		Middle School	23	1	0				1	1	3
5188	Geometr		Forest Grove	1.3684								
	y		Middle School	83	1	0				1	1	3
5188	Geometr		Forest Grove	2.2220								
	y		Middle School	93	1	1				1	0	3
5188	Geometr		Forest Grove	2.2223								
	y		Middle School	58	1	1				1	0	3

5188	Geometr y		Forest Grove Middle School		2.2224 44	1	1					1	1	3
5188	Geometr y		Forest Grove Middle School		2.2225 84	1	0					1	1	3
5188	Geometr y		Burncoat Middle School		N\A	0	0					1	1	3
5188	Geometr y		Oak Middle School		N\A	0	1					0	0	3
5188	Geometr y		Oak Middle School		N\A	1	1					1	0	3
5188	Geometr y		Oak Middle School		N\A	1	1					1	0	3
5188	Geometr y		Worcester East Middle School		N\A	1	1					1	0	3
5188	Geometr		Worcester East		N\A	0	0					0	0	3

	y		Middle School																
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