DAILY LESSON PLAN

Week of:	Date	Grade	Subject	
March 19th	3/20/07		Alg II	MATH

General Topic: Systems of Linear Equations

Today's Topic: Solving Systems of Equations Symbolically cont'd & Solving using Matrices

Expected Student Learning Outcomes

<u>What will students know and be able to do as a result of today's lesson?</u> Solve systems of equations using the substitution method, linear combination method and solving these equations using Matrices.

Standards Addressed:

AII. P. 10

<u>Which learning standard from the MA Frameworks or WPS curriculum does today's lesson address?</u>
1. Number Sense
2. (Patterns, Relations & Functions)
3. Geometry & Measurement
4. Statistics & Probability

School Improvement Plan

<u>Which (if any) literacy strategy does today's lesson address?</u>

LEARN TO READ/ READ TO LEARN

Pre-Reading	Guided Reading	Post Reading
_____ Preview Text	_____ Make connections	_____ Low Stakes Writing
_____ Ask Questions	_____ Visualize	_____ Projects
_____ Activate Prior Knowledge	_____ Think aloud strategy	_____ Presentations

- -

LEARN TO WRITE/WRITE TO LEARN

_____ "I wonder" log entries	_____ Letters	_____ Metacognitive Logs
_____ Exit slips	_____ 2 Column notes	

✓ Solve problems using linear equations/inequalities

✓ Apply algebraic and graphical methods to solutions

Outline of Lesson Activities:
(to be posted on classroom agenda)

DISCUSS CLASSWORK & HW FROM 3/19
pg. 174 # 6-10, 12   pg. 176 # 30-34
DO pg. 174 # 17-22 (Re-inforce substitution & linear combination)
DISCUSS: pg. 174 # 17-22 and have students
        do them on the board and explain
HW: WORKSHEET # 1-6.

Assessment:

<u>How will you assess students' understanding of today's lesson?</u>
Test - Quiz - (Verbal Questioning) (Group Work) (Homework) (written or reading) -
Project Presentation - Portfolios -
Other :

March 20, 2007

Solving Systems of Equations Cont'd
Ch. 3-1 Part B

Discuss

- class work: pg. 174 #6-10 and 12
- HW: pg. 176 # 30-34

Group work: Pg. 174 # 17-22

Discuss

- Group work (Have students put problems on the board and explain)

HW: Worksheet #1-6

March 20, 2007

Solving Systems of Equations Symbolically Cont'd.
Ch. 3-1 Part B

Discuss:
- classwork pg. 174 # 6-10, 12 → Done 6 & 7
- HW pg. 176 # 30-34

(30.) Substitution

$y = x + 2$

$x + y = 8$

$x + x + 2 = 8$

$2x + 2 = 8$

$ -2 \quad -2$

$\dfrac{2x}{2} = \dfrac{6}{2}$

$x = 3$

$y = 3 + 2$

$y = 5$

$(3, 5)$

(31.) Linear Combination

$2(x + 3y = -65)$

$2x - y = -25$

$-2x - 6y = +130$

$\dfrac{-7y}{-7} = \dfrac{105}{-7}$

$y = -15$

$2x + (-15) = -25$

$ -15 \quad -15$

$\dfrac{2x}{2} = \dfrac{-40}{2}$

$x = -20$

$(-20, -15)$

(32.) Linear Combination

$3(7x - 4y = 8)$

$2(3x + 6y = 15)$

$21x - 12y = 24$

$+ \; 6x + 12y = 30$

$\dfrac{27x}{27} = \dfrac{54}{27}$

$x = 2$

$3(2) + 6y = 15$

$6 + 6y = 15$

$-6 -6$

$\dfrac{6y}{6} = \dfrac{9}{6}$

$y = 3/2$

$(2, 3/2)$

(33.) Linear Combination

$3(2x + 3y = 13)$

$-2(3x - 5y = 10)$

$6x + 9y = 39$

$-6x + 10y = -20$

$\dfrac{19y}{19} = \dfrac{19}{19}$

$y = 1$

$2x + 3(1) = 13$

$2x + 3 = 13$

$ -3 \quad -3$

$\dfrac{2x}{2} = \dfrac{10}{2}$

$x = 5$

$(5, 1)$

19. $y = \frac{1}{3}x - 59$

$x - 3y - 15 = 0$

Need $Ax + By = C$

NO solution

$3\left(-\frac{1}{3}x + y = -59\right)$

$(x - 3y = 15$

$+ \quad -x + 3y = -177$
_____
$0 = -162$

20. $3x + 2y = 16$

$-2(7x + y = 19)$

$3x + 2y = 16$

$-14x - 2y = -38$
_____
$\frac{-11x}{-11} = \frac{-22}{-11}$

$x = +2$

$(2, 5)$

$3(2) + 2y = 16$

$\underset{-6}{6} + 2y = \underset{-6}{16}$

$\frac{2y}{2} = \frac{10}{2} \quad y = 5$

21. $3(2x - y + 2 = 0)$

$6x + 12y - 1^{+1} = 0^{+1}$

$-6x + 3y - 6^{+6} = 0^{+6}$
_____
$\frac{15y}{15} = \frac{7}{15}$

$y = \frac{7}{15}$

$2x - \frac{7}{15} + 2 = 0$

$-\frac{7}{15} + \frac{30}{15} = \frac{23}{15}$

$\frac{2x}{2} = \frac{-23}{15} \cdot \frac{1}{2} = \frac{-23}{30}$

$x = -23/30$

$\left(-23/30, \ 7/15\right)$

22. $5x - 3y = -1$

$+ \quad -5x + 3y = -7$
_____
$0 = -8$

NO solution.

Reteach
Chapter 3

Name HW # 1-6

What you should learn :

3.2	How to solve a linear system using algebraic methods.

Correlation to Pupil's Textbook:

Mid-Chapter Test (p. 144)   Chapter Test (p. 169)
Exercises 7–12   Exercises 1–3

Examples | Using Algebraic Methods to Solve Linear Systems

a. Use the substitution method to solve the system. $\begin{cases} 6x + y = -2 & \text{Equation 1} \\ 4x - 3y = 17 & \text{Equation 2} \end{cases}$

$y = -6x - 2$	Write Equation 1 in slope-intercept form.
$4x - 3y = 17$	Equation 2
$4x - 3(-6x - 2) = 17$	Substitute $-6x - 2$ for y in Equation 2.
$4x + 18x + 6 = 17$	Distributive Property
$22x = 11$	Simplify.
$x = \frac{1}{2}$	Solve for x.
$y = -6x - 2$	Slope-intercept form of Equation 1
$y = -6(\frac{1}{2}) - 2$	Substitute $\frac{1}{2}$ for x.
$y = -5$	Solve for y. The solution is $(\frac{1}{2}, -5)$.

b. Use the linear combination method to solve the system. $\begin{cases} 5x - 3y = 14 & \text{Equation 1} \\ 3x - 2y = 6 & \text{Equation 2} \end{cases}$

$15x - 9y = 42$	To obtain coefficients for x that differ in sign, multiply Equation 1 by 3.
$-15x + 10y = -30$	Multiply Equation 2 by -5.
$y = 12$	Add the equations. From the result, you know that $y = 12$.
$3x - 2y = 6$	Equation 2
$3x - 2(12) = 6$	Substitute 12 for y.
$x = 10$	Solve for x. The solution is $(10, 12)$.

Guidelines: To use algebraic methods to solve a system of linear equations:
- If one of the equations has a variable with a coefficient of 1, then use the substitution method as outlined on page 130 of the textbook.
- Otherwise, use the linear combination method as outlined on page 131 of the textbook.

EXERCISES

In 1–6, solve the system using an algebraic method.

1. $\begin{cases} 2x - y = 6 \\ 2x + 2y = -9 \end{cases}$

2. $\begin{cases} -2x + 3y = 5 \\ 3x - 2y = 0 \end{cases}$

3. $\begin{cases} 2x + 3y = 7 \\ x - 2y = -7 \end{cases}$

4. $\begin{cases} 2x - 5y = -4 \\ 4x + 3y = 5 \end{cases}$

5. $\begin{cases} 11x + 6y = 1 \\ 3x + 2y = -3 \end{cases}$

6. $\begin{cases} 4x - 3y = 5 \\ -8x + 6y = 17 \end{cases}$

Algebra 2

DAILY LESSON PLAN

Week of:	Date	Grade	Subject	
March 19th	3/21/07		Alg II	MATH

General Topic: Systems of Linear Equations

Today's Topic: Solving systems using Matrices

Expected Student Learning Outcomes

<u>What will students know and be able to do as a result of today's lesson?</u>

To use inverse matrices to solve systems of linear equations.

Standards Addressed:

AII.P.9

<u>Which learning standard from the MA Frameworks or WPS curriculum does today's lesson address?</u>

1. Number Sense
②.Patterns, Relations & Functions
3. Geometry & Measurement
4. Statistics & Probability

School Improvement Plan

<u>Which (if any) literacy strategy does today's lesson address?</u>

LEARN TO READ/ READ TO LEARN

Pre-Reading	Guided Reading	Post Reading
____Preview Text	____Make connections	____Low Stakes Writing
____Ask Questions	____Visualize	____Projects
____Activate Prior Knowledge	____Think aloud strategy	____Presentations

- -

LEARN TO WRITE/WRITE TO LEARN

____"I wonder" log entries	____Letters	____Metacognitive Logs
____Exit slips	____2 Column notes	

✓ Solve problems using linear equations/inequalities

✓ Apply algebraic and graphical methods to solutions

Outline of Lesson Activities:
(to be posted on classroom agenda)

Discuss HW: Worksheet # 1-6

Lecture: 1. How to put systems of equations into AX=B form.
↳ (create Matrix)
2. How to find the inverse of the matrix
2. Using a graphing calculator.
3. How to solve the system of equations
by Multiplying the inverse x constants (B Matrix)

Do "Try It" pg. 178 & 181
Groupwork: pg. 182# 2-5   pg. 183#12
HW: Pg. 183# 12-14   pg. 184# 27-32 (just write matrix)

Assessment:

<u>How will you assess students' understanding of today's lesson?</u>
Test - Quiz - ⟨Verbal Questioning⟩ - ⟨Group Work⟩ - ⟨Homework⟩ (written or reading) -
Project Presentation - Portfolios -
Other :

March 21, 2007

Solving Systems Using Matrices
Ch. 3-1 Part C

Discuss HW: worksheet #1-6

Introduce solving systems using matrices:
Note: Explain this requires steps.

- Show students how to put a system of equations into AX=B form.
  A= coefficients
  X= variables Eg.1 $\begin{bmatrix} x & y \end{bmatrix}$
  B= constants Eg.2 $\begin{bmatrix} x & y \end{bmatrix}$

$3x-4y=7$ $3x-4y=7$
$y=2x-3$ $-2x+y=-3$

$\begin{bmatrix} 3 & -4 \\ -2 & 1 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix}=\begin{bmatrix} 7 \\ -3 \end{bmatrix}$

ans $\begin{bmatrix} -1 \\ -1 \end{bmatrix}$

Examples: Put Equations in $Ax + By = C$ Form

$2x-y=-1$
$5x-3y=1$

$\underset{a}{\begin{bmatrix} 2 & -1 \\ 5 & -3 \end{bmatrix}}\underset{x}{\begin{bmatrix} x \\ y \end{bmatrix}}=\underset{B}{\begin{bmatrix} -1 \\ 1 \end{bmatrix}}$

ans = $\begin{bmatrix} -4 \\ -7 \end{bmatrix}$

$2x+3y=-2$
$-3x-5y=2$

$\underset{a}{\begin{bmatrix} 2 & 3 \\ -3 & -5 \end{bmatrix}}\underset{x}{\begin{bmatrix} x \\ y \end{bmatrix}}=\underset{B}{\begin{bmatrix} -2 \\ 2 \end{bmatrix}}$

ans $\begin{bmatrix} -4 \\ 2 \end{bmatrix}$

$3x-8y=-9$
$2x-5y=5$

$\underset{a}{\begin{bmatrix} 3 & -8 \\ 2 & -5 \end{bmatrix}}\underset{x}{\begin{bmatrix} x \\ y \end{bmatrix}}=\underset{B}{\begin{bmatrix} -9 \\ 5 \end{bmatrix}}$

ans $\begin{bmatrix} 85 \\ 33 \end{bmatrix}$

Do "Try It" pg. 178 a&b

(9.) $2x+3y=8$
$-3x+5y=7$

$\underset{a}{\begin{bmatrix} 2 & 3 \\ -3 & 5 \end{bmatrix}}\underset{x}{\begin{bmatrix} x \\ y \end{bmatrix}}=\underset{B}{\begin{bmatrix} 8 \\ 7 \end{bmatrix}}$

(b.) $2.25x-3.72y=10.98$
$x+11.37y=32.14$

$\underset{a}{\begin{bmatrix} 2.25 & 3.72 \\ 1 & 11.37 \end{bmatrix}}\underset{x}{\begin{bmatrix} x \\ y \end{bmatrix}}=\underset{B}{\begin{bmatrix} 10.98 \\ 32.14 \end{bmatrix}}$

- Give a matrix and have students put it back into a standard equation.

Examples:

$\begin{bmatrix} 1 & -2 \\ 1 & 1 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix}=\begin{bmatrix} 4 \\ 4 \end{bmatrix}$

$x-2y=4$ ans $\begin{bmatrix} 4 \\ 0 \end{bmatrix}$
$x+y=4$

↑
*Not needed
just in case

$\begin{bmatrix} 3 & 1 \\ 2 & 3 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix}=\begin{bmatrix} 6 \\ -3 \end{bmatrix}$

$3x+y=6$ ans $\begin{bmatrix} 3 \\ -3 \end{bmatrix}$
$2x+3y=-3$

$\begin{bmatrix} 2 & -1 \\ 0 & 1 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix}=\begin{bmatrix} -4 \\ 3 \end{bmatrix}$

$2x-y=-4$ ans $\begin{bmatrix} -.5 \\ 3 \end{bmatrix}$
$y=3$

$\begin{bmatrix} \frac{1}{2} & -1 \\ -1 & 2 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix}=\begin{bmatrix} -2 \\ 0 \end{bmatrix}$ ← either ∥
or same line
graph

NO solution

$\frac{1}{2}x-y=-2$
$-x+2y=0$ $\frac{1}{2}x+2=y$
              $y=\frac{1}{2}x$

↓
parallel lines
- same slope

Explain

- Explain how to plug in the matrix they create according to the system of equations into a graphing calculator.
- Explain how to find the inverse of the matrix using a graphing calculator.
- Explain how the inverse is used in solving the systems of equations on graphing calculator.
- Now solve by multiplying the inverse of the matrix by the constants.

Examples:

use previous examples but plug it into calc.

c, d → calculater

e. $4g + 500s = 3992$ $G = 389.25$
   $8g + 200s = 4088$ $S = 4.87$

f, g, h → calculater

f = No inconsistent → parallel
g = No, same line
h = yes → unique

(12) $T + P = 200$
      $95T + 150P = 23400$

Do "Try It" Pg. 181 c, d, e, f, g, h ⟋ solve
Group work: pg. 182 # 2-5 pg. 183 #12 ⟶ 184# 18 –
HW: pg. 183 # 13&14 pg. 184 # 27-32 (just write the matrix)

$$\begin{bmatrix} 1 & 1 \\ 95 & 150 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 200 \\ 23400 \end{bmatrix}$$

How to use matrices to solve systems of equations:
- Put the equation in AX=B Form
- Put the equations in matrix form
- Find the inverse of the equation using graphing calculator
- Multiply the inverse by the constants (B)
- Solve

Using calculators to solve:
- **2ⁿᵈ Matrx**
- **Go to edit**

- Plug in the 2X2 matrix and the 2X1 matrix
- Quit, 2nd matrix inverse AXB
- Solution

DISCUSS 3/21/07

Reteach
Chapter 3

Name _answer key_

What you should learn:

| 3.2 | How to solve a linear system using algebraic methods. |

Correlation to Pupil's Textbook:

Mid-Chapter Test (p. 144)   Chapter Test (p. 169)
Exercises 7–12   Exercises 1–3

Examples _Using Algebraic Methods to Solve Linear Systems_

a. Use the substitution method to solve the system. $\begin{cases} 6x + y = -2 & \text{Equation 1} \\ 4x - 3y = 17 & \text{Equation 2} \end{cases}$

$y = -6x - 2$ Write Equation 1 in slope-intercept form.

$4x - 3y = 17$ Equation 2

$4x - 3(-6x - 2) = 17$ Substitute $-6x - 2$ for y in Equation 2.

$4x + 18x + 6 = 17$ Distributive Property

$22x = 11$ Simplify.

$x = \frac{1}{2}$ Solve for x.

$y = -6x - 2$ Slope-intercept form of Equation 1

$y = -6(\frac{1}{2}) - 2$ Substitute $\frac{1}{2}$ for x.

$y = -5$ Solve for y. The solution is $(\frac{1}{2}, -5)$.

b. Use the linear combination method to solve the system. $\begin{cases} 5x - 3y = 14 & \text{Equation 1} \\ 3x - 2y = 6 & \text{Equation 2} \end{cases}$

$15x - 9y = 42$ To obtain coefficients for x that differ in sign, multiply Equation 1 by 3.

$-15x + 10y = -30$ Multiply Equation 2 by -5.

$y = 12$ Add the equations. From the result, you know that $y = 12$.

$3x - 2y = 6$ Equation 2

$3x - 2(12) = 6$ Substitute 12 for y.

$x = 10$ Solve for x. The solution is $(10, 12)$.

Guidelines: To use algebraic methods to solve a system of linear equations:
- If one of the equations has a variable with a coefficient of 1, then use the substitution method as outlined on page 130 of the textbook.
- Otherwise, use the linear combination method as outlined on page 131 of the textbook.

EXERCISES

In 1–6, solve the system using an algebraic method.

1. $\begin{cases} 2x - y = 6 \\ 2x + 2y = -9 \end{cases}$

2. $\begin{cases} -2x + 3y = 5 \\ 3x - 2y = 0 \end{cases}$

3. $\begin{cases} 2x + 3y = 7 \\ x - 2y = -7 \end{cases}$

4. $\begin{cases} 2x - 5y = -4 \\ 4x + 3y = 5 \end{cases}$

5. $\begin{cases} 11x + 6y = 1 \\ 3x + 2y = -3 \end{cases}$

6. $\begin{cases} 4x - 3y = 5 \\ -8x + 6y = 17 \end{cases}$

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Algebra 2

Chapter 3 ▪ Solving Systems of Linear Equations **17**

DAILY LESSON PLAN

Week of: March 19th	Date 3/22/07	Grade	Subject Alg II	MATH

General Topic:	Solving systems of linear Equations
Today's Topic:	Systems with 3 variables

Expected Student Learning Outcomes	**What will students know and be able to do as a result of today's lesson?** To solve 3x3 systems of linear equations.

Standards Addressed: AII.P.10	**Which learning standard from the MA Frameworks or WPS curriculum does today's lesson address?** 1. Number Sense 3. Geometry & Measurement 2. Patterns, Relations & Functions 4. Statistics & Probability

School Improvement Plan	**Which (if any) literacy strategy does today's lesson address?**

LEARN TO READ/ READ TO LEARN

Pre-Reading	Guided Reading	Post Reading
_____ Preview Text	_____ Make connections	_____ Low Stakes Writing
_____ Ask Questions	_____ Visualize	_____ Projects
_____ Activate Prior Knowledge	_____ Think aloud strategy	_____ Presentations

- -

LEARN TO WRITE/ WRITE TO LEARN

_____ "I wonder" log entries	_____ Letters	_____ Metacognitive Logs
_____ Exit slips	_____ 2 Column notes	

✓ Solve problems using linear equations/inequalities

✓ Apply algebraic and graphical methods to solutions

Outline of Lesson Activities: (to be posted on classroom agenda)	Discuss HW. pg. 184 # 27-32
	 Quiz: Solving systems of Equations with two variables.
	 Notes: Do pg. 189 Explore
	      Do pg. 189 "Try It"
	      Do pg. 190 # 2-4
	 HW pg. 192 # 19 & 20

Assessment:	**How will you assess students' understanding of today's lesson?** Test – (Quiz) – Verbal Questioning – Group Work – Homework (written or reading) – Project Presentation – Portfolios – Other :

Name:_____

Quiz: Solving Systems of Equations with Two Variables

Use the graphing method to solve for #1.

1. $y = 3x - 5$

    $y = 2/3x + 2$

Use substitution, linear combination, or matrices to solve for #2-5.
Note: (You can only use a matrix for one problem and show the matrix in AX=B form)

2. $x + y = 11$

    $3x - y = 5$

3. $-5x + y = 12$

    $y = 5x + 13$

Name_____

Extra Credit

Solving systems of Equations with two variables

Write a system of equations for the word problem and solve for the number of children and adults that attended the fair.

The admission fee at a small fair is $1.50 for children and $4.00 for adults. On a certain day, 2200 people enter the fair and $5050 is collected. How many children and how many adults attended?

Name: _____

Quiz: Solving Systems of Equations with Two Variables

Use the graphing method to solve for #1.

1. $2x + 3y = 1$
        $x - 2y = 4$

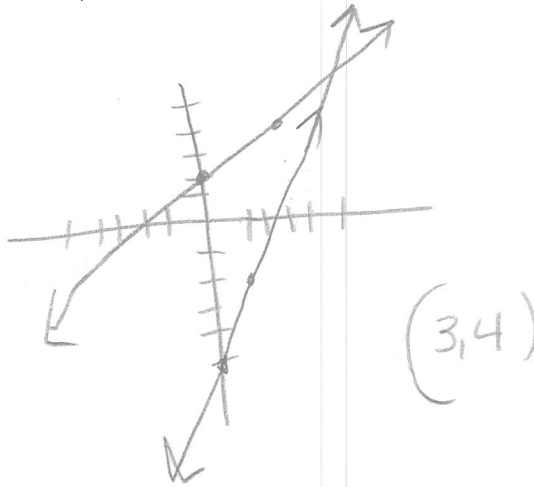2. $x + y = 5$
       $y = -x + 3$

Name: _answer key_

Quiz: Solving Systems of Equations with Two Variables

Use the graphing method to solve for #1.

1. $y = 3x - 5$

   $y = 2/3x + 2$ $\frac{2}{3} \cdot 3$

X	Y
0	-5
1	-2

X	Y
0	2
3	4

$(3,4)$

Use substitution, linear combination, or matrices to solve for #2-5.
Note: (You can only use a matrix for one problem and show the matrix in AX=B form)

2. $x + y = 11$
   $3x - y = 5$

   $4 + y = 11$
   $-4 \quad -4$

   $\frac{4x}{4} = \frac{16}{4}$

   $x = 4$

   $y = 7$

   $(4,7)$

3. $-5x + y = 12$
   $y = 5x + 13$

   $-5x + y = 12$
   $-1(-5x + y = 13)$

   $5x - y = -13$

   $0 = -1$

   NO solution

4. $5x + 3y = 7$ $3(5x + 3y = 7)$
     $3x = -23 + 5y$ $-5(3x - 5y = -23)$

$5x + 3(4) = 7$

$5x + 12 = 7$
$ -12 \quad -12$

$\dfrac{5x}{5} = \dfrac{-5}{5}$

$ x = -1$

$15x + 9y = 21$
$-15x + 25y = 115$

$\dfrac{34y}{34} = \dfrac{136}{34}$

$ y = 4$ $(-1, 4)$

5. $3x - y = 8$
     $-3(x + 2y = 5)$

$-3x - 6y = -15$

$\dfrac{-7y}{-7} = \dfrac{-7}{-7}$

$y = 1$

$3x - 1 = 8$ $(3, 1)$
$ +1$

$\dfrac{3x}{3} = \dfrac{9}{3}$

$x = 3$

Name: _____

Extra Credit
Solving systems of Equations with two variables

Write a system of equations for the word problem and solve for the number of children and adults that attended the fair.

The admission fee at a small fair is \$1.50 for children and \$4.00 for adults. On a certain day, 2200 people enter the fair and \$5050 is collected. How many children and how many adults attended?

$$a + c = 2200$$
$$4a + 1.5c = 5050$$

Then solve the system for the number of adults and the number of children:

$$a = 2200 - c$$

$$4(2200 - c) + 1.5c = 5050$$
$$8800 - 4c + 1.5c = 5050$$
$$8800 - 2.5c = 5050$$
$$-2.5c = -3750$$
$$c = 1500$$

$$a = 2200 - (1500) = 700$$

There were 1500 children and 700 adults.

March 22, 2007

Discuss:
 HW: pg. 184 #27-32 (solve)

Quiz:
 Solving systems of equations using graphing, substitution, linear combination, and matrices.

Systems with 3 Variables
Ch. 3-1 Part D

Do pg. 189 Explore: Technology to the Rescue with class.

Explain how to solve systems of equations with three variables:
 Linear Combination:

1.) $x + 3y + 2z = 9$
2.) $-3(x - y + 3z = 16)$
3.) $3x - 4y + 2z = 28$

$x + 3y + 2z = 9$
$-x + y - 3z = -16$
$\overline{\quad 4y - z = -7}$

$-3x + 3y - 9z = -48$
$3x - 4y + 2z = 28$
$\overline{\quad -y + 7z = -20}$

$4y - z = -7$
$4(-y - 7z = -20)$

$4y - z = -7$
$-4y - 28z = -80$
$\overline{\quad -29z = -87}$
$z = 3$

$4y - 3 = -7$
$\quad +3 \quad +3$
$\dfrac{4y}{4} = \dfrac{-4}{4}$
$y = -1$

$x + 3(-1) + 2(3) = 9$
$x + -3 + 6 = 9$
$x + 3 = 9$
$\quad -3 -3$
$x = 6$

 Substitution:

$x + 3y + 2z = 9 \rightarrow x = -3y - 2z + 9$
$x - y + 3z = 16$
$3x - 4y + 2z = 28$

like terms
$(-3y - 2z + 9) - y + 3z = 16$
$\qquad\qquad -9 \qquad\qquad -9$
$\boxed{-4y + z = 7} \rightarrow z = 4y + 7$

$3(-3y - 2z + 9) - 4y + 2z = 28$
$-9y - 6z + 27 - 4y + 2z = 28$
$\qquad\qquad -27 \qquad\qquad -27$
$\boxed{-13y - 4z = 1} \longleftarrow$

$-13y - 4(4y + 7) = 1$
$-13y - 16y - 28 = 1$
$\qquad\qquad +28 \quad +28$
$\dfrac{-29y}{-29} = \dfrac{29}{-29}$ plugin
$y = -1$

Do pg.189 "Try It" (a&b)

1. $-(x+y+z=5)$ $-x-y-z=-5$
2. $-2(x-2y+z=-7)$ $x-2y+z=-7$
3. $2x+y+3z=5$ $\dfrac{-3y}{-3}=\dfrac{-12}{-3}$

$$-2x+4y-2z=14$$

$$5y+z=19 \xleftarrow{\text{plug in}} \qquad y=4$$

$$5(4)+z=20$$
$$20+z=19$$
$$-20 \quad -20$$
$$z=-1$$

$B \rightarrow$ other sheet $\rightarrow$

$$x+4-1=5$$
$$x+3=5$$
$$-3 \quad -3 \qquad x=2$$

$2,4,-y$

Do pg. 190 #2-4

② $x=2$

$2x+3z=13$

$x-3y+z=-10$

$2-3y+3=-10$

$-3y+5=-10$
$-5\quad-5$

$\dfrac{-3y}{-3}=\dfrac{-15}{3}$
$\qquad y=5$

$2(2)+3z=13$
$4+3z=13$
-4
$\dfrac{3z}{3}=\dfrac{9}{3}\quad z=3$

$\boxed{2,5,3}$

HW: pg. 192 #19&20

③ $(x+z=5)$ $-2x+y+z=-5$
$(-2x+y+z=5)$ $3x-2y-z=9$
$3x-2y-z=9$ $x-y=4$

$$3x-2y-z=9$$
$$+\quad x+0y+z=5$$

$$4x-2y=14$$
$$-2(x-y=4)$$
$$-2x+2y=-8$$

$$\dfrac{2x}{2}=\dfrac{6}{2}\quad x=3$$

$$3+y=4$$
$$-3\quad-3$$
$$\dfrac{-y}{-1}=\dfrac{1}{-1}$$
$$y=-1$$

Explore pg. 189

1. $20.25x + 25.60y + 31.50z = 978$ wages
prices $3x + 4y + 5z = 150$
Hours $x + y + z = 41$

$$\begin{bmatrix} 20.25 & 25.60 & 31.50 \\ 3 & 4 & 5 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 978 \\ 150 \\ 41 \end{bmatrix}$$

3. calc. a^{-1}

4. solve on calc

5. inequalities → time on machine to make part ≤ 41
                    labor cost ≤ 978

"Try It" b. $-2(4x + 3y + 5z = 730)$ $-8x - 6y - 10z = -1460$
            $3(6x + 2y + 3z = 595)$ $18x + 6y + 9z = 1785$
            $-1(1x + 2y + 8z = 770)$ $\overline{10x - z = 325}$

$40 + 2(y) + 8(75) = 770$ $6x + 2y + 3z = 595$
$\underset{600+40}{}$ $x - 2y - 8z = -770$
$y = -65 \leftarrow \dfrac{130}{2}$ $\overline{}$

                $5x - 5z = -175$ $-5(10x - z = 325)$
                      ← plugin $5x - 5z = 175$
        $5(40) - 5z = -175$ $-50x + 5z = -1625$
            $200 - 5z = -175$ $\dfrac{-45x}{-45} = \dfrac{-1800}{-45}$
            $-200 \qquad -200$ $x = 40$
            $\dfrac{-5z}{-5} = \dfrac{-375}{-5}$ $z = 75$

DAILY LESSON PLAN

Week of:	Date	Grade	Subject	
March 19th	3/23/07		Alg. II	MATH

General Topic: Solving Systems of Linear Equations

Today's Topic: Solving systems with 3 variables

Expected Student Learning Outcomes

What will students know and be able to do as a result of today's lesson?

Solving systems of equations with three variables.

Standards Addressed:

AII P. 10

Which learning standard from the MA Frameworks or WPS curriculum does today's lesson address?
1. Number Sense
2. Patterns, Relations & Functions
3. Geometry & Measurement
4. Statistics & Probability

School Improvement Plan

Which (if any) literacy strategy does today's lesson address?

LEARN TO READ/ READ TO LEARN

Pre-Reading	Guided Reading	Post Reading
____Preview Text	____Make connections	____Low Stakes Writing
____Ask Questions	____Visualize	____Projects
____Activate Prior Knowledge	____Think aloud strategy	____Presentations

LEARN TO WRITE/ WRITE TO LEARN

____"I wonder" log entries	____Letters	____Metacognitive Logs
____Exit slips	____2 Column notes	

✓ Solve problems using linear equations/inequalities

✓ Apply algebraic and graphical methods to solutions

Outline of Lesson Activities: (to be posted on classroom agenda)

Discuss HW pg. 192 #19-20

Notes: Solving systems of Equations with 3 variables
— Do examples

Groupwork: worksheet 31D #1-9 odd

HW: worksheet 3-D #1-8 even

Assessment:

How will you assess students' understanding of today's lesson?
Test – Quiz – (Verbal Questioning) – (Group Work) – (Homework) (written or reading) –
Project Presentation – Portfolios –
Other :

March 23, 2007
Ch. 3-1 Part D Cont'd

Discuss HW: pg. 192 # 19&20
Do more systems with 3 variable equations. (attached sheet)
Group work:
Discuss
HW:

Solve each system of linear equations if possible.

1. $x - y = -1$
    $y + z = 1$
    $3x + 2y + z = 10$ _____

2. $2x + z = 7$
    $x + y + z = 0$
    $2x + 3y - 2z = -8$ _____

3. $x + y - z = 3$
    $2x - y + z = 5$
    $x - 2y = 4$ _____

4. $3x - y + 2z = 20$
    $3x + y - 2z = 4$
    $x + 2y + z = 3$ _____

5. $x - z = -3$
    $x - y + 2z = 6$
    $2x + 3y - z = 7$ _____

6. $x + 2y - z = 5$
    $3x - 2y + 5z = 31$
    $-x + 2y - z = -5$ _____

7. Find the measures of the three angles of a triangle if the sum of twice the measure of the first angle and three times the measure of the second angle equals the measure of the third angle, and if the measure of the second angle is 3° more than the measure of the first angle.

    _____

8. Yesterday three customers at Kay's Market bought dates, endives, and/or figs, as shown in the table. Find the price per pound of each item.

    _____

	Dates	Endives	Figs	Total
Customer 1	2 lb	1 lb	0 lb	$3.85
Customer 2	1 lb	0 lb	2 lb	$6.20
Customer 3	1 lb	1 lb	1 lb	$4.70

Write each system of linear equations as a matrix equation in the form $AX = B$. Then use a graphing utility to solve each system of linear equations using matrices if possible.

9. $2x + 4y + 3z = 6$
    $4x - 2y + z = 4$
    $-x + 3y + 4z = -2$ _____

10. $5x - 2y + 3z = 4$
    $-2x + 4y + 6z = 3$
    $8x + 7y - 3z = -6$ _____

11. $2x - 3y + z = 4$
    $-5x + 2y + 3z = -3$
    $\frac{3}{8}x + \frac{7}{4}y + \frac{3}{4}z = 6$ _____

12. $3.5x + 2.2y - 2.7z = 4.3$
    $4.3x - 1.8y + 2.3z = 2.5$
    $3.6x + 1.3y + 5.3z = 2.9$ _____

pg. 192 #19-20

19. $x+y=3$
⊙ $2x-y=9$
$3x+y+2z=1$

$x+y=3$
$2x-y=9$
_____
$\dfrac{3x}{3}=\dfrac{12}{3}$

$x=4$

$4+y=3$
$-4 \quad -4$
$y=-1$

$3(4)-1+2z=1$
$12-1+2z=1$
$11+2z=1$
$-11 \qquad -11$
$\dfrac{2z}{2}=\dfrac{-10}{2}$
$z=-5$

⊙

$(4,-1,5)$

20. $2x+3y=-2$
$4y+2z=-10$
$3x+5z=1$

$4(2x+3y+0z=-2)$
$-3(0x+4y+2z=-10)$
$8x+12y+0z=-8$
$0x-12y-6z=30$
_____
$5\overline{)8x-6z=22}$

$0(2x+3y+0z=-2)$
$3x+0y+5z=1$
$0x+0y+0z=0$
_____
⊙ $\boxed{3x+5z=1}$

$6(3x+5z=1)$
$40x-30z=110$
$18x+30z=6$
_____
$\dfrac{58x}{58}=\dfrac{116}{58}$ $\boxed{x=2}$

$4y+2(-1)=-10$
$4y-2=-10$
$+2 \quad +2$
$\dfrac{4y}{4}=\dfrac{-8}{4}$
$\boxed{y=-2}$

$3(2)+5z=1$
$6+5z=1$
$-6 \qquad -6$
$\dfrac{5z}{5}=\dfrac{-5}{5}$
$\boxed{z=-1}$

Examples!

$x + 2y + z = 6$ $-2(x + 2y + z = 6)$

$2x - y + 3z = -2$ $2x - y + 3z = -2$

$x + y - 2z = 0$ $-2x - 4y - 2z = -12$

$$-5y + z = -14$$

$-(x + 2y + z = 6)$ $-5y + z = -14$

$x + y - 2z = 0$ $-5(-y - 3z = -6)$

$-x - 2y - z = -6$ $5y + 15z = 30$

$$-y - 3z = -6$$

$$\frac{16z}{16} = \frac{16}{16}$$

$$\boxed{z = 1}$$

$-y - 3^{(1)} = -6$ $x + 2(3) + 1 = 6$

     $+3 \quad +3$ $x + 7 = 6$ $(-1, 3, 1)$

$$\frac{-y = -3}{-1 \quad -1} \quad \boxed{y = 3} \quad \begin{array}{c} -7 \quad -7 \\ \boxed{x = -1} \end{array}$$

$x - y + z = 5$ $x - y + z = 5$ $(1, -1, 3)$

$3x + 2y - z = -2$ $3x + 2y - z = -2$

$2x + y + 3z = 10$ $-7(4x + y = 3)$ $4(1) + y = 3$

     $11x + 7y = 4$ $4 + y = 3$

$3(3x + 2y - z = -2)$ $-28x - 7y = -21$ $\dfrac{-4 \quad -4}{}$

$(2x + y + 3z = 10)$ $\dfrac{17x}{17} = \dfrac{17}{17}$ $\boxed{y = -1}$

$9x + 6y - 3z = -6$

$$11x + 7y = 4 \qquad \boxed{x = 1} \qquad 1 - 7 + z = 5$$

     $2 + z = 5$

     $-2 \quad z = 3$

DAILY LESSON PLAN

Week of:	Date	Grade	Subject	
march 25	3/26/07		Alg II	MATH

General Topic: Solving Systems of Linear Inequalities

Today's Topic: Solving Systems of Linear InEqualities

Expected Student Learning Outcomes A.2 P10	**What will students know and be able to do as a result of today's lesson?** Solve systems of Equations of inequalities by graphing.

Standards Addressed:	**Which learning standard from the MA Frameworks or WPS curriculum does today's lesson address?** 1. Number Sense 3. Geometry & Measurement (2.)Patterns, Relations & Functions 4. Statistics & Probability

School Improvement Plan	**Which (if any) literacy strategy does today's lesson address?** LEARN TO READ/ READ TO LEARN

Pre-Reading	Guided Reading	Post Reading
____Preview Text	____Make connections	____Low Stakes Writing
____Ask Questions	____Visualize	____Projects
____Activate Prior Knowledge	____Think aloud strategy	____Presentations

LEARN TO WRITE/WRITE TO LEARN

____"I wonder" log entries	____Letters	____Metacognitive Logs
____Exit slips	____2 Column notes	

✓ Solve problems using linear equations/inequalities

✓ Apply algebraic and graphical methods to solutions

Outline of Lesson Activities: (to be posted on classroom agenda)	DISCUSS HW & Classwork #1-8 on worksheet
	
	Notes: How to Solve system of linear inequalities
	    - Put Equation into y=mx+b
	    - graph, shade
	     - solution = over lapping shaded region
	
	Do pg. 202 #13
	
	Grap work worksheet "Graphing Inequalities"
	        #1-6
	HW pg. 203 # 33-38

Assessment:	**How will you assess students' understanding of today's lesson?** Test – Quiz – (Verbal Questioning) – Group Work – (Homework (written or reading)) – Project Presentation - Portfolios – Other :

March 26th 2007
Ch. 3-2 Part A
Systems of Inequalities

Discuss HW and class work #1-8 on worksheet   use calculater
Notes:
How to solve systems of linear inequalities
-Put equation in y=mx+b
-Graph both equations on the same grid
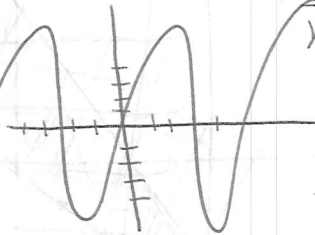- < or > - - - - -
- < or > ---------
- y < shade below the line
- y > shade above the line
- Solution to the system of equations is the region with the overlapping shading.

Do pg. 202 #13

a. $\frac{x}{18} \cdot \frac{y}{26}$ b. $\frac{x}{18} + \frac{y}{26} \leq 16$ $-\frac{x}{18} + \frac{x}{18} + \frac{y}{26} \leq (16 - \frac{x}{18}) 26$

for every 18 mi = 1 gal $y \leq (416 - \frac{13x}{9})$

Group work: worksheet "Graphing Inequalities" #1-6
Discuss
HW: pg. 203 # 33-38

Examples:

① $3x + y \leq 5$
$y \geq 1$
$x \geq 1$
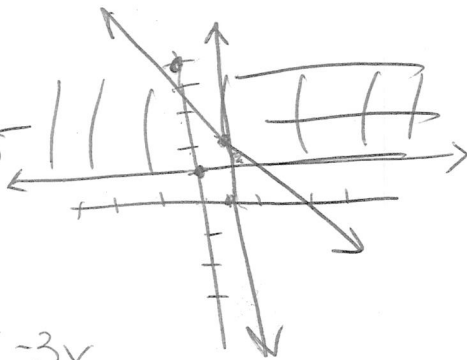
$3x + y \leq 5 - 3x$
$-3x$
$y \leq 5 - 3x$

x	y
0	5
1	2

$y > x - 1$
$y < 2x + 1$

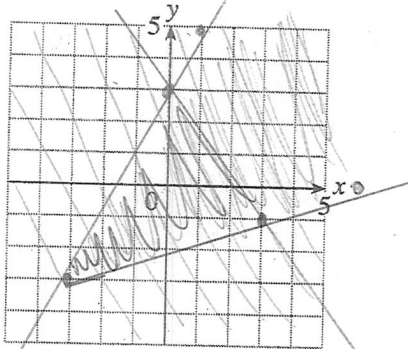| x	y
1	0
2	1

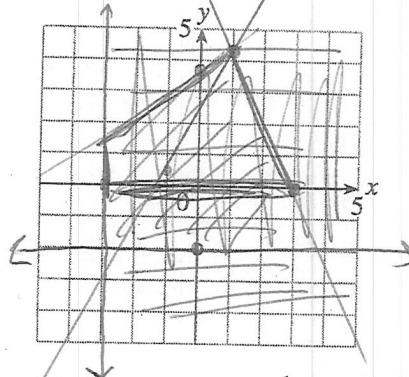| x	y
0	1
1	3
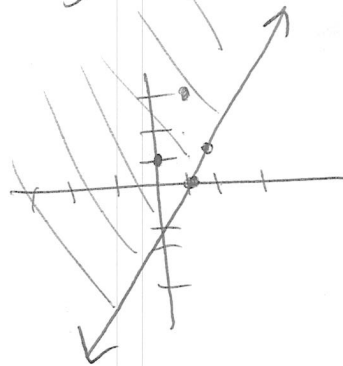
Name _____

Date _____

Graph the feasible region for each of the following sets of constraints (inequalities). Then find the coordinates of the vertices.
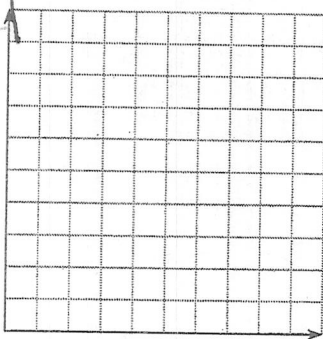
1. $y \geq \frac{1}{3}x - 2$, $y \leq 2x + 3$, $y \leq -\frac{4}{3}x + 3$
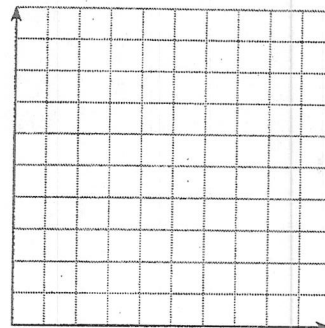   vertices _____

(handwritten side table)
$\frac{x \mid y}{3 \mid -1}$ / $-\frac{1}{3} \mid 3$
$\frac{x \mid x}{0 \mid 3}$ / 5

$\frac{x \mid y}{0 \mid 3}$ / $3 \mid -1$

2. $x \geq -3$, $y \geq -2$, $2x + y \leq 6$, $2y - x \leq 7$
   vertices _____

(handwritten side work)
$\frac{x \mid y}{0 \mid 6}$ / $3 \mid 0$

$\frac{2y - x \leq 7 + x}{2} = \frac{7 + x}{2}$

$y \leq \frac{7}{2} + x$ (3,5)

$\frac{x \mid y}{1 \mid 4.5}$ / $0 \mid 3.5$

3. $x \geq 0$, $y \geq 0$, $y \leq -\frac{4}{7}x + 7$, $y \leq -3x + 24$
   vertices _____

4. $x \geq 0$, $y \geq 0$, $y \leq -\frac{1}{4}x + 40$, $y \geq \frac{3}{2}x - 30$
   vertices _____

Write a set of linear inequalities to model the constraints in each situation. Then graph the feasible region and find the coordinates of its vertices.

5. A restaurant has 25 tables. Some of the tables (x) are reserved, and the rest are available for walk-in customers. The restaurant never reserves more than 15 tables.
   inequalities _____
   vertices _____

(handwritten left margin)
$x \geq 0$
$y \geq 0$
$x + y \leq 25$
$x \leq 15$
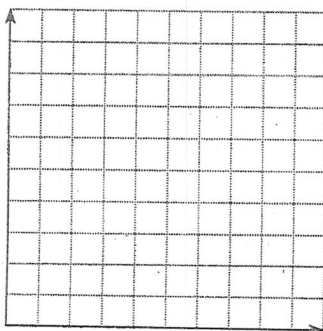
6. Red marbles cost 15¢ and turquoise ones cost 25¢. Jimbo has $1.75 to spend on red and turquoise marbles, and he will buy at most 5 red marbles.
   inequalities _____
   vertices _____
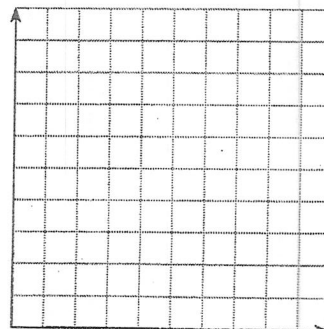
(handwritten)
$r \geq 0$
$t \geq 0$
$15r + 25t \leq 175$
$r \leq 5$

Answers

12. $\begin{bmatrix} 3.5 & 2.2 & -2.7 \\ 4.3 & -1.8 & 2.3 \\ 3.6 & 1.3 & 5.3 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 4.3 \\ 2.5 \\ 2.9 \end{bmatrix}$; $x \approx 0.842$, $y \approx 0.450$, $z \approx -0.135$

3-1 Part E

1. (b)   **2.** (a)   **3.** $(-2, 5)$; 1 solution; consistent
4. $(3, -5)$; 1 solution; consistent   **5.** $(3, 2)$; 1 solution; consistent   **6.** All ordered pairs that satisfy $2x + 3y = 5$; Infinitely many solutions; consistent   **7.** $(-4, -5)$; 1 solution; consistent   **8.** No solution; inconsistent
9. 9 gal regular and 6 gal premium
10. $\begin{bmatrix} 3 & -2 \\ -7 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -4 \\ 3 \end{bmatrix}$; $x = -14$, $y = -19$
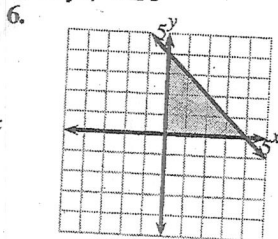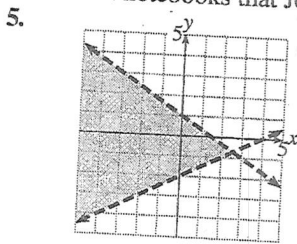**11.** $\begin{bmatrix} 2 & -5 & -3 \\ 1 & -3 & -1 \\ -2 & 6 & 3 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 2 \\ 5 \\ -2 \end{bmatrix}$; $x = 13$, $y = 0$, $z = 8$
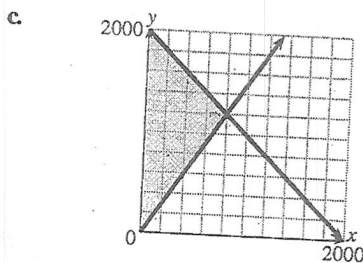**12.** Asparagus: $2.00; Broccoli: $1.00; Cabbage: $0.50

3-2 Part A

1.

2.
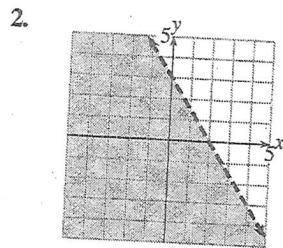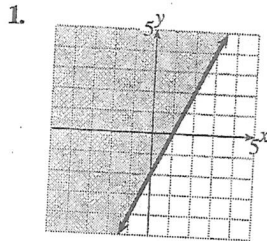
3. Possible answer: Let x be the amount that Maria spends; $x \le 300$ **4.** Possible answer: Let n be the number of notebooks that Jose buys; $n \ge 5$
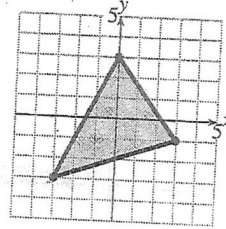
5.

6.

7. a. $x + y \le 2000$; $x \le \frac{2}{3}y$ **b.** $x \ge 0$; $y \ge 0$
c.

3-2 Part B

1. $(-3, -3)$, $(3, -1)$, $(0, 3)$

2. $(-3, -2)$, $(-3, 2)$, $(1, 4)$, $(4, -2)$
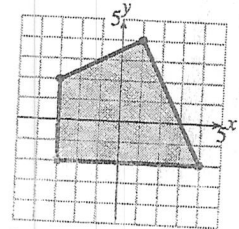
3. $(0, 0)$, $(0, 7)$, $(7, 3)$, $(8, 0)$
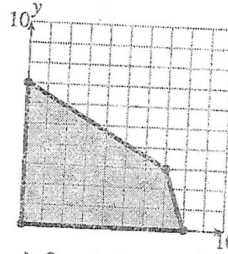
4. $(0, 0)$, $(0, 40)$, $(40, 30)$, $(20, 0)$
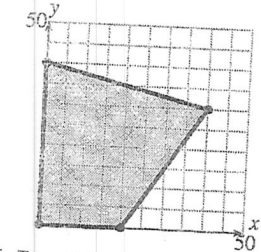
5. $x \ge 0$, $y \ge 0$, $x + y \le 25$, $x \le 15$; $(0, 0)$, $(0, 25)$, $(15, 10)$, $(15, 0)$
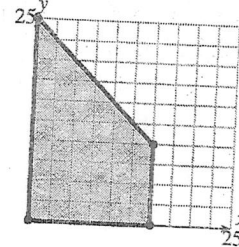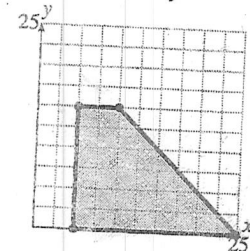

6. Possible answer: $r \ge 0$, $t \ge 0$, $15r + 25t \le 175$, $r \le 5$; $(0, 0)$, $(0, 7)$, $(5, 4)$, $(5, 0)$
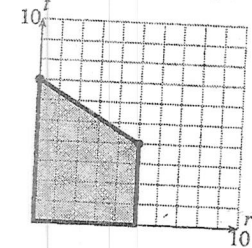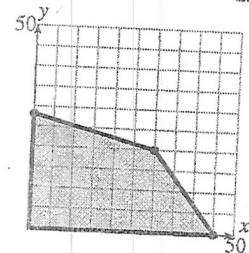

3-2 Part C

1. Possible answer: $P = 5b + 20p$ **2.** Possible answer: $C = 90b + 60v$ **3.** Possible answer: $N = x + y$
4. a. $x \ge 5$, $y \ge 0$, $y \le 15$, $x + y \le 25$
b. $(5, 0)$, $(5, 15)$, $(10, 15)$, $(25, 0)$ **c.** $I = 5x + 7y$
d. $(10, 15)$; He should work 10 hours for X and 15 hours for Y.   **e.** $155

5. a. $x \ge 0$, $y \ge 0$, $0.4x + 0.3y \le 18$; $0.1x + 0.35y \le 10$
b. $(0, 0)$, $\left(0, 28\frac{4}{7}\right)$, $(30, 20)$, $(45, 0)$
c. $F = x + y$ **d.** $(30, 20)$; Use 30 pounds of Amazin' Oats and 20 pounds of Nutty Surprise.   **e.** 50 pounds

Solve each system of linear equations if possible.

1. $x - y = -1$
   $y + z = 1$
   $3x + 2y + z = 10$ _____

2. $2x + z = 7$
   $x + y + z = 0$
   $2x + 3y - 2z = -8$ _____

3. $x + y - z = 3$
   $2x - y + z = 5$
   $x - 2y = 4$ _____

4. $3x - y + 2z = 20$
   $3x + y - 2z = 4$
   $x + 2y + z = 3$ _____

5. $x - z = -3$
   $x - y + 2z = 6$
   $2x + 3y - z = 7$ _____

6. $x + 2y - z = 5$
   $3x - 2y + 5z = 31$
   $-x + 2y - z = -5$ _____

7. Find the measures of the three angles of a triangle if the sum of twice the measure of the first angle and three times the measure of the second angle equals the measure of the third angle, and if the measure of the second angle is $3°$ more than the measure of the first angle.

   _____

8. Yesterday three customers at Kay's Market bought dates, endives, and/or figs, as shown in the table. Find the price per pound of each item.

   _____

	Dates	Endives	Figs	Total
Customer 1	2 lb	1 lb	0 lb	$3.85
Customer 2	1 lb	0 lb	2 lb	$6.20
Customer 3	1 lb	1 lb	1 lb	$4.70

Write each system of linear equations as a matrix equation in the form $AX = B$. Then use a graphing utility to solve each system of linear equations using matrices if possible.

9. $2x + 4y + 3z = 6$
   $4x - 2y + z = 4$
   $-x + 3y + 4z = -2$ _____

10. $5x - 2y + 3z = 4$
    $-2x + 4y + 6z = 3$
    $8x + 7y - 3z = -6$ _____

11. $2x - 3y + z = 4$
    $-5x + 2y + 3z = -3$
    $\frac{3}{8}x + \frac{7}{4}y + \frac{3}{4}z = 6$ _____

12. $3.5x + 2.2y - 2.7z = 4.3$
    $4.3x - 1.8y + 2.3z = 2.5$
    $3.6x + 1.3y + 5.3z = 2.9$ _____