

**RED BANK REGIONAL HIGH SCHOOL
HONORS ALGEBRA 2
SUMMER ASSIGNMENT – Summer 2017**

Mrs. Wendland, Mrs. Young

Welcome to Honors Algebra 2! In order to start out successfully in September, you'll need to complete an assignment before the beginning of classes. Set up a timeline to complete this assignment - take into account plans you may have for vacations, etc. You set up your own schedule, making sure you complete work early enough so as not to rush. Do NOT save this assignment for the last week (or day) of summer break! A schedule template has been included with this letter.

The assignment is divided into ten sections. Each section has a video component that will serve as a review of the material. There are also Guided Notes that correspond to the video to allow the review to be more interactive. You **MUST** complete the practice problems and application problems that correspond to each section. All work is to be written neatly, accurately, and organized. Presenting just answers is not acceptable. Answers will be posted by 8/14/17 on our websites. You are expected to check those answers and correct any mistakes. **You will take a brief homework quiz on the first day of class. The entire summer work assignment will be assessed as a quiz grade on the second block of class.**

If you have a question, please do not hesitate to e-mail either of us over the summer at the e-mail addresses below.

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If you are purchasing a graphical calculator, get the TI-84+ or the TI-89. These will get you through Calculus and beyond in college. A TI-83+ can also be used without sacrificing any ability in our class. A graphical calculator is a much-needed item in this course. Note however, only a TI-84+ or lower is allowed on state standardized tests and the ACT, but there are no restrictions on the AP or SAT level tests. If you are seriously considering AP Calculus and/or Statistics, a TI-89 is a good investment.

Have an enjoyable and safe summer - See you in September

Links to all videos and worksheets can be found on our websites:

<http://cwendland.weebly.com/>
<http://rbryoungmath.weebly.com/>

Honors Algebra 2 Summer Work Schedule

Section/Topic	Video/Guided Notes Projected Start Date	Video/Guided Notes Completed Date	Practice Problems Projected Start Date	# of Practice Problems/# of Application Problems	Practice Problems Completed Date
6.1 Write Linear Equations in Slope-Intercept Form				13/4	
8.1 Solving Systems by Graphing				10/2	
8.2 Solving Systems by Substitution				12/2	
8.3 Solving Systems by Elimination				12/4	
8.4 Solving Special Systems				12	
9 Review for Exponents				34/9	
10.2 Multiplying Polynomials				13	
10.4 Factoring Trinomials				12	
10.5 Solve Quadratics with Factoring				12	
10.6 Double Factoring				10/4	

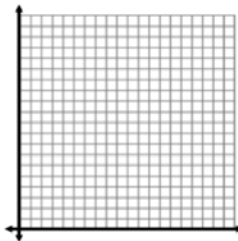
6.1 Write Linear Equations in Slope-Intercept Form

NOTES

Write your questions here!

VERBAL: Mr. Brust talks a METRIC-TON in his videos and the other Algebras try to convince him to cut them back. His first video was 27 minutes long but he says he'll cut back 2 minutes each video.

LABEL	LABEL
(units)	(units)
0	
1	
2	
3	



Write the rule:

Initial Value:

Rate of Change:

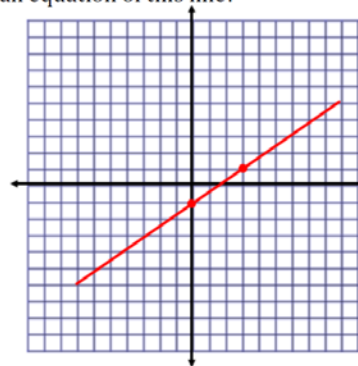
$$y = mx + b$$

Steps to find an equation in slope-intercept form.

Ex 1: What's an equation of this line?

slope = 4
y-intercept = -6

Ex 2: What's an equation of this line?



Ex #3: What's the equation of a line that passes through the following two points?
 $(-3, 1), (0, -8)$

Ex #4: Write an equation for the linear function f with the given values.
 $f(0) = -2, f(4) = -3$

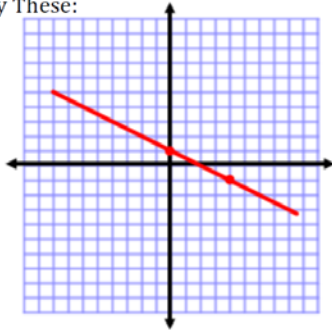
Ex #5: The initial fee to have a website set up using a server is \$48. It costs \$44 per month to maintain the website.

a) Write an equation that gives the total cost of setting up and maintaining a website as a function of the number of months it is maintained.

b) Find the total cost of setting up and maintaining the website for 6 months.

Try These:

1)



2) $(0, 4), (6, 13)$

SUMMARY:

Now,
summarize
your notes
here!

6.1 Write Linear Equations in Slope-Intercept Form

PRACTICE

Write an equation of the line with the given slope and y-intercept.

1) slope: 2
y-intercept: 9

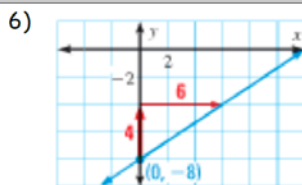
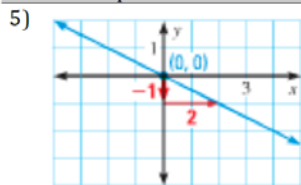
2) slope: -3
y-intercept: 0

3) slope: $\frac{2}{3}$
y-intercept: -9

4) Which equation represents the line with a slope of -1 and a y-intercept of 2?

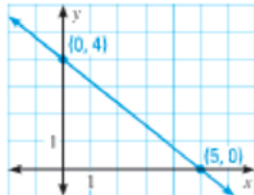
- a) $y = -x + 2$ b) $y = 2x - 1$ c) $y = x - 2$ d) $y = 2x + 1$

Write an equation of the line shown.

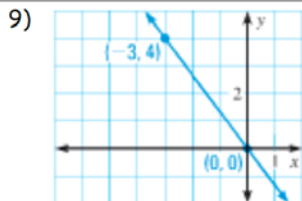
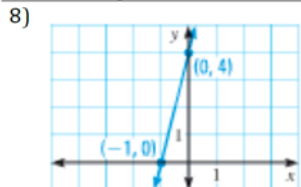


7) Describe and correct the error in writing an equation of the line shown.

$$\text{slope} = \frac{0 - 4}{0 - 5} = \frac{-4}{-5} = \frac{4}{5}$$
~~$$y = \frac{4}{5}x + 4$$~~



Write an equation of the line shown.



Write an equation of the line that passes through the given points.

10) $(2, -7), (0, -5)$

11) $(0, 4), (8, 3.5)$

Write an equation of the linear function f with the given values.

12) $f(0)=7, f(3) = 1$

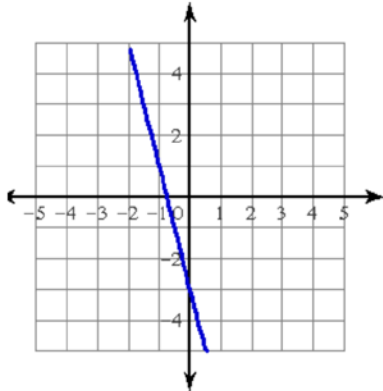
13) $f(0)=-1, f(5) = -5$

6.1 Write Linear Equations in Slope-Intercept Form

APPLICATION

Directions: Find the equation of the line for each situation.

1)



2) (0, -2) and (1, -4)

3) Mr. Kelly starts up his own HELLO KITTY business. It costs him \$10 to start up and he makes \$5 every month.

a) What's Mr. Kelly's slope (rate of change) for this situation?

b) What's Mr. Kelly's y-intercept (initial value) for this situation?

c) Write an equation of the line for the given situation. Graph the line.

d) How much money would Mr. Kelly have after 10 months?

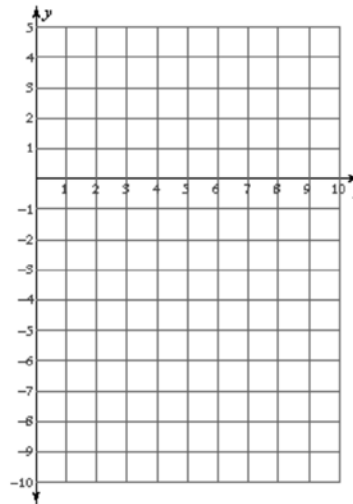
4) Mr. Brust starts up a rival HELLO KITTY business. At the beginning (0 months) he owes \$2. After 3 months he has \$1.

a) What's Mr. Brust's slope (rate of change) for this situation?

b) What's Mr. Brust's y-intercept (initial value) for this situation?

c) Write an equation of the line for the given situation. Graph the line.

d) How much money would Mr. Brust have after 10 months?



[8.1: SOLVING SYSTEMS BY GRAPHING]

Write your questions here

A linear system, or simply linear system, consists of two or more linear equations in the same variables. Here is an example:

$$\begin{array}{r} x + 2y = 7 \\ 3x - 2y = 5 \end{array} \quad \begin{array}{l} \text{Equation 1} \\ \text{Equation 2} \end{array}$$

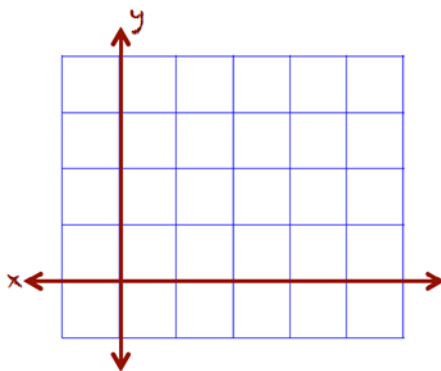
The solution is the x and the y values that satisfy each equation. One way to find the solution is by graphing both equations and finding where they intersect.

Steps for Solving Linear Systems by Graphing

- Step 1 • Write both equations in slope-intercept form and graph; (Sections 4.4, "4 Shortcuts," and Section 5.4)
- Step 2 • Find the coordinates of the point of intersection.
- Step 3 • Check the coordinates by substituting into the original equations.
- Step 4 • Write your solution as a coordinate point.

Solve the following linear system by graphing:

$$\begin{array}{l} y = \frac{2}{5}x + 1 \\ y = 3 \end{array}$$



[8.1: SOLVING SYSTEMS BY GRAPHING]

You try the next two examples by yourself.

1. $y + x = 11$
 $y = -2x + \frac{77}{5}$

2. $5y = -15 - x$
 $y = 2x + 15$



Sketch your graphs here!



Step 5: Checking your solution.

To check your solution, plug x and y into the original equations!

Is $(4,3)$ a solution of the following systems of equations?

$$\begin{aligned}y &= 3x - 11 \\ x - y &= -1\end{aligned}$$

$$\begin{aligned}x &= 4 \\ y &= x + 1\end{aligned}$$

Now, summarize
your notes here!

Write your questions here!

Solving Linear Systems with a Graphing Calculator

Let's be honest. You love our TI-84's! And as I have been explaining how to solve linear systems by hand, you were thinking "Can't I just do this in the calculator?" So here you go:

Example: Solve the linear system using a calculator:

$$y = -\frac{5}{2}x + 3$$
$$3y = x + 5$$



Step 1: Rewrite each equation in slope-intercept form.

$$y = -\frac{5}{2}x + 3$$

$$3y = x + 5$$

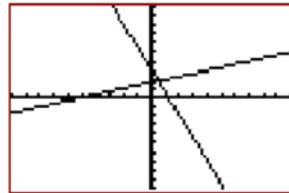
Step 2: Now, put each function into the calculator.

Keystrokes:

Y= ((-) 5 ÷ 2) X.T.θ.n + 3
(1 ÷ 3) X.T.θ.n + (5 ÷ 3)

```
Plot1 Plot2 Plot3
Y1= (-5/2)X+3
Y2= (1/3)X+(5/3)
Y3=
Y4=
Y5=
Y6=
Y7=
```

Step 3: Pick a nice window (Usually `ZOOM` 6 is a good starting point.) You may have to "Zoom Out" if you cannot see the lines by changing the window.



Step 4: Use the intersect function of your calculator to find the solution to the system:

Keystrokes:

2nd TRACE 5 ENTER ENTER ENTER

```
Intersection
X=.47058824 Y=1.8235294
```

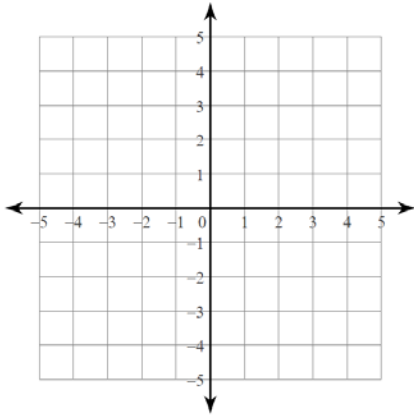
Notice that it now says $X = .47058824$ and $Y = 1.8235294$. These are your answers! Your solution would be $(0.47058824, 1.8235294)$.

Practice 8.1

Solve each system by graphing by hand.

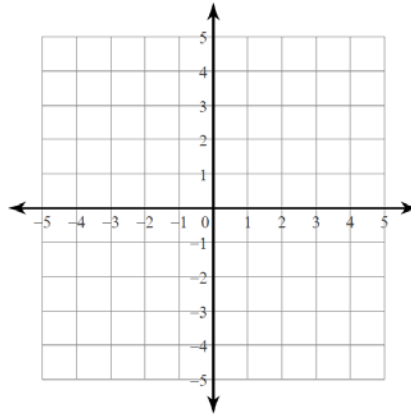
1) $y = \frac{8}{3}x + 4$

$$y = \frac{1}{3}x - 3$$

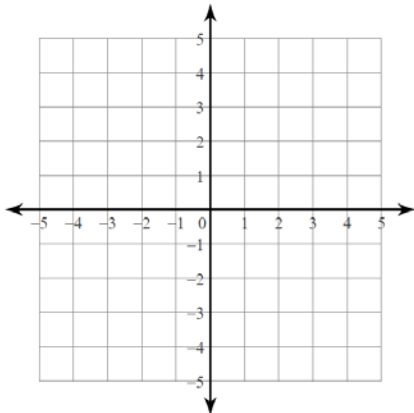


2) $y = \frac{1}{3}x + 1$

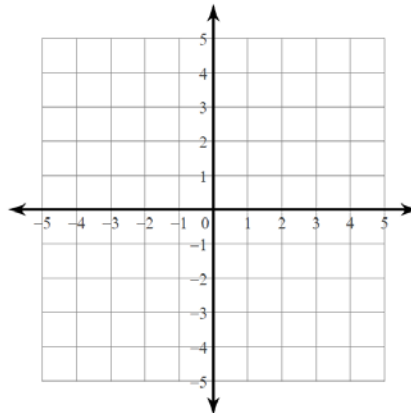
$$y = -\frac{1}{3}x + 3$$



3) $24 = -9x + 6y$
 $-12 - 4y = x$



4) $-2y + 8x = 2$
 $3y - 3x = 6$



Solve each system by graphing with your graphing calculator or by hand.

$$5) \begin{aligned} y &= -3x - 19 \\ y &= -\frac{7}{9}x + 1 \end{aligned}$$

$$6) \begin{aligned} y &= \frac{1}{3}x + 17 \\ y &= -\frac{4}{9}x + 10 \end{aligned}$$

$$7) \begin{aligned} y &= -\frac{1}{14}x + 19 \\ y &= \frac{17}{14}x + 1 \end{aligned}$$

$$8) \begin{aligned} y &= -\frac{2}{3}x + 15 \\ y &= \frac{7}{2}x - 10 \end{aligned}$$

9) Is the point $(1, 2)$ a solution of the system of linear equations in # 7 above?

10) Is the point $(-1, 3)$ a solution of the system of linear equations in # 8 above?

Application and Extension

APPLICATION AND EXTENSION

1. Solve the following system of equations using your calculator. Write your answers as fractions, if necessary.

a. $y = x + 2.5$
 $y - 2x = -0.5$

b. $y = 3x + 6$
 $-2y = 12x$

Solution _____

Solution _____

2. The Algebros thought it would be super-cool to start up a Twitter account (@TheAlgebros). When they created their account, they had 3 followers (their 3 mothers) and each day they added 4 followers. A rival Flippedmath group, "The Radicals," did the same, but started with 15 followers and added 1 follower per day.

Sketch your graph here!



TheAlgebros Equation: _____

TheRadicals Equation: _____

What is the solution to your system? _____

Hint: Adjust your window to:
X: $-5 \rightarrow 15$
Y: $-10 \rightarrow 50$

- How long will it take @TheAlgebros to have the same number of followers as The Radicals?
- How many followers will each group have after 1 year?

[8.2: SOLVING SYSTEMS BY SUBSTITUTION] 1

Write your questions here!

We have learned how to solve linear systems by graphing. Now we will learn how to solve the linear systems by using a method called **substitution**.

Steps for Solving Linear Systems by Substitution

- Step 1 • Solve one of the equations for one of its variables. When possible, solve for a variable that has a coefficient of 1.
- Step 2 • Substitute the expression from Step 1 into the other equation and solve for the other variable.
- Step 3 • Substitute the value from Step 2 into either original equation and solve for the remaining variable.
- Step 4 • Write your solution as a coordinate point or as a pair of values.

Example 1: Solve the linear system using substitution:

$$\begin{aligned}4x + 6y &= 4 \\ x &= -6 + 2y\end{aligned}$$

Step 1: Solve one of the equations for one of its variables.

Step 2: Now, substitute the expression from **Step 1** into the OTHER equation and solve.

Step 3: Next, substitute the value from **Step 2** into either of the original equations and solve for the last unknown variable.

Step 4: Write your solution as a coordinate point or as a pair of values.

2 | 8.2: SOLVING SYSTEMS BY SUBSTITUTION

Write your questions here!



More Examples:

2. $y = -7 - 3x$
 $-2x + 4y = 0$

3. $x = 2y + 5$
 $x = 10 - 3y$

4. $x - 1 = y$
 $2x - y = 5$

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

Now, summarize
your notes here!



Practice 8.2 Systems of Equations (Substitution)

Show all of your work!

Solve each system by substitution.

1) $4x - 4y = -4$
 $y = -4x + 1$

2) $y = 2x - 7$
 $2x - 4y = 10$

3) $8x + 5y = -24$
 $y = 5x + 15$

4) $y = -4x - 5$
 $6x - 5y = -1$

5) $y = 4x - 24$
 $-3x - 5y = -18$

6) $y = 4x - 17$
 $4x + 4y = 12$

7) $x = -1 - 3y$
 $2x - 4y = -22$

8) $-x + 3y = 4$
 $x = 4y - 3$

9) $4x + y = -3$
 $-7x - 3y = 9$

10) $x = 5y - 11$
 $-9x - 7y = -5$

11) Is the point $(-1, 3)$ a solution of the system of linear equations below?

$$x + y = 2$$
$$y - x = 2$$

12) Is the point $(1, 7)$ a solution of the system of linear equations below?

$$2x - 4 = 5$$
$$x = 1$$

Application and Extension

1. Solve the following system of equations using substitution. Write your answers as fractions, if necessary.

$$\begin{aligned} -x + 2y &= -2 \\ y &= 3x + 4 \end{aligned}$$

2. In the March 1998 issue of **Great Goatee Magazine**, readers could vote online for their favorite goatee in the *Pitt-Brust Bonanza*. Readers could either vote for Brad Pitt or Mr. Brust. Brust's votes equaled 2 times the sum of Pitt's votes and 400. The total number of votes received was 2012.

- a. Model the situation with a linear system.



Pitt?

Let B = # vote for Brust
Let P = # votes for Pitt

Total # of votes: _____ + _____ = 2012

Brust vs Pitt: _____ = 2 (_____ + _____)



Brust?

- b. Now solve your system using substitution. By how many votes did Brust win the contest?

- c. Explain why solving this by graphing wouldn't be ideal.

[8.3: SOLVING SYSTEMS BY ELIMINATION] 1

Write your questions here!

We have learned how to solve linear systems by graphing and substitution. Now we will learn how to solve the linear systems by using a method called **elimination**.

Steps for Solving Linear Systems by Elimination

- Step 1 • Make sure that all of the variables and the equal sign are "lined up."
- Step 2 • Decide which coefficients you want to cancel out. To cancel out, they must be opposites. You might have to multiply the equations first!
- Step 3 • Add the two equations and solve new equation. (One variable should cancel out!)
- Step 4 • Take your answer to Step 3 and substitute it into either of the original equations.
- Step 5 • Write your solution as a coordinate point or as a pair of values.

Example 1: Solve the linear system using elimination:

$$\begin{aligned}3x - 4y &= 10 \\5x + 4y &= 6\end{aligned}$$

Step 1: Do you have x over x, y over y and equal sign over equal sign? Yup!

Continue on....

Step 2: The y's are already opposites. Our work here is done.

Step 3: Add the two equations. Solve the resulting equation.

Step 4: Take the answer from **Step 3** and plug it into either of the original equations and solve for the other unknown variable.

Step 5: Write your solution as a coordinate point or as a pair of values.

2 | 8.3: SOLVING SYSTEMS BY ELIMINATION

Write your questions here!

More Examples:

2. $2x - y = 12$
 $-2x - 3y = -12$

3. $x + 2y = 4$
 $-6x + 2y = -10$

4. $4x - 3y = 8$
 $2x - 2y = 0$

5. $9x + 2y = 39$
 $6x + 13y = -9$

Now, summarize your notes here!

Practice 8.3 Systems of Equations (Elimination)

Show all of your work!

Solve each system by elimination.

$$\begin{aligned} 1) \quad & -4x - 4y = 8 \\ & -x + 4y = 12 \end{aligned}$$

$$\begin{aligned} 2) \quad & 3x + 2y = -3 \\ & -3x + y = 12 \end{aligned}$$

$$\begin{aligned} 3) \quad & x - 2y = -9 \\ & -4x - 2y = -4 \end{aligned}$$

$$\begin{aligned} 4) \quad & -2x + y = 4 \\ & -2x + 2y = 0 \end{aligned}$$

$$\begin{aligned} 5) \quad & -4x - y = 8 \\ & -12x + 3y = -24 \end{aligned}$$

$$\begin{aligned} 6) \quad & -x + 4y = -1 \\ & -2x - 8y = 14 \end{aligned}$$

7) $-6x + 3y = 3$
 $5x - 8y = -8$

8) $4x - 3y = -16$
 $5x + 2y = 3$

9) $3x + 2y = 10$
 $4x + 5y = 18$

10) $-5x - 6y = -3$
 $2x + 4y = 6$

11) Is the point $(0, 0)$ a solution of the system of linear equations below?

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

12) Is the point $(\frac{5}{4}, 7)$ a solution of the system of linear equations below?

$$4x + y = 12$$
$$-4x + 3y = 16$$

Application and Extension

$$\begin{aligned}2x + 2y &= 2 \\ -8x + 4y &= 16\end{aligned}$$

1. Solve the following system of equations using elimination.

2. You have just enough coins to pay for a loaf of bread priced at \$1.95. You know you have a total of 12 coins, with only quarters and dimes. Let Q = the number of quarters and D = the number of dimes. Complete:

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = 12$$

Representing the number of coins.

$$0.10\underline{\hspace{2cm}} + 0.25\underline{\hspace{2cm}} = \$1.95$$

Representing the value of the coins.

Now, solve the linear system using elimination.

(Hint: Multiply the second equation by -10 !)

3. The table shows the number of apples needed to make apple pies and applesauce sold at a farm store. During a recent picking at the farm, 169 Granny Smith apples and 95 Red Delicious apples were picked. Write and solve a system to determine how many apple pies and how many batches of applesauce can be made if every apple is used. *(Hint: read across each row to create your equations!)*

Type of Apple	# Needed for π (Pie)	# Needed for Sauce	Total
Granny Smith	5	4	169
Red Delicious	3	2	95

3. The Algebros are visting Michigan State University when they stumble upon a Girl Scout selling cookies. Sully orders 3 boxes of Tagalongs and 4 boxes of Somoas for \$26. Brust isn't statisfied with such a small order and yells "**UPGRADE!!**" He then upgrades the order to 5 boxes of Tagalongs and 6 Boxes of Somoas which costs \$41.

a. Write a system of linear equations to model the situation.
(Let x = cost of a box of Tagalongs and y = cost of a box of Somoas.)

b. Solve your system of equations above using elimination to find the cost of each type of cookie.

[8.4: SOLVING SPECIAL SYSTEMS] 1

Write your questions here!

We learned 3 different ways to solve linear systems of equations: graphing, substitution and elimination. But sometimes, weird things can happen:

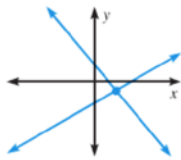
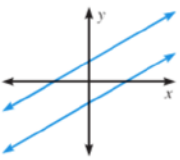
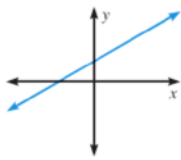
Examples:

Solve each linear system by graphing:

1. $y = \frac{1}{2}x - 4$
 $y = \frac{1}{2}x + 2$

2. $5x + 3y = 6$
 $3y = -5x - 3$

Possible Outcomes When Solving by Graphing

CONCEPT SUMMARY		For Your Notebook
Number of Solutions of a Linear System		
One solution	No solution	Infinitely many solutions
		
The lines intersect. The lines have different slopes.	The lines are parallel. The lines have the same slope and different y-intercepts.	The lines coincide. The lines have the same slope and the same y-intercept.

You try! Solve each linear system by graphing. (Be sure to solve for y first!)

3. $y = 3x - 6$
 $y - 3x = 1$

4. $y = 4x - 1$
 $-2y = -8x + 2$

Write your questions here!

So what does this look like when solving by substitution and elimination?

Solve by substitution:

$$5. \quad -16x + 2y = -2$$

$$y = 8x - 1$$

Solve by elimination:

$$6. \quad -18x + 6y = 24$$

$$3x - y = -2$$

		POSSIBLE OUTCOMES		
		No Solution	1 Unique Solution	Infinitely Many Solutions
METHOD OF SOLVING	Graphing	<i>Parallel Lines</i>	<i>Lines Intersect Once</i>	<i>Both Lines are the Same When Graphed</i>
	Substitution or Elimination	<i>Variables Cancel; Sides Not Equal</i>	<i>Each Variable Has One Solution</i>	<i>Variables Cancel; Sides are Equal</i>

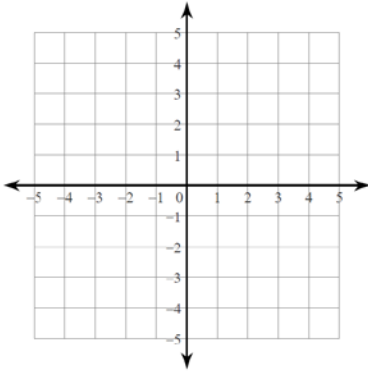
Now, summarize your notes here!

Practice 8.4 Special Systems

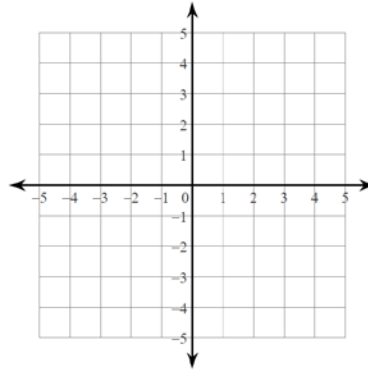
Show all of your work!

Solve each system by graphing.

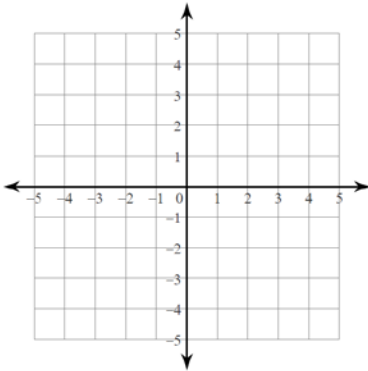
1) $y = -x - 4$
 $y = x - 2$



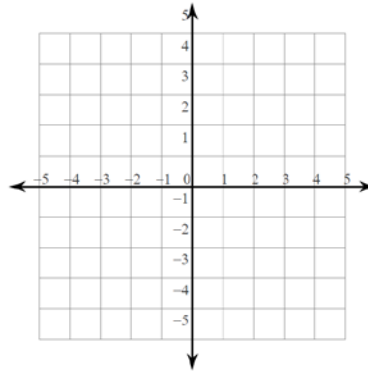
2) $y = \frac{1}{2}x + 2$
 $y = \frac{1}{2}x - 3$



3) $x + y = 3$
 $x + y = -1$



4) $2x - y = -4$
 $2x - y = -2$



Solve each system by elimination.

$$\begin{aligned} 5) \quad & -3x + 7y = -2 \\ & 6x - 14y = 4 \end{aligned}$$

$$\begin{aligned} 6) \quad & 16x - 4y = -4 \\ & -8x + y = -3 \end{aligned}$$

$$\begin{aligned} 7) \quad & 9x + 15y = -12 \\ & -3x - 5y = 7 \end{aligned}$$

$$\begin{aligned} 8) \quad & -5x - 4y = -1 \\ & 10x + 8y = 2 \end{aligned}$$

Solve each system by substitution.

$$\begin{aligned} 9) \quad & 12x - 2y = 3 \\ & y = 6x - 2 \end{aligned}$$

$$\begin{aligned} 10) \quad & y = 3x + 21 \\ & -9x + 3y = 63 \end{aligned}$$

$$\begin{aligned} 11) \quad & 3x - 6y = -6 \\ & y = x - 2 \end{aligned}$$

$$\begin{aligned} 12) \quad & y = -8x - 1 \\ & 24x + 3y = -3 \end{aligned}$$

Review for Exponents

1) Express the following using exponents.

a. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

b. $\frac{1}{x}$

c. $5 \cdot 5 \cdot m \cdot m \cdot n \cdot n \cdot n \cdot n$

d. $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

2) Express the following without using exponents.

a. $2^3 x^2$

b. 4^{-3}

c. $\left(\frac{3}{4}\right)^3$

d. x^{-5}

Simplify. Your answer should contain only positive exponents.

3) $3^2 \cdot 3^2$

4) $2^{-2} \cdot 2^4$

5) $(3^{-4})^2$

6) $(3^3)^2$

7) $\frac{2^3}{2^{-1}}$

8) $\frac{4^{-4}}{4^2}$

9) $2n^{-4} \cdot 3n^{-3}$

10) $4m^3 \cdot m^2 \cdot 4m$

11) $(r^{-3})^3$

12) $(4a^4)^2$

13) $-\frac{4x^0}{4x^2}$

14) $\frac{3n^2}{-n^3}$

15) $-2y^2 \cdot 4y^{-3}$

16) $4m^{-2}n^2 \cdot 4m^4$

17) $(-4x^3y^0)^2$

18) $(-x^4y^2)^3$

19) $\frac{4x^0y^4}{-4x^{-4}}$

20) $\frac{4yx^2}{2yx^0}$

21) $(2x^3)^3x^{-1}$

22) $\frac{4r^4 \cdot r^{-2}}{r^4}$

23) $\left(\frac{2x^4}{2x^2}\right)^3$

24) $\frac{(-2a^4)^2}{a^3 \cdot -2a^4}$

Simplify. Write each answer in scientific notation.

25) $(5.8 \times 10^9)(3 \times 10^{-5})$

26) $(2 \times 10^{-9})(6 \times 10^9)$

27) $\frac{7 \cdot 10^{12}}{2.5 \cdot 10^7}$

28) $\frac{8.8 \times 10^{-7}}{8 \times 10^{-1}}$

29) $(8 \cdot 10^{-5})^4$

30) $(3 \cdot 10^2)^9$

Express in scientific notation

31) 5,555,000,000

32) 0.0072


Express in standard notation (decimal notation).


33) 5×10^{-5}


34) 8.35×10^6

REVIEW APPLICATIONS

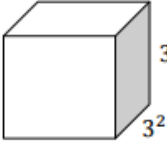
Find the area of the following rectangles:

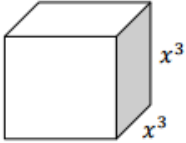
1. 
 4^2
 4^3

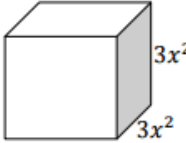
2. 
 x
 $3x - 4$

3. 
 $2x^2$
 $2x^3 + 4x$

Find the volume of the following cubes:

4. 
 3^2
 3^2
 3^2

5. 
 x^3
 x^3
 x^3

6. 
 $3x^2$
 $3x^2$
 $3x^2$

EXPAND

Expand the following to simplify. SHOW WORK!

7. $(3xy^3)^2(2x^4y^2) =$

RULE

Use the rules to simplify.

8. $(-5x^7y^2z)^4(4xy^0z^9)^3 =$

9. List the elements in order from least to concentration to greatest concentration.

Elements in Seawater	Concentration (parts per million)
Sulfur	904
Chloride	1.95×10^4
Magnesium	1.29×10^3
Sodium	10,770

10.2 Multiplying Polynomials

Write your questions here!



Multiplying a Monomial times a Polynomial

$$-3x^2(4x^3 - 2x^2 + x - 10)$$

Multiplying using a table

$$(2x - 1)(4x + 2)$$

Binomial times a Trinomial

$$(x - 5)(3x^2 - 2x + 4)$$

Another Way: Multiplying Horizontally

$$(2x - 5)^2$$

$$(2x - 4)(x^3 + 2x^2 - 2x + 4)$$

Try these:

$$(2x - 4)(2x + 4)$$

$$(7g^2 + 4g + 1)(g - 8)$$

SUMMARY:

Now,
summarize
your notes
here!



10.2 Multiplying Polynomials

PRACTICE

DIRECTIONS: Find the product.

1) $x(2x^2 - 3x + 9)$

2) $z^2(4z^4 + z^3 - 11z^2 - 6)$

3) $-a^5(-9a^2 + 5a + 13)$

4) $(x+2)(x-3)$

5) $(4b - 3)(b-7)$

6) $(3k - 1)((3k + 1)$

$$7) (y - 6)^2$$

$$8) (7w + 5)(11w - 3)$$

$$9) (s + 4)(s^2 + 6s - 5)$$

$$10) (5x + 2)(-3x^2 + 4x - 1)$$

$$11) (6z^2 + z - 1)(9z - 5)$$

$$12) p(2p-3) + (p-3)(p+3)$$

$$13) -3b^2(b + 11) - (4b - 5)(3b - 2)$$

10.4 Factoring Trinomials

NOTES

Write your questions here!

$$(2x + 3)(3x + 2)$$

Multiplying



Factoring

Factoring with the Australian Method

Ex 1:

Key numbers
X to $a \cdot c =$
+ to $b =$

*Make sure you do a quick check

Ex 2:

Key numbers
X to $a \cdot c =$
+ to $b =$

Ex 3:

Key numbers
X to $a \cdot c =$
+ to $b =$

*Make sure you do a quick check

Ex 4:

Key numbers
X to $a \cdot c =$
+ to $b =$

You Try!

1)

2)

SUMMARY:

Now,
summarize
your notes
here!



10.4 Factoring Trinomials

PRACTICE

Directions: Factor the trinomial.

1) $x^2 + 4x + 3$

2) $b^2 - 17b + 72$

3) $2y^2 - 3y - 2$

4) $8y^2 + 2y - 3$

5) $6s^2 - s - 5$

6) $m^2 - 7m - 120$

7) $2h^2 - 5h - 3$

8) $c^2 - 144$

9) $4n^2 + 16n + 15$

$$10) p^2 + 20p + 64$$

$$11) x^2 + 3x - 70$$

$$12) 4n^2 - 9$$

10.5 Solve Quadratics with Factoring

NOTES

Write your questions here!



Ex 1:

Tip: Make sure the squared term is positive.

Ex 2:

Remember to use the zero product property

Find the zeroes of the function or polynomial.

Ex 3:

Ex 4:

Your turn!

1) Solve:

2) Find the zeroes:

SUMMARY:

Now,
mmarize
ur notes
here!

10.5 Solve Quadratics with Factoring

PRACTICE

Directions: Solve the equation.

1) $8t^2 - 2t = 3$

2) $n^2 - 64 = 0$

3) $2x^2 - 3x - 35 = 0$

4) $a^2 = 50 - 5a$

5) $s(s + 1) = 72$

6) $p(3p + 14) = 5$

Directions: Find the zeroes of the polynomial function.

7) $f(x) = x^2 - 12x + 35$

8) $g(x) = 3x^2 + x - 14$

9) $f(x) = 6x^2 - 11x + 3$

10) $h(x) = x^2 + 10x - 39$

11) $g(x) = x^2 - 14x - 51$

12) $j(x) = 9x^2 - 4$

10.6 Double Factoring

NOTES

Write your questions here!



Factor: $2b^2 - 12b - 80$

Factor: $-4g^2 + 12g + 112$

Factor: $30k^5 + 57k^4 - 18k^3$

Solve: $6b^2 = -48b$

Solve: $45r^3 + 51r^2 - 13r = -r$

You try: $-24b^2 - 76b - 12$

SUMMARY:

Now,
summarize
your notes
here!



10.6 Double Factoring

PRACTICE

Directions #1-6: Factor completely.

1) $-4r^2 + 20r + 144$

2) $4n^3 + 68n^2 + 288n$

3) $20n^4 + 76n^3 + 48n^2$

4) $42x^2 + 6x - 36$

5) $-60x^2 + 15$

6) $8p^2 - 50$

Directions #7-10: Solve each equation.

7) $8x^2 + 40x = 0$

8) $3a^3 - 24a^2 = -42a + 3a^2$

9) $28k^2 - 192k = -144$

10) $6x^3 + 9x^2 = 60x$

10.6 Double Factoring

APPLICATION

1) Solve: $11x^3 - 3x^2 = 5x^3 - 3x + 6x^2$

Directions: A projectile is an object that is propelled into the air, but has no power to keep itself in the air, like a thrown ball. The height of a projectile can be described by the vertical motion model:

$s(t) = -16t^2 + vt + h$, where $s(t)$ represents the height of the projectile, t represents the time in seconds the object has been in the air, v is the initial velocity (in feet per second) and h is the initial height (in feet).

3) A cliff diver jumps from a ledge 96 feet above the ocean with an initial upward velocity of 16 feet per second.

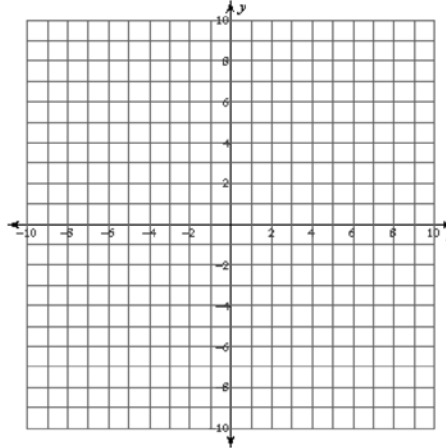
a) Write an equation that represents this situation.

b) How long will it take until the diver enters the water? (Hint: You should factor out a GCF first).

4) Use the function $f(x) = x^3 + 2x^2 - 3x$ to answer the following.

a) Complete the table. Plot on graph.

X	F(x)
-3.5	
-3	
-2	
-1	
0	
.5	
1	
2	



b) Put the function into factored form.

c) Find the zeroes of the function. Plot them on the graph.

d) How do the zeroes relate to the graph?