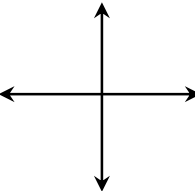
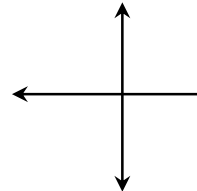


Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
RELATIONS	- A set of ordered pairs. Can be shown in a _____, _____, _____, or expressed as an _____. - The set of x-values is called the _____ and the set of y-values is called the _____. - A relation with distinct points is called _____. A relation with connected lines or curves is called _____.

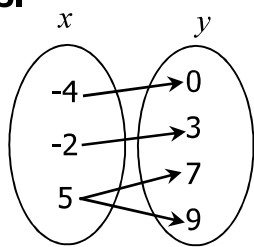
FUNCTION	A relation in which each element of the domain is paired with exactly one element of the range.	
	FUNCTION:	NOT A FUNCTION:
	This means x-values do not repeat!	

Vertical Line Test In order to be a function, a vertical line can not pass through more than one point in the relation.	FUNCTION: 	NOT A FUNCTION: 
---	---	---

Directions: Find the domain and range of each relation. Then, determine if the relation is a function.

1. $\{(-1, -9), (0, -5), (4, 3), (6, -2)\}$ $D =$ _____ $R =$ _____ Function? _____	2. $\{(5, 2), (-3, 4), (5, -6), (8, 0)\}$ $D =$ _____ $R =$ _____ Function? _____																				
3. <table border="1" style="display: inline-table; vertical-align: top;"> <tr><td>x</td><td>y</td></tr> <tr><td>7</td><td>-8</td></tr> <tr><td>2</td><td>3</td></tr> <tr><td>0</td><td>-1</td></tr> <tr><td>-4</td><td>3</td></tr> </table> $D =$ _____ $R =$ _____ Function? _____	x	y	7	-8	2	3	0	-1	-4	3	4. <table border="1" style="display: inline-table; vertical-align: top;"> <tr><td>x</td><td>y</td></tr> <tr><td>10</td><td>0</td></tr> <tr><td>15</td><td>3</td></tr> <tr><td>18</td><td>7</td></tr> <tr><td>24</td><td>11</td></tr> </table> $D =$ _____ $R =$ _____ Function? _____	x	y	10	0	15	3	18	7	24	11
x	y																				
7	-8																				
2	3																				
0	-1																				
-4	3																				
x	y																				
10	0																				
15	3																				
18	7																				
24	11																				

5.

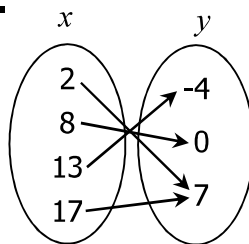


$D =$ _____

$R =$ _____

Function? _____

6.

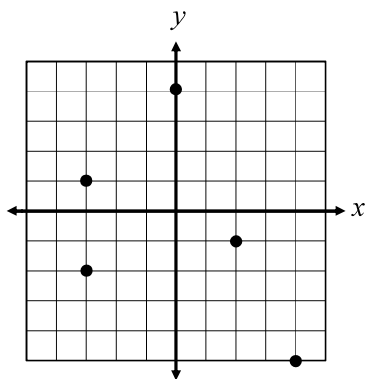


$D =$ _____

$R =$ _____

Function? _____

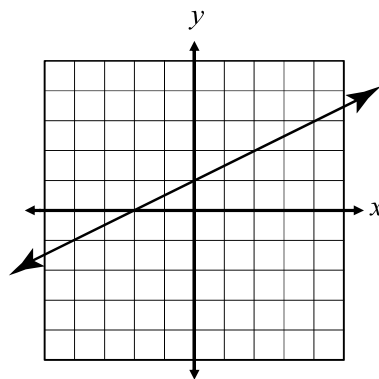
7.



$D =$ _____ $R =$ _____

Function? _____

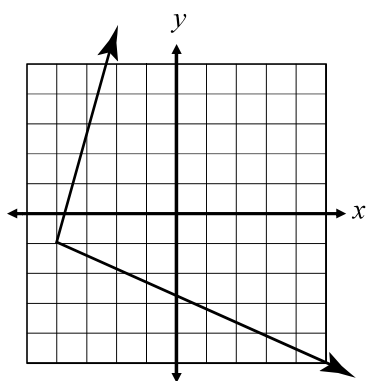
8.



$D =$ _____ $R =$ _____

Function? _____

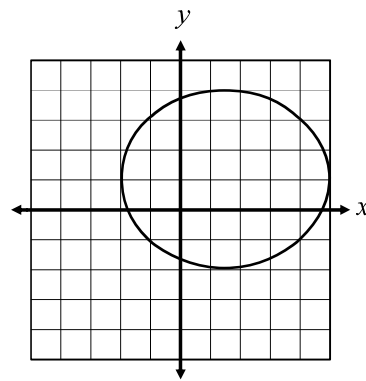
9.



$D =$ _____ $R =$ _____

Function? _____

10.



$D =$ _____ $R =$ _____

Function? _____

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

$D =$ _____

$R =$ _____

Function? _____

12. $y = -5x - 1$

$D =$ _____

$R =$ _____

Function? _____

13. $y = -7$

$D =$ _____

$R =$ _____

Function? _____

14. $x = -1$

$D =$ _____

$R =$ _____

Function? _____

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
FUNCTION NOTATION	Equations that represent functions are often written in function notation . Example: $y = 2x + 7$ 
	_____ is the input and _____ is the output !
<i>Evaluating</i> FUNCTIONS	Function notation is specifically useful for finding a value in the range that corresponds to a certain domain value. Example: If $f(x) = 2x + 7$, find $f(-3)$

Use $f(x) = -5x - 14$ and $g(x) = -x^2 + 9x - 1$ for questions 1-6.

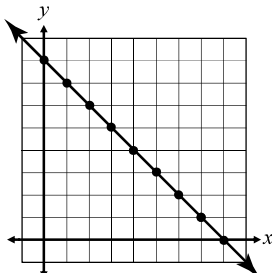
1. $f(-9)$	2. $f\left(\frac{3}{10}\right)$
3. $g(0.4)$	4. $g(-7)$
5. $f(1) - f(-4)$	6. $2[g(12)]$

Use $p(x) = \frac{1}{2} - \frac{4}{3}x$ and $q(x) = |3x - x^3|$ for questions 7-12.

7. $p\left(-\frac{9}{16}\right)$	8. $q(5)$
9. $q(-2)$	10. $p(18)$

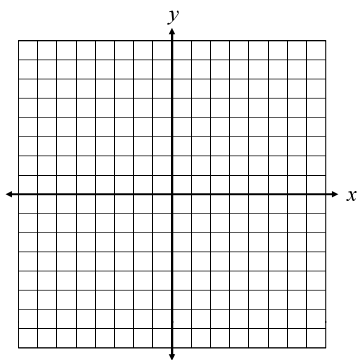
11. $7 - q(4.5)$	12. $3[p(-1)] + 5$
Use $f(x) = 3x + 19$ for questions 13-14.	
13. If $f(x) = 34$, find x .	14. If $f(x) = -62$, find x .
15. Owen paid a landscaping company \$108 for an initial lawn treatment, then \$74 per month thereafter. The function $p(t) = 108 + 74t$ represents the total amount of money he will have paid after t months.	
a) Find $p(24)$. What does this represent?	b) How long has Owen been receiving lawn service if he has paid a total of \$2,994 to date?
Use $f(x) = -4x + 9$ and $g(x) = x^2 - 5$ for questions 16-20.	
16. $f(c + 2)$	17. $f(7w - 5)$
18. $g(-4y^3)$	19. $g(a - 3)$
20. $g(2m + 1) - f(3m - 7)$	

Name:	Date:
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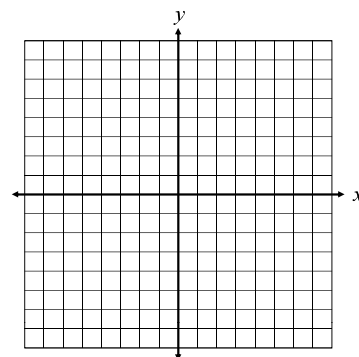
Main Ideas/Questions	Notes/Examples			
Linear Relations	- When points on a graph lie along a straight line, it is called a linear relation. - Linear relations can be represented by an equation, for example, the equation of this graph can be written as $x + y = 8$.			
	Standard Form			
Linear equations are often written in standard form : (where A, B, and C are integers and A ≥ 1 and the GCF of A, B, and C, is 1)				
Directions: Write each equation in standard form .				
1. $-5x + 6y = -12$		2. $y = 2x - 9$		
3. $9x + 6y - 24 = 0$				
4. $7y = 7 - 7x$		5. $\frac{3}{4}x - \frac{1}{3}y = 1$		
		6. $\frac{1}{6}x = y - 2$		
Slope-Intercept Form	Linear equations are often written in slope-intercept form : (or) (where m is the and b is the)			
Slope	Slope is the constant rate of change between the points (think rise/run!) There are types of slope. Sketch them below.			

Directions: Write the equation in **slope-intercept form**, then graph the line.

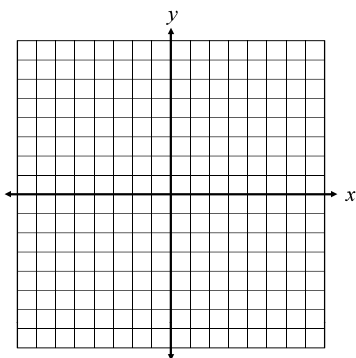
7. $y = \frac{2}{5}x + 7$



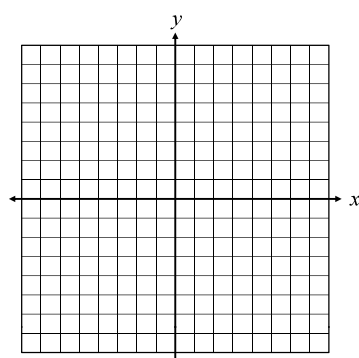
8. $f(x) = -x + 2$



9. $x + 3y = -15$



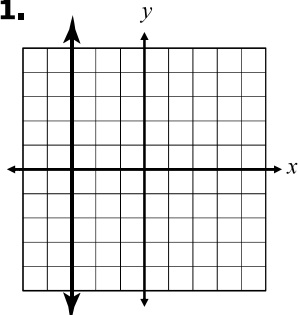
10. $4x + y - 1 = 0$



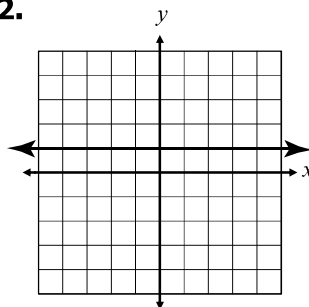
Vertical & Horizontal Lines

Write each equation to represent the line shown on the graph.

11.



12.



Parallel vs. Perpendicular Lines

- The **slopes** of **parallel lines** are _____.
- The **slopes** of **perpendicular lines** are _____.

Directions: Determine whether the pair of lines are parallel, perpendicular, or neither.

13. $10x + 5y = 5$ and $-x = 2y + 16$

14. $8x - 6y = 42$ and $-3y = 9 - 4x$

15. $-8x + 8y = 0$ and $x - y = 4$

16. $x = 2$ and $y = 2$

Name:

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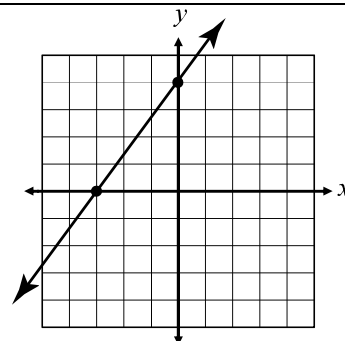
Class:

Main Ideas/Questions

Notes/Examples

X- and Y-Intercepts

- The point at which the graph intersects the x-axis is called the **x-intercept**. Likewise, the point at which the graph intersects the y-axis is called the **y-intercept**.
- Identify the x- and y-intercept of the graph shown on the right.



The **x-intercept** is also referred to as a _____, _____, or _____ to the equation.

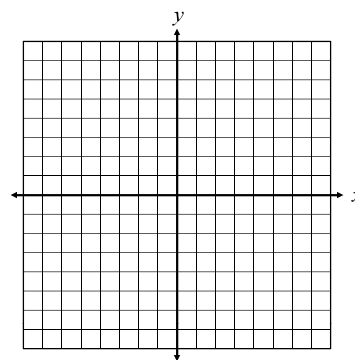
Finding Intercepts Algebraically

To find the x-intercept of an equation, set y equal to 0 and solve for x. To find the y-intercept of an equation, set x equal to 0 and solve for y. You can use these points to graph the equation.

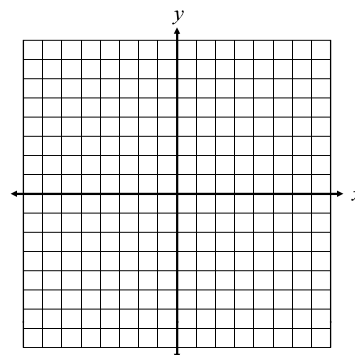
Example: Find the x- and y-intercepts of the equation $y = -2x + 5$

Directions: Find the x- and y-intercept of each equation. Then, graph the equation using the intercepts.

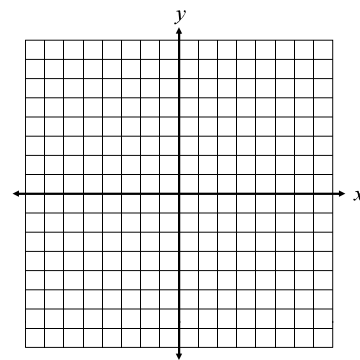
1. $y = 5x - 1$



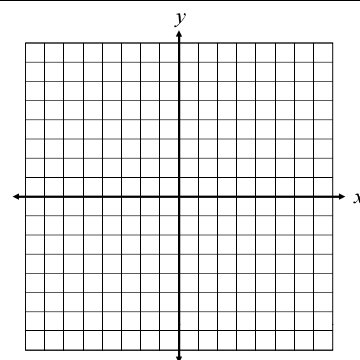
2. $y = -\frac{6}{5}x + 2$



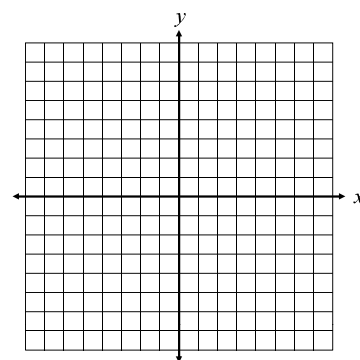
3. $y = -3x + \frac{16}{3}$



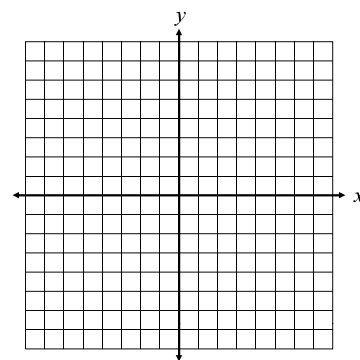
4. $4x - y = 8$



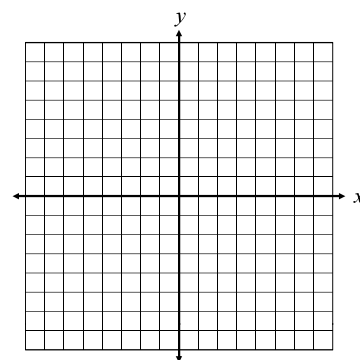
5. $-5x - 4y = -24$



6. $\frac{3}{4}x - \frac{1}{3}y = -2$



7. $\frac{5}{2}x + \frac{5}{6}y = 6$



Name:	Date:
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Main Ideas/Questions	Notes/Examples	
Writing Linear Equations Given a POINT & SLOPE	To write a linear equation given the slope of the line (m), and a point that it passes through (x_1, y_1) , use the point-slope formula : _____	
Examples	1. $(-1, 7); m = -4$	2. $(-6, -5); m = \frac{2}{3}$
Writing Linear Equations Given TWO POINTS	To write a linear equation given two points (x_1, y_1) and (x_2, y_2) use the slope formula followed by the point-slope formula : _____  _____	
Examples	3. $(-6, 1)$ and $(-3, 7)$	4. $(-2, -2)$ and $(-6, 8)$
	5. $(10, -5)$ and $(1, -8)$	6. $(-8, -3)$ and $(-2, -3)$

LINEAR EQUATION APPLICATIONS: Slope-Intercept Form

7. A cab ride costs \$4 plus \$1.75 per mile driven.

a) Write an equation to represent the cab fare.
Define your variables.

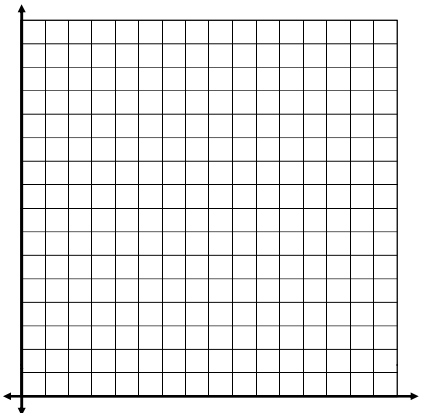
b) If Clay's destination is 17 miles away and he has \$30, will he make it?

8. The Jones' are purchasing a new home. The closing costs are \$249 plus 3% of the purchase price of the home.	
a) Write an equation to represent the total closing costs. Define your variables.	b) The purchase price of their home is \$195,000. The sellers offered \$5,000 in closing cost assistance. Will this cover all their closing costs? If not, how much will the Jones' need to pay out of pocket?
9. A 22.5-ounce candle burns at the rate of one ounce every five hours.	
a) Write an equation to represent the amount of candle left. Define your variables.	b) How many hours will the candle last?
LINEAR EQUATION APPLICATIONS: Standard Form	
10. Josh bought 3 bags of potting soil and 10 bags of mulch from Home Depot.	
a) Write an equation to represent the total cost. Define your variables.	b) If Josh spent \$40.91 and mulch cost \$2.75 per bag, how much was a bag of potting soil?
11. Kayleigh has a collection of quarters and nickels.	
a) Write an equation to represent the total value of the coins. Define your variables.	b) If the total value of the coins is \$5.50 and Kayleigh has 17 quarters, how many nickels does she have?
12. The baseball concession stand sells soft pretzels for \$4.50 and bags of popcorn for \$3.25.	
a) Write an equation to represent the total sales from pretzels and popcorn on a given day. Define your variables.	b) If the concession stand sold 137 soft pretzels, how many bags of popcorn would they need to sell to make at least \$1,000?

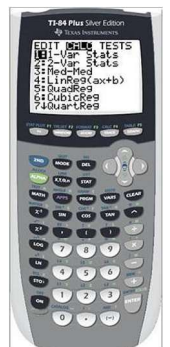
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Main Ideas/Questions	Notes/Examples		
SCATTER PLOTS	A scatter plot shows the relationship between two variables . Sketch the three possible relationships below.		
	Positive Correlation	Negative Correlation	No Correlation

LINE OF BEST FIT	Given a positive or negative correlation, it's possible to write a prediction equation, called a line of best fit . It can be used to predict the value of a variable given the value of the other variable.
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Example <table border="1"> <thead> <tr> <th>d</th><th>t</th></tr> </thead> <tbody> <tr><td>0</td><td>85</td></tr> <tr><td>4</td><td>82</td></tr> <tr><td>7</td><td>81</td></tr> <tr><td>10</td><td>79</td></tr> <tr><td>12</td><td>77</td></tr> <tr><td>15</td><td>76</td></tr> </tbody> </table>	d	t	0	85	4	82	7	81	10	79	12	77	15	76	The table to the left shows the relationship between the depth, d, of the lake in feet and the water temperature, t, in degrees Fahrenheit. a) Make a scatter plot.  b) Use two ordered pairs to write a line of best fit. c) Predict the temperature of the lake at 25 feet.
d	t														
0	85														
4	82														
7	81														
10	79														
12	77														
15	76														

LINEAR REGRESSION	Another method to find the line of best fit is called linear regression . This can be done through your graphing calculator and will create the most precise equation possible.	
Calculator Steps	Enter your data.	Find the line of best fit.
	- Hit STAT, ENTER - Enter x-values in L₁ - Enter y-values in L₂	- Hit STAT - Arrow over to CALC - Choose #4-LinReg(ax+b) - Hit ENTER (possibly twice)



Linear Regression Examples

1. The table below shows the number of people, p , and suitcases, s , on 8 airplanes

p	63	115	153	192	224	297	331	375
s	112	209	278	302	379	500	586	712

a) Find the regression equation.

b) Predict the number of suitcases on an airplane with 500 people.

2. The table below shows the population, in thousands, during certain years since 2000.

<i>year</i>	0	3	6	9	12	15
<i>population</i>	10.7	11.1	11.9	12.5	13.2	13.6

a) Find the regression equation.

b) Predict the population in 2025.

3. The table below shows the salary, in millions, made by the highest paid major league baseball player during certain years.

<i>year</i>	1985	1991	1993	1996	1998	2001
<i>salary</i>	2.1	3.8	6.2	9.3	14.9	22

a) Find the regression equation.

b) Predict the salary of the highest paid player in 2020.

4. The table below shows the mileage, m , on six cars that were recently traded in, along with their value, v .

m	5,824	25,824	58,126	73,005	105,092	159,062
v	\$16,920	\$10,300	\$7,225	\$5,300	\$3,125	\$1,800

a) Find the regression equation.

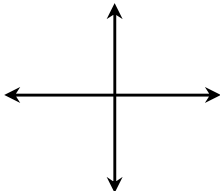
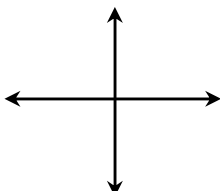
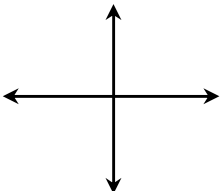
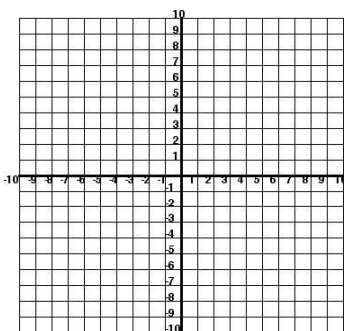
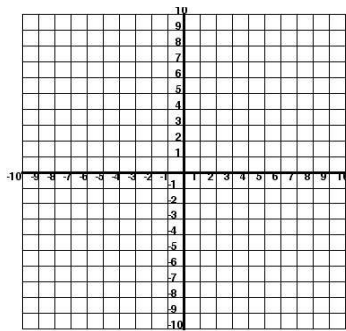
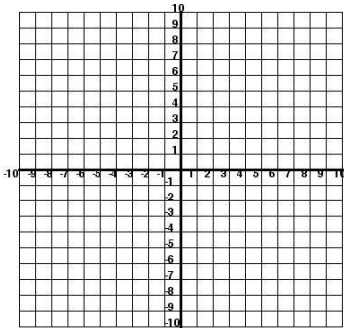
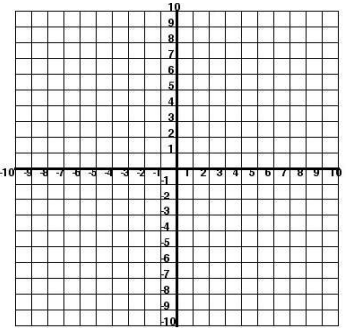
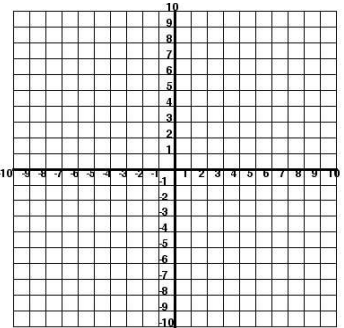
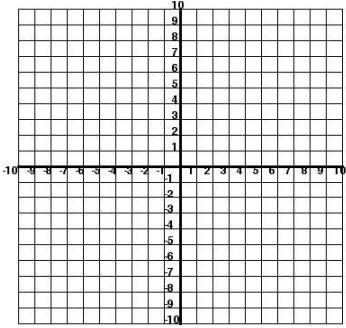
b) Predict the value of a car with 13,258 miles.

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Main Ideas/Questions	Notes/Examples		
System of Equations			
Types of Solutions			
	One Solution	No Solution	Infinite Solution
Solve by Graphing	Solve each system of equations below by graphing. Identify the solution.		
1. $y = -\frac{5}{3}x - 6$ $y = \frac{1}{6}x + 5$	2. $y = 5$ $y = 2x + 7$		
			
3. $6x - 5y = -45$ $2x + 2y = -4$	4. $3x + 6y = -12$ $y = -\frac{1}{2}x - 5$		
			
5. $2y = 8x + 18$ $24 + 4y = x$	6. $-y = -x - 6$ $3x + 18 = 3y$		
			

Solve by Substitution	①	SOLVE one equation for x or y. (Isolate a variable)
	②	SUBSTITUTE the resulting equation from step 1 into the other equation for that variable.
	③	SOLVE for the remaining variable.
	④	SUBSTITUTE your answer from step 3 into either original equation to find the other variable.
Directions: Solve each system of equations below by substitution. Identify the solution.		
7. $y = -7x - 1$ $y = x - 9$		8. $y = -5x + 30$ $7x + 3y = 42$
9. $6x - 5y = -28$ $7x + y = 22$		10. $x - 7y = 53$ $-4x - 5y = 19$
11. $2y = 6x + 10$ $3x - y = 5$		12. $5x + 7y = -17$ $4x - 3y = -5$

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Main Ideas/Questions	Notes/Examples	
Solve by Elimination	①	LINE UP the equations.
	②	MULTIPLY one or both equations by a number to result in a variable with the same coefficient.
	③	ADD or SUBTRACT the equations to eliminate this variable.
	④	SOLVE for the remaining variable.
	⑤	SUBSTITUTE your answer from step 4 into either original equation to find the other variable.
Directions: Solve each system of equations below by elimination. Identify the solution.		
1. $x + 7y = 17$ $x - y = -7$	2. $3x + 2y = 22$ $5x - 2y = 42$	
3. $4x - 9y = -42$ $x + 5y = 4$	4. $7x - 6y = -53$ $2x - 3y = -13$	
5. $5x + 3y = -7$ $2x + 7y = 3$	6. $3x - 9y = 9$ $4x - 12y = 36$	

7. $5x - 6y = 3$
 $7y = 2x + 8$

8. $10x + 18 = -8y$
 $4 + 9x = 5y$

Applications

①

DEFINE YOUR VARIABLES – What are you solving for?

②

SET UP TWO EQUATIONS using the information given.

③

SOLVE the system using your method of choice.

9. Marcie bought a total of 20 used books and CDs during a yard sale for a total of \$54.50. If books cost \$1.50 each and CDs cost \$5 each, how many of each did she buy?

10. Landon babysits and works part time at the water park over the summer. One week, he babysat for 3 hours and worked at the water park for 10 hours and made \$109. The next week he babysat for 8 hours and worked at the water park for 12 hours and made \$177. How much does Landon make per hour at each job?

11. Kent has a collection of pennies and nickels with a value of \$1.98. The number of pennies he has is five less than twice the number of nickels. How many of each coin does Kent have?

MORE APPLICATIONS PRACTICE *with* SYSTEMS

Directions: For each problem - define your variables, set up a system of equations, and solve.

1. At the fast food restaurant, four cheeseburgers and five small fries have a total of 2,310 calories. Three cheeseburgers and two small fries have a total of 1,330 calories. How many calories does each item contain?
2. One month, a homeowner used 150 units of gas and 520 units of electric for a total cost of \$84.20. The next month, 210 units of gas and 405 units of electric were used for a total cost of \$82.35. Find the cost per unit of gas and electric.
3. Kym is renovating the first floor of her home. She bought 750 square feet of laminate flooring and 525 square feet of carpet and paid \$2717.25. She went back to the store and bought an additional 100 square feet of laminate flooring and 75 square feet of carpet and paid \$374.75. Find the cost per square foot of each type of flooring.
4. Sean bought 1.8 pounds of gummy bears and 0.6 pounds of jelly beans and paid \$10.26. He went back to the store the following week and bought 1.2 pounds of gummy bears and 1.5 pounds of jelly beans and paid \$15.09. What is the price per pound of each type of candy?

- 5.** Courtney has a total of 88 stamps worth \$15.56. Some are 25¢ stamps and some are 2¢ stamps. How many of each does she have?
- 6.** Tom put 18 gallons of midgrade gas in his truck and filled up his empty five-gallon gas can with regular gas for his lawnmower at home. He spent \$59.91. The following week, he put 14 gallons of midgrade gas in his truck and topped off his five-gallon can with just one gallon of regular gas. If he paid \$39.75 and the prices remained the same, find the price per gallon of midgrade and regular gas.
- 7.** A total of \$12,000 was invested in two types of bonds. One pays 8% simple interest while the other pays 10.5%. Last year, the annual interest earned on the two investments was \$1,145. How much was invested at each rate?
- 8.** A collection of dimes and quarters is worth \$9.55. If the quarters were dimes and the dimes were quarters, the total value would be \$7.60. Find the number of each coin.

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Main Ideas/Questions	Notes/Examples	
<i>Systems with</i> 3 VARIABLES	①	CHOOSE TWO EQUATIONS in which you can easily eliminate a variable. Let's call this new equation after the elimination Equation A .
	②	ELIMINATE THE SAME VARIABLE from a combination of the equation you didn't use and one of the ones you did. Let's call this equation after the elimination Equation B .
	③	PUT EQUATION A AND EQUATION B TOGETHER and SOLVE THAT SYSTEM . You now have two of your variables!
	④	SUBSTITUTE your answers from step 3 into either original equation to find the remaining variable. Write your solution as (x, y, z).

:: EXAMPLES ::

1. $2x - 6y + 9z = -8$
 $5x + y + 2z = 10$
 $3x + y - 8z = -28$

2. $4x + y - 3z = 45$
 $6x - 4y + 3z = 41$
 $2x - 7y - 11z = 85$

3. $5x - 3y + 8z = -59$
 $9x - 4y - z = -60$
 $5x + 2y + 4z = -47$

4. $x - 5y + 3z = 39$
 $3x + 8y - z = -19$
 $2x - 6y - 5z = -29$

5. $x + y + 3z = 12$
 $-3x + 7y - 2z = -35$
 $7x - 6y - 5z = 32$

:: APPLICATIONS ::

- 6.** The theater sells three types of tickets: general admission, senior citizen, and child. Mark bought 9 general admission, 2 senior citizen, and 3 child tickets and paid \$170. Sarah bought 5 general admission, 4 senior citizen, and 7 child tickets and paid \$173. Kyle bought 4 general admission, 1 senior citizen, and 6 child tickets and paid \$116.50. Find the cost of each type of ticket.

- 7.** Jamie has a collection of 78 nickels, dimes, and quarters worth \$12.40. If the number of quarters is doubled, the value becomes \$22.15. How many of each type of coin does Jamie have?

Examples in which **SUBSTITUTION** *may be the* **BETTER METHOD**

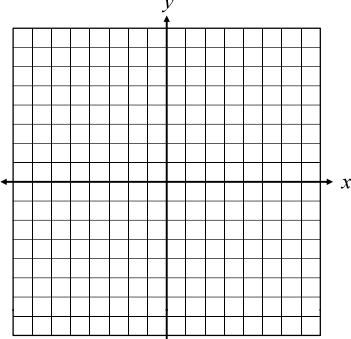
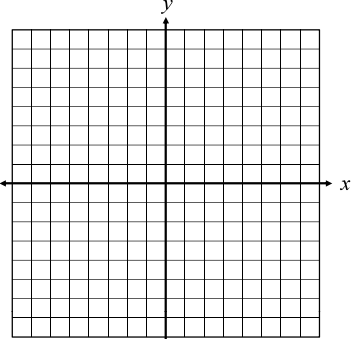
8. Mason has a collection of 49¢ stamps, 20¢ stamps, and 3¢ stamps worth \$23.55. He has 56 total 49¢ and 20¢ stamps and the number of 3¢ stamps is nine more than the number of 20¢ stamps. How many of each does he have?

9. The three medals earned in the Olympics are the gold, silver, and bronze medals. In the 2014 Winter Olympics, the United States had 28 total medal winners. There were two more gold medals than silver medals and the number of bronze medals was four less than the sum of the number of gold and silver medals. How many winners were there of each type of medal?

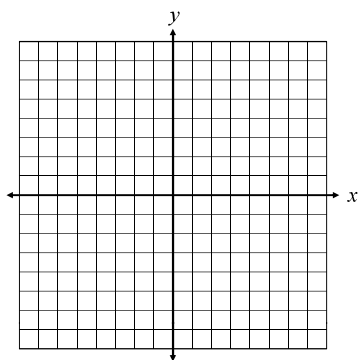
10. Enrique has a pay-per-use plan on his cell phone. It costs \$0.10 per minute talk, \$0.20 per text message, and \$0.25 per picture message. His total bill last month was \$30.95. The total number of text and picture messages sent was 87. The cost for the use of minutes was \$1.60 less than the cost of the text messages. Find the number of talk minutes, text messages, and picture messages he used.

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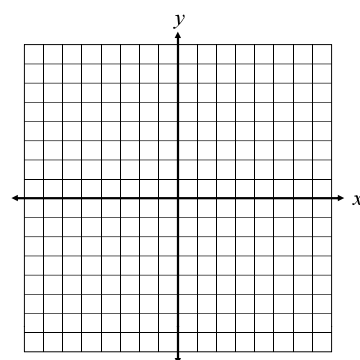
Main Ideas/Questions	Notes/Examples
Linear Inequalities	A linear inequality is similar to a linear equation, however with an inequality symbol instead. Example: Given $y \geq -2x + 9$, determine which points satisfy the inequality: a) (7, 4) b) (-1, 3) c) (10, -5)
Real World Example	John sells t-shirts. Plain shirts cost \$5 and graphic shirts cost \$7. In order to match his product costs, he must make at least \$1,200. a) Write an inequality to represent this situation. b) If he sells 150 plain shirts and 60 graphic shirts, will he be able to cover the product costs? c) If he sells 90 graphic shirts, what's the minimum number of plain shirts he must sell to break even?
Graphing Linear Inequalities	Graphing linear inequalities in a visual way of showing the ordered pairs that satisfy the inequality. ① Put the inequality in SLOPE-INTERCEPT FORM. Be sure to flip the inequality if you multiply or divide by a negative. ② GRAPH the line. Use a dashed line for < and > symbols and a solid line for ≤ and ≥ symbols. ③ SHADE above the line for > or ≥ symbols and below the line for < or ≤ symbols.

Directions: Graph each linear inequality.	
1. $y < \frac{2}{3}x - 1$ 	2. $y \geq -4x$ 

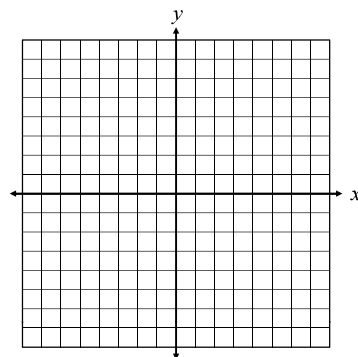
3. $5x + 3y \leq 12$



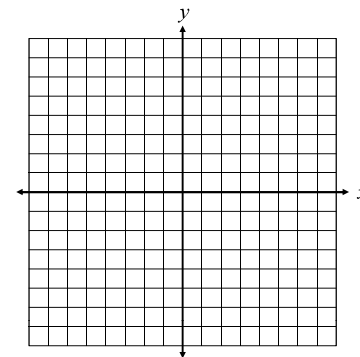
4. $x - 6y < -12$



5. $9x + 12y \geq -60$



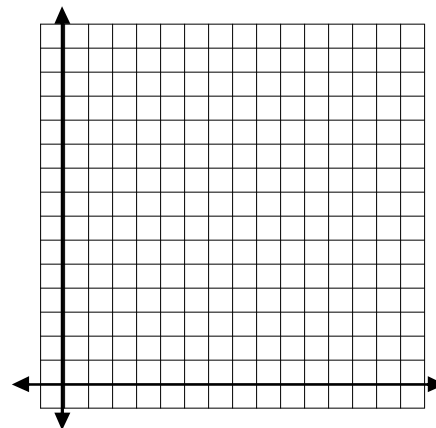
6. $x < -4$



7. Stephanie spends \$0.10 per text message sent and \$0.25 per picture message sent on her cell phone. Her monthly budget for messaging is \$30.

a) Write a linear inequality to represent this situation, then graph.

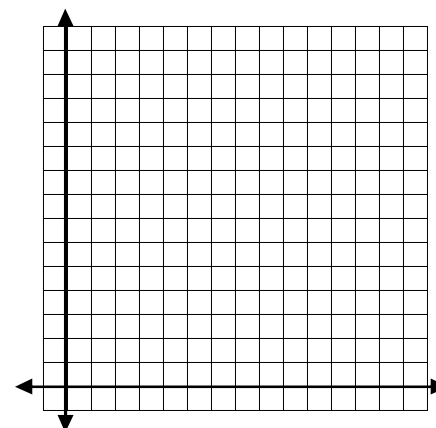
b) Using your graph, give two possible combinations of text and picture messages she can send and stay within her budget.



8. Scott makes \$12 per hour babysitting and \$8 per hour working at the grocery store. He will need to make at least \$600 to buy a new computer.

a) Write a linear inequality to represent this situation, then graph.

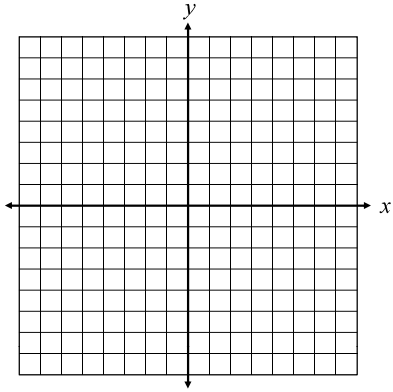
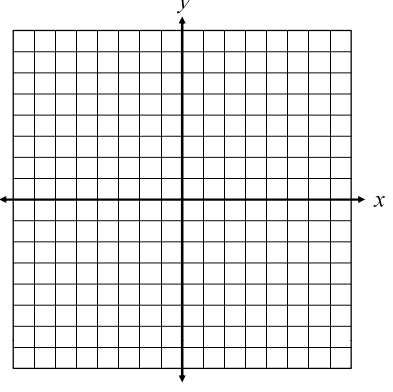
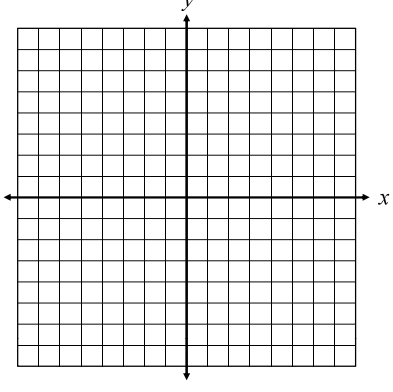
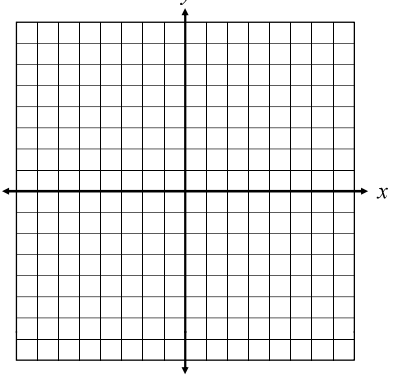
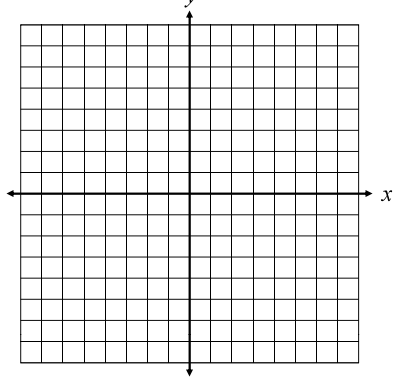
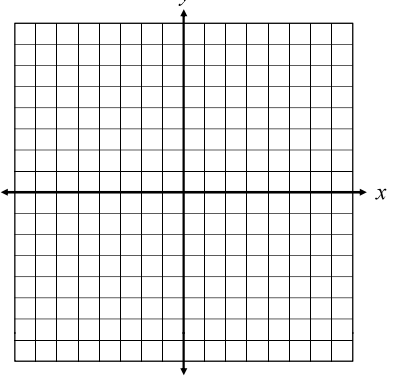
b) Using your graph, give two possible combinations of the number of hours Scott can babysit and work in the grocery store to ensure he can afford his new computer.



Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
Systems of Linear Inequalities	The solution to a system of linear inequalities is the set of ordered pairs that satisfy ALL the linear inequalities. The solution can be shown by graphing.	
	①	GRAPH and SHADE each linear inequality.
	②	The SOLUTION to the system is where the shading overlaps .

Directions: Graph each system of linear inequalities. Clearly indicate the solution region.

1. $y \leq -\frac{2}{3}x - 1$ $y \geq \frac{1}{2}x - 8$ 	2. $y \leq \frac{3}{4}x - 4$ $y > -7$ 
3. $x - y > 1$ $x + 4y > 20$ 	4. $7x + 3y \leq 18$ $2x - 3y \leq 9$ 
5. $x + 2y < -6$ $-4x - 2y < -10$ 	6. $4x - 5y > -5$ $x < -1$ 

7. Which points are solutions to the system of inequalities below? Check all that apply.

$$x - 6y > -48$$

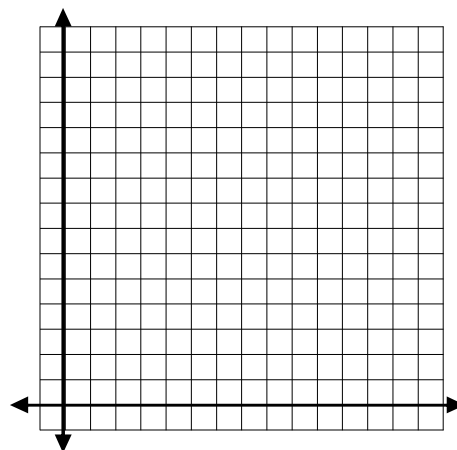
$$2x + 3y < 9$$

☐ (1, 1)	☐ (-2, 6)
☐ (9, -2)	☐ (-8, -3)
☐ (3, 4)	☐ (4, -7)

8. To raise money to attend Boy Scout camp, Alec is selling popcorn. Small bags of popcorn sell for \$4 each and large bags sell for \$6 each. He needs to earn at least \$300 to attend camp. He will also earn a badge if he sells at least 60 bags total of any combination.

a) Write a system of linear inequalities to represent this situation, then graph.

b) Using your graph, give two possible combinations of bags of popcorn that Alec can sell to attend camp and earn his badge.



9. Greg needs at least \$1.60 in stamps to mail a package. He has 28¢ and 4¢ stamps. He can use no more than twenty 4¢ stamps as he only has one book left.

a) Write a system of linear inequalities to represent this situation, then graph.

b) Using your graph, give two possible combinations of stamps that Greg can use to ensure he mails his package with the correct postage.

