NAME _____ DATE _____ PERIOD _____

8-3 Practice

Representing Linear Functions

Find four solutions of each equation. Write the solutions as ordered pairs.

1. $y = x - 5$

x	y
3	
-2	
1	

2. $y = -7$

x	y
-8	
0	
3	

3. $y = -3x + 1$

x	y
-4	
-2	
2	

4. $x - y = 6$

x	y
3	
-3	
1	

5. $y = 2x + 4$

x	y
0	
4	
-5	

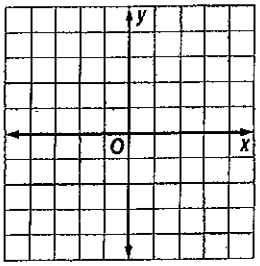
6. $7x - y = 14$

x	y
1	
-1	
0	

Graph each equation by plotting ordered pairs.

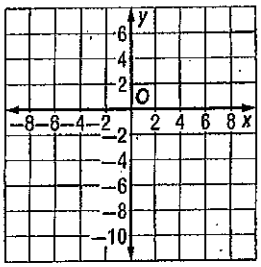
7. $y = 2x - 1$

x	y
-1	
0	
1	



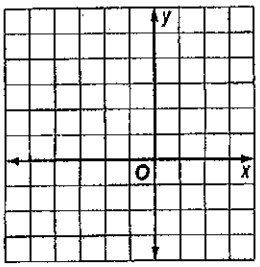
8. $y = -6x + 2$

x	y
-2	
1	
0	



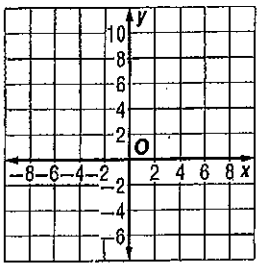
9. $y = x + 4$

x	y
-3	
-1	
2	



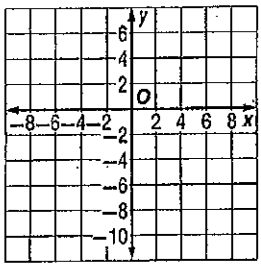
10. $y = 7$

x	y
-5	
4	
4	



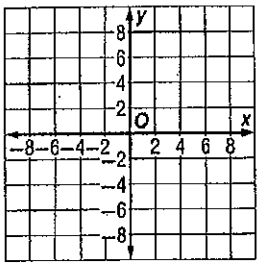
11. $y = 3x - 9$

x	y
-2	
-1	
2	



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

x	y
-2	
0	
4	



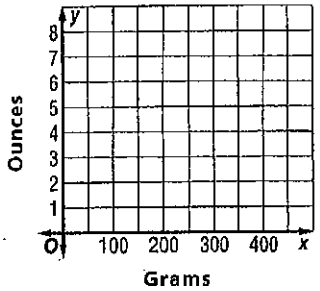
COOKING For Exercises 13–15, use the following information.

Kirsten is making gingerbread cookies using her grandmother's recipe and needs to convert grams to ounces. The equation $y = 0.04x$ describes the approximate number of ounces y in x grams.

13. Find three ordered pairs of values that satisfy this equation.

14. Draw the graph that contains these points.

15. Do negative values of x make sense in this case? Explain.



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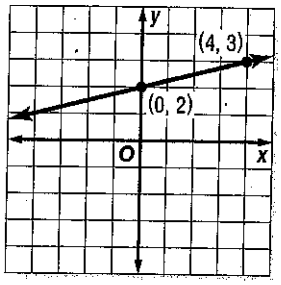
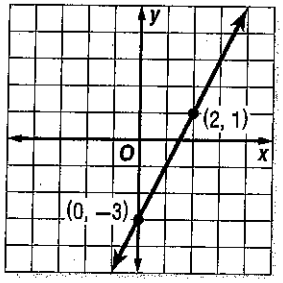
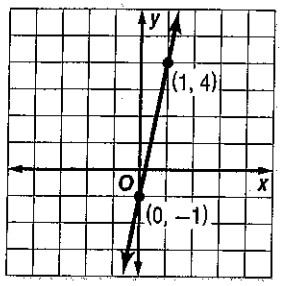
8-6 Skills Practice

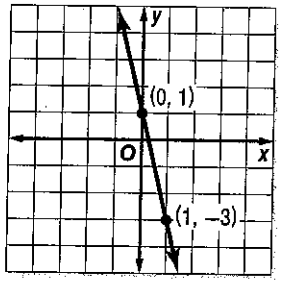
Slope

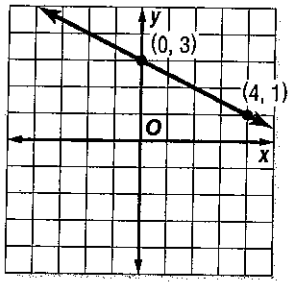
Find the slope of each line.

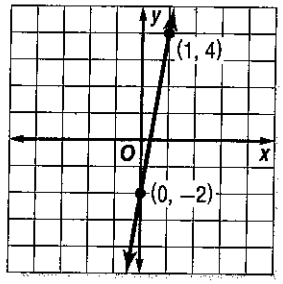
1. 

2. 

3. 

4. 

5. 

6. 

Find the slope of the line that passes through each pair of points.

7. $A(1, -5), B(6, -7)$

8. $C(7, -3), D(8, 1)$

9. $E(7, 2), F(12, 6)$

10. $G(8, -3), H(11, -2)$

11. $J(5, -9), K(0, -12)$

12. $L(-4, 6), M(5, 3)$

13. $P(2, -2), Q(7, -1)$

14. $R(-5, -2), S(-5, 3)$

15. $T(5, -6), U(8, -12)$

16. $P(10, -2), Q(3, -1)$

17. $R(6, -5), S(7, 3)$

18. $T(1, 8), U(7, 8)$

19. **CAMPING** A family camping in a national forest builds a temporary shelter with a tarp and a 4-foot pole. The bottom of the pole is even with the ground, and one corner is staked 5 feet from the bottom of the pole. What is the slope of the tarp from that corner to the top of the pole?

20. **ART** A rectangular painting on a gallery wall measures 7 meters high and 4 meters wide. What is the slope from the upper left corner to the lower right corner?

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8-7 Study Guide and Intervention

Slope-Intercept Form

Find Slope and *y*-intercept An equation with a y-intercept that is *not* O represents a non-proportional relationship. An equation of the form $y = mx + b$, where m is the slope and b is the y-intercept, is also in slope-intercept form.

Example 1 **State the slope and the *y*-intercept of the graph of $y = -\frac{2}{3}x - 0.5$.**

$y = -\frac{2}{3}x - 0.5$ Write the equation.

$y = -\frac{2}{3}x + (-0.5)$ Write the equation in the form $y = mx + b$.

$y = \ mx \ + \ b$ $m = -\frac{2}{3}$, $b = -0.5$

The slope is $-\frac{2}{3}$ and the y-intercept is -0.5.

Example 2 **State the slope and the *y*-intercept of the graph of $6x - y = 7$.**

Write the equation in slope-intercept form.

$6x - y = 7$ Write the original equation.

$-6x \quad -6x$ Subtract $6x$ from each side.

$-y = 7 - 6x$ Simplify.

$-y = -6x + 7$ Write in slope-intercept form. Divide both sides by -1 to remove the negative coefficient from y.

$y = 6x - 7$

$y = mx + b$ $m = 6$, $b = -7$

The slope of the graph is 6 and the y-intercept is -7.

Exercises

State the slope and the *y*-intercept of the graph of each equation.

1. $y = 4x + 12$ **2.** $y = -2x - 1$ **3.** $y = -x + 4$ **4.** $y = x - 9$

5. $y = \frac{5}{6}x - 8$ **6.** $5x - y = 22$ **7.** $3x + y = 8$ **8.** $y - x = 17$

9. $12x = y - 9$ **10.** $-3x = y + 1$ **11.** $y + 9x = 11$ **12.** $y - 8x = 21$

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8-7 Study Guide and Intervention *(continued)*

Slope-Intercept Form

Graph Equations Equations written in the slope-intercept form can be easily graphed.

Example **Graph $y = -4x - 3$ using the slope and y-intercept.**

Step 1 Find the slope and y-intercept.

slope $= -4$

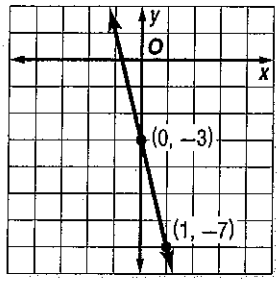
y-intercept $= -3$

Step 2 Graph the y-intercept point at $(0, -3)$.

Step 3 Write the slope as $\frac{-4}{1}$. Use it to locate a second point on the line.

$m = \frac{-4}{1}$ ← change in y: down 4 units
← change in x: right 1 unit

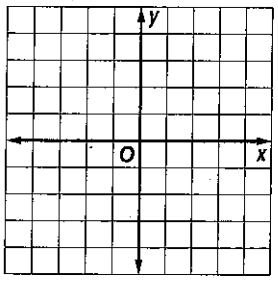
Step 4 Draw a line through the two points and extend the line.



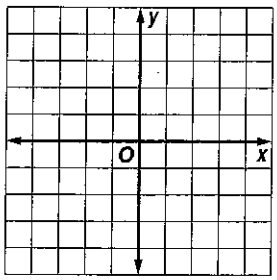
Exercises

Graph each equation using slope and y-intercept.

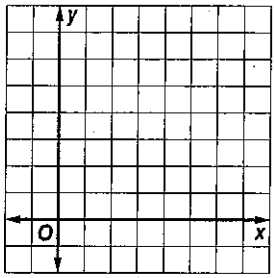
1. $y = 4x - 1$



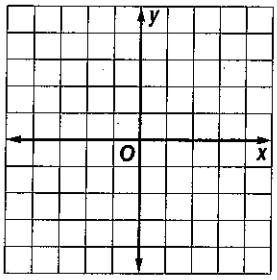
2. $y = 6x + 4$



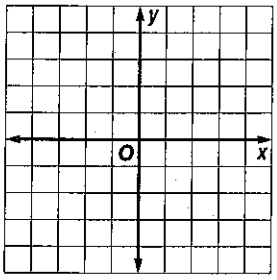
3. $y = \frac{1}{4}x + 5$



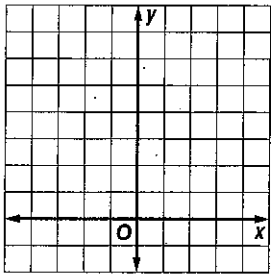
4. $y = 3x - 2$



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



6. $y = -5x + 3$



Lesson 8-7

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8-7 Practice

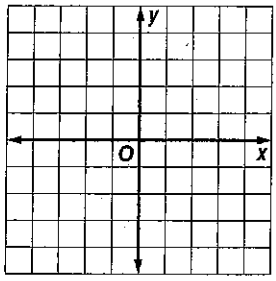
Slope-Intercept Form

State the slope and the y-intercept of the graph of each line.

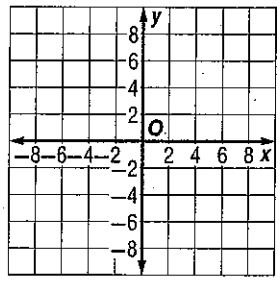
1. $4x - y = 6$ **2.** $3x + 2y = 8$ **3.** $y - \frac{1}{2}x = \frac{3}{4}$

Graph each equation using the slope and y-intercept.

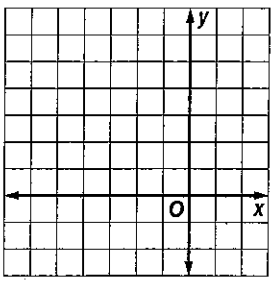
4. slope $= \frac{3}{4}$, y-intercept $= -3$



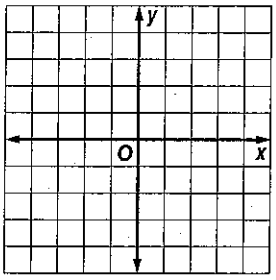
5. slope $= \frac{5}{6}$, y-intercept $= 1$



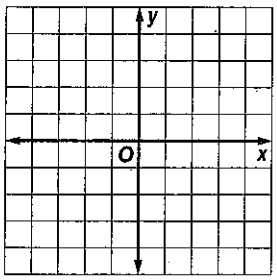
6. slope $= 1$, y-intercept $= 5$



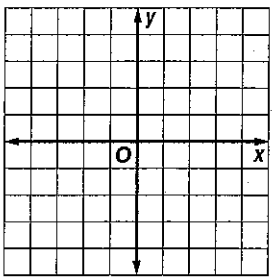
7. $y = -\frac{1}{2}x - 4$



8. $y = x - 4$



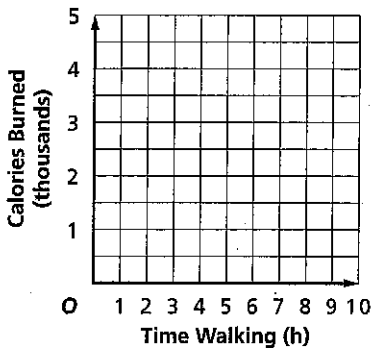
9. $y = -6x + 3$



EXERCISE For Exercises 10 and 11, use the following information.

A person weighing 150 pounds burns about 320 Calories per hour walking at a moderate pace. Suppose that the same person burns an average of 1500 Calories per day through basic activities. The total Calories y burned by that person can be represented by the equation $y = 320x + 1500$, where x represents the number of hours spent walking.

10. Graph the equation using the slope and y-intercept.



11. State the slope and y-intercept of the graph of the equation and describe what they represent.

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8-8 Skills Practice

Writing Linear Equations

Write an equation for each line in slope-intercept form.

1. slope = 7, y-intercept = 2

2. slope = −5, y-intercept = −3

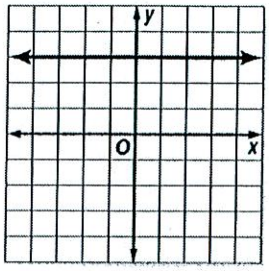
3. slope = $\frac{3}{5}$, y-intercept = 6

4. slope = −6, y-intercept = 7

5. slope = $\frac{2}{7}$, y-intercept = 1

6. slope = $\frac{4}{3}$, y-intercept = −4

7.



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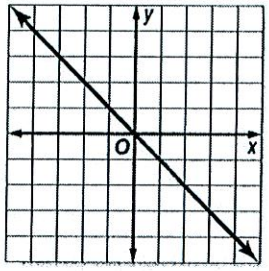

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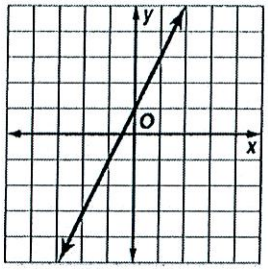

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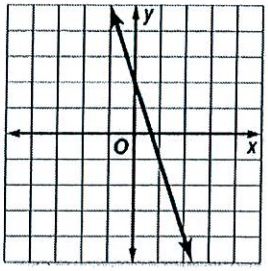

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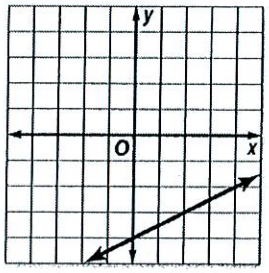

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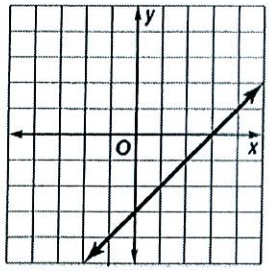

Write an equation of the line in point-slope form that passes through each pair of points.

13. (9, −1) and (6, −2)

14. (12, 5) and (−4, 1)

15. (10, −6) and (−2, −6)

16. (4, 6) and (1, 3)

17. (6, 3) and (−6, 9)

18. (8, −4) and (−4, −1)

19. (5, 0) and (2, −3)

20. (12, −2) and (6, 2)

21. (−5, 10) and (3, −6)

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8-10 Study Guide and Intervention

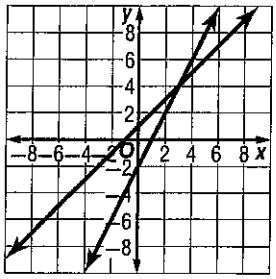
Systems of Equations

Solve Systems by Graphing A collection of two or more equations with the same set of variables is a **system of equations**. The solution to a system of equations with two variables, x and y, are the coordinate pair (x, y). If you graph both equations on the same coordinate plane, the coordinates of the point of intersection are the solution.

Example 1 **Solve the system of equations by graphing.**

$y = x + 1$

$y = 2x - 2$



The graphs appear to intersect at (3, 4). Check this estimate by substituting the coordinates into each equation.

Check

$y \stackrel{?}{=} x + 1$	$y = 2x - 2$
$4 \stackrel{?}{=} 3 + 1$	$4 \stackrel{?}{=} 2(3) - 2$
$4 = 4$ ✓	$4 = 4$ ✓

The solution of the system of equations is (3, 4).

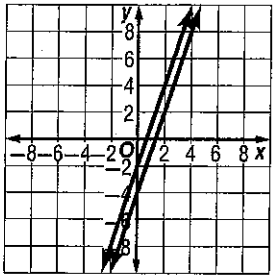
Systems of equations can have one solution, no solution, or infinitely many solutions. When the graphs of a system of equation are

- parallel lines, there are no solutions.
- the same graph, there are infinitely many solutions.

Example 2 **Solve the system of equations by graphing.**

$y = 3x - 2$

$y = 3x - 4$



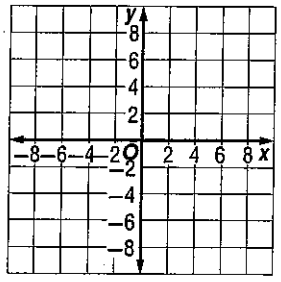
The graphs appear to be parallel lines. Because there is no coordinate pair that is a solution to both equations, there is no solution to this system of equations.

Exercises

Solve each system of equations by graphing.

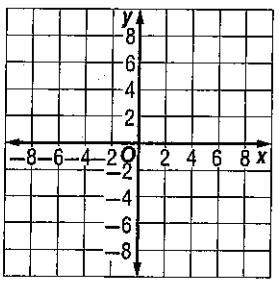
1. $y = 2x$

$y = x + 3$



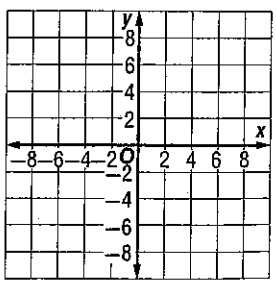
2. $y = -3x$

$y = -2x - 2$



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

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



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8-10 Study Guide and Intervention *(continued)*

Systems of Equations

Solve Systems by Substitution Systems of equations can also be solved algebraically by **substitution**.

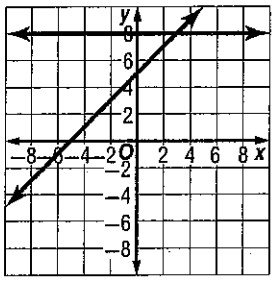
Example 1 **Solve the system of equations by substitution.**

$y = x + 5$

$y = 8$

Replace y with 8 in the first equation.

$y = x + 5$	Write the first equation.
$8 = x + 5$	Replace y with 8.
$3 = x$	Solve for x.



The solution of this system of equations is (3, 8). You can check the solution by graphing. The graphs appear to intersect at (3, 8), so the solution is correct.

Exercises

Solve each system of equations by substitution.

1. $y = 6 + x$
$y = 1$

2. $y = 7 - x$
$y = 12$

3. $y = 3x$
$y = 21$

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

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

6. $y = 4x + 11$
$y = 3$

7. $y = 6x - 21$
$y = -3$

8. $y = 3x + 14$
$y = 2$

9. $y = -2x - 8$
$y = 6$

10. $x + y = 17$
$y = 5$

11. $y + 2x = 12$
$y = x$

12. $3y - 2x = 20$
$y = 2x$

13. $5x - 2y = 22$
$y = 3x$

14. $6x - 3y = 27$
$y = -x$

15. $-y + 6x = 30$
$y = 4x$

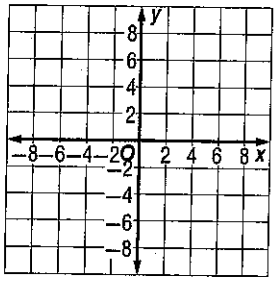
NAME _____ DATE _____ PERIOD _____

8-10 Practice

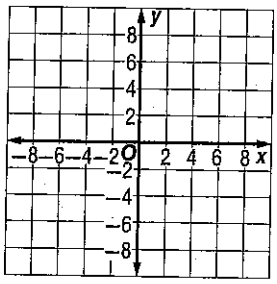
Systems of Equations

Solve each system of equations by graphing.

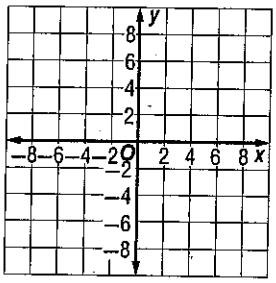
1. $y = x + 3$
$y = 4x$



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



3. $4x + y = 18$
$y = -x$



Solve each system of equations by substitution.

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

5. $y = 13 - x$
$y = -5$

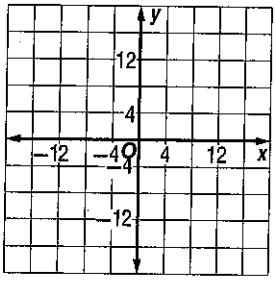
6. $y = 10x + 24$
$y = -6$

7. $y = 5x + 12$
$y = -x$

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

9. $y = 4x + 45$
$x = 4y$

10. CHOIR There are twice as many girls as boys in the school chorus. There are 8 fewer boys than girls in the chorus. Write a system of equations to represent this situation. Then solve the system by graphing. Explain what the solution means.



11. FOOD The cost of 8 muffins and 2 quarts of milk is $18. The cost of 3 muffins and 1 quart of milk is $7.50. Write a system of equations to represent this situation. Solve the system of equations by substitution. Explain what the solution means.

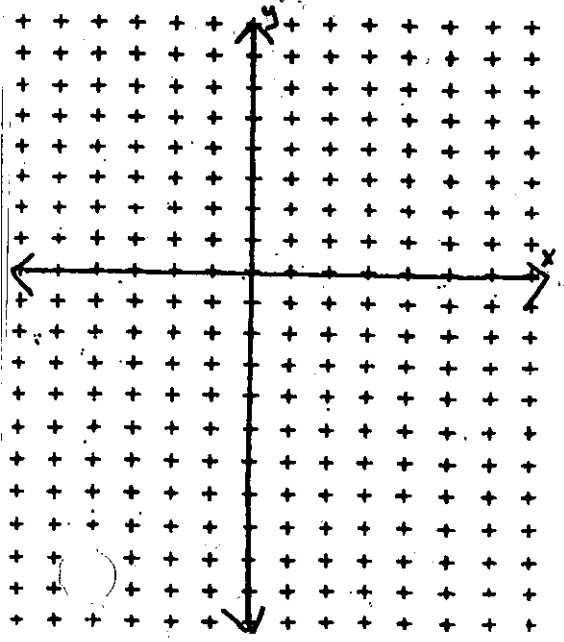
Skills Practice 8-10
•Solving Systems•

Name _____

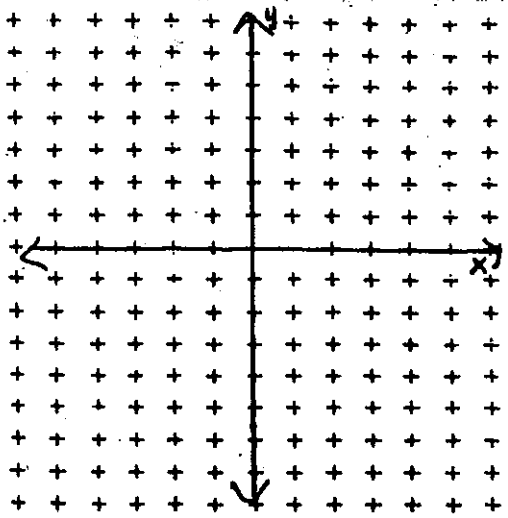
/15

I. Use a graph to solve the system:

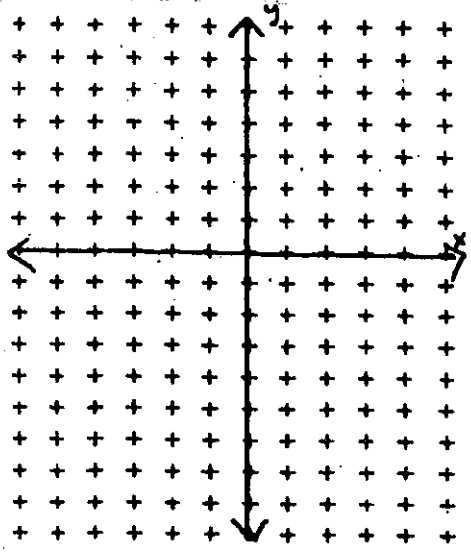
1) $x+y=6$
$x-y=0$



2) $x+y=5$
$3y+3x=15$



3) $\frac{2}{3}x-y=2$
$6y-4x=18$



II. Solve each system algebraically: show work!

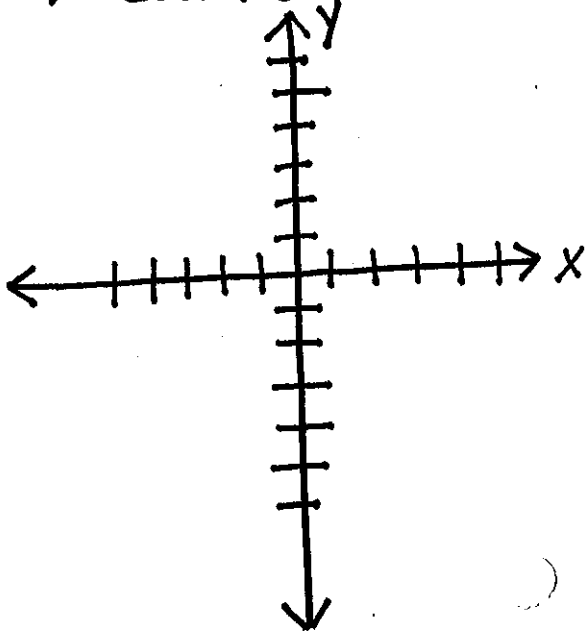
4) $x-2y=8$
$2y-x=4$

5) $2x-2y=8$
$3x+5y=-12$

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

7.) There are twice as many girls as boys in chorus. There are 8 fewer boys than girls in chorus.

* Write a system of equations to represent this situation. Then, solve by graphing. Explain what your answer means.



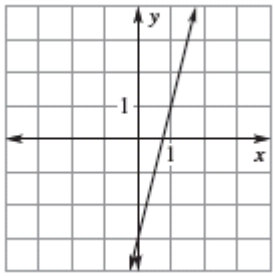
8.) The cost of 8 muffins and 2 quarts of milk is $18. The cost of 3 muffins and 1 quart of milk is $7.50.

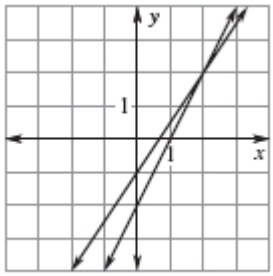
* Write and solve a system of equations to represent this situation.
Explain what your answer means.

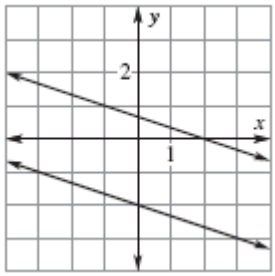
Pre-Algebra Name_____

Stilwell Practice 8-10 Supplementary 1

For 1-3, the graph of a linear system is given. State the solution of the system. State whether the system is inconsistent, consistent and dependent, or consistent and independent.

1. 

2. 

3. 

Solve the system using the elimination method.

4. $-5x + y = -11$
$4x - y = 7$

5. $9x + 4y = -7$
$3x - 5y = -34$

6. $16x - 12y = -8$
$8x - 6y = -4$

7. $x + 2y = 6$
$3x + 6y = 2$

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

9. $8x + 2y = 2$
$x + 3y = 14$

10. $3x - 4y = -10$
$6x + 3y = -42$

11. Which ordered pair is a solution of the following system of linear equations?

$x + 2y = -1$
$2x - y = 13$

A. (5,3) B. (5, -3) C. (-3, -5) D. (-5, 3) E. (3, 5)

Solve using elimination. State whether the system is inconsistent, consistent and dependent, or consistent and independent.

12. $4x - 3y = -6$
$-8x + 6y = 12$

Pre-Algebra Name_____
8-10 Supplementary 2

Write a system of equations for the story problem. <u>Set up, you don't need to solve</u>.

13. A hair salon receives a shipment of 84 bottles of hair conditioner to use and sell to customers. The two types of conditioners received are type A, which is used for regular hair, and type B, which is used for frizzy hair. Type A costs $6.50 per bottle and type B costs $8.25 per bottle. The hair salon's invoice for the conditioner is $588.

14. You and your sister decide to combine your weekly overtime earnings to buy a birthday gift for your aunt. Your overtime rate is $18 per hour and your sister's overtime rate is $24 per hour. The total amount earned for the gift was $288. You worked 2 more hours of overtime than your sister.

15. You can work at most 20 hours next week. You need to earn at least $92 to cover your weekly expenses. Your dog-walking job pays $7.50 per hour and your job as a car wash attendant pays $6 per hour.

Set up and solve the following systems of equations. Choose your choice of method.

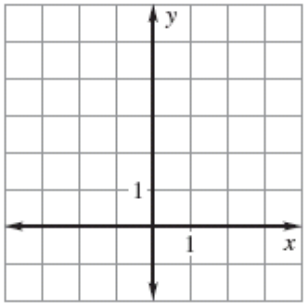
16. You worked 14 hours last week and earned a total of $96 before taxes. Your job as a lifeguard pays $8 per hour, and your job as a cashier pays $6 per hour. **How many hours did you work at each job?**

17. An adult pass for a county fair costs $2 more than a children's pass. When 378 adult and 214 children's passes were sold, the total revenue was $2384. **Find the cost of an adult pass.**

18. During one calendar year, a state trooper issued a total of 375 citations for warnings and speeding tickets. Of these, there were 37 more warnings that speeding tickets. **How many warnings and how many speeding tickets were issued?**

Pre-Algebra Name_____
WS Stilwell Practice 8-10 Review Period_____

1. Graph the following equation on the grid to the right and answer the following questions: $y = 2x + 1$



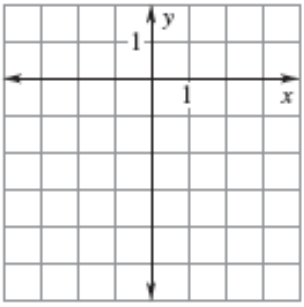
slope:_____ slope of parallel line:_____

slope of perpendicular line:_____

2. On the same grid, graph $y = -x + 4$.

3. State a solution to the system for equations 1-2.

4. Graph the following equation on the grid to the left and answer the following questions: $4x - 2y = 12$



x-intercept:_____ y-intercept:_____ slope:_____

5. On the same grid, graph $8x - 4y = 8$.

6. State the solution to the system for equations 4-5.

Write a system of linear equations for the given problem, then solve.

7. You stop at the gas station to fill up your car and a small gas tank you have for the lawn mower at home. You fill up your car with premium gas which costs $3.25 per gallon and you fill up your small gas tank with regular gas which costs $3.15. Total you bought 22 gallons of gas and spent $71. How many gallons of each type of gasoline did you buy?

8. Which ordered pair is a solution of the following system of linear equations?

$$x + 2y = -1$$
$$2x - y = 13$$

A. (5,3) B. (5, -3) C. (-3, -5) D. (-5, 3) E. (3, 5)

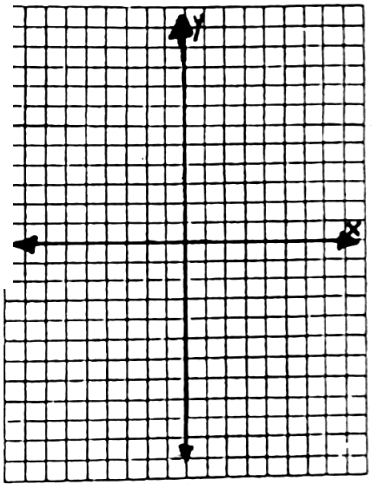
Name _____ Date _____ Pd_____

Chapter 8 (part 2) Bringing It All Together
Linear Equations

Graph the equation by plotting the ordered pairs. (4 points)

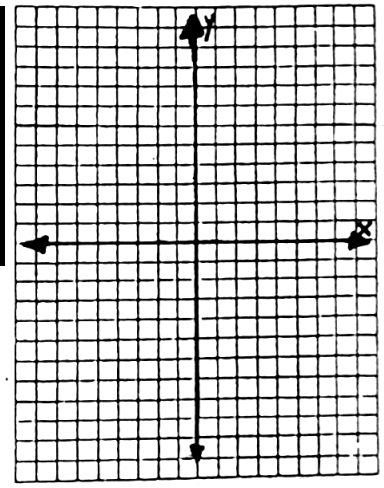
1) $y = 3x + 2$

x	y
-1	
0	
1	



2) $2y = -3x - 2$

x	y
-2	
0	
2	



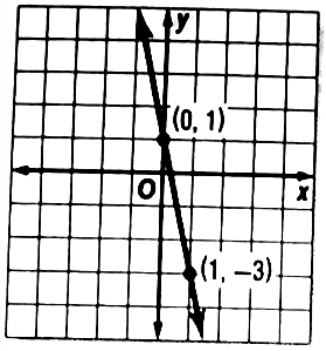
Find the slope of the line that passes through the pair of points. (1 point)

3) $A(12, 5)$ $B(-4, 1)$

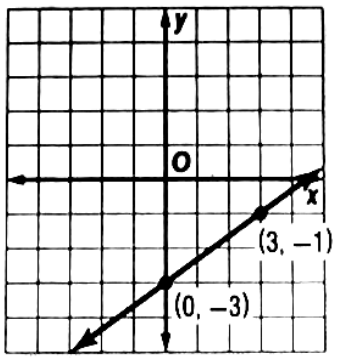
4) $R(12, -2)$ $S(6, 2)$

Using the given graph, find the slope of the line. (1 point)

5)



6)



State the slope <u>and</u> the *y*-intercept of the equation. (2 points)

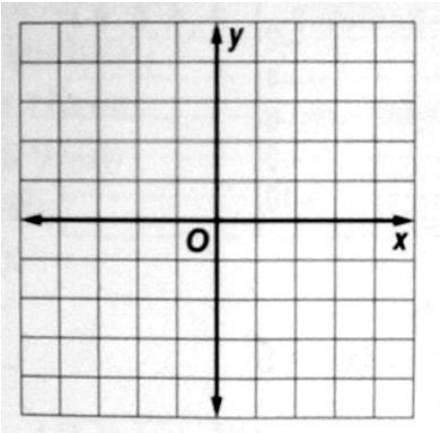
7) $-5x + 6y = -48$ _____ ; _____

OVER⟶

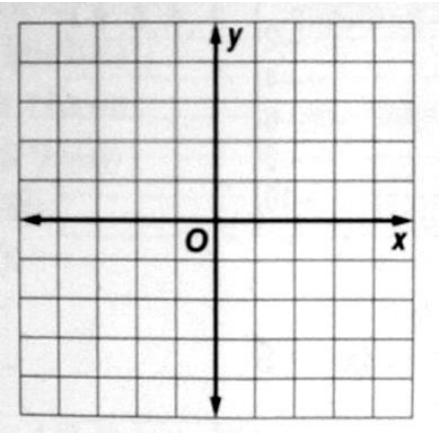
Name _____ Date _____ Pd_____

Graph using the slope and *y*-intercept. (2 points)

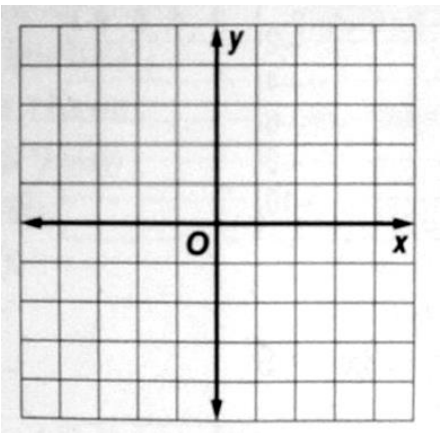
8) $y = \frac{1}{4}x - 4$



9) $y = -2x + 3$



10) $-3x + 4y = -4$



Give the slope of the line by using the data in the table. (1 point)

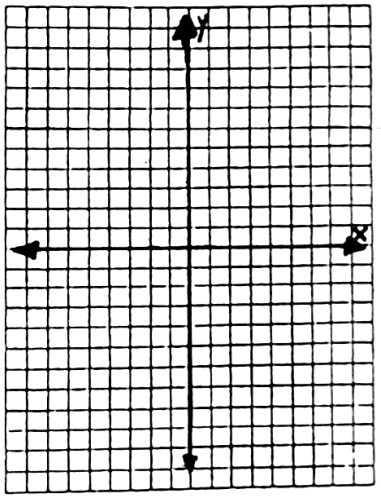
11a)

x	*y*
-1	-6
0	-8
1	-10
2	-12

Graph the points on the represented coordinate plane. (1 point)

(Connect the points to form a line.)

11b)



11c) What does the point **(0, -8)** represent? _____ (1 point)

Write an equation of the line in <u>point-slope</u> form that passes through each set of points: (2 points)

12) (9, -1) and (6, -2) _____

13) (-5, 10) and (3, -6) _____

14) (5, 0) and (2, -3) _____

OVER →

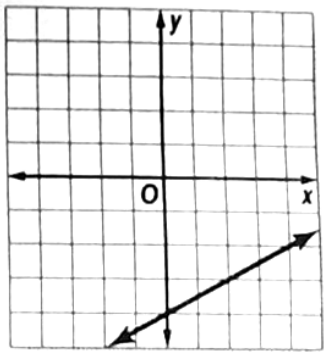
Name _____ Date _____ Pd_____

Write an equation for the line in <u>slope-intercept</u> form when:

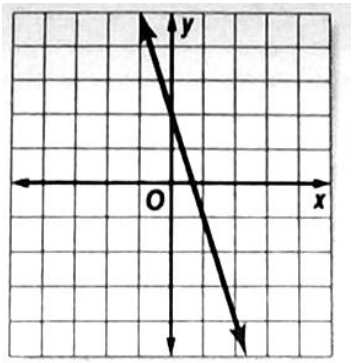
15) the slope is $-\frac{1}{4}$ and the *y*-intercept is 2 _____ **(1 point)**

Write an equation for each line in <u>slope-intercept</u> form: (1 point)

16) _____



17) _____



Solve each system of equations by substitution: (2 points)

18) _____

$x - y = 8$

$y = -1$

19) _____

$4x - y = 16$

$y = 2x$

20) _____

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

Solve each system of equations by elimination: (2 points)

21) _____

$$-6x + y = 12$$
$$-16x - y = -10$$

22) _____

$$-x + 2y = 7$$
$$5x - 3y = -21$$

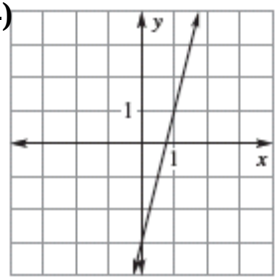
23) _____

$$3x - 2y = 8$$
$$-6x + 4y = 9$$

Name _____ Date _____ Pd_____

For 24-26, the graph of a linear system is given. State the solution of the system. State whether the system is inconsistent, consistent and dependent, or consistent and independent.

24)



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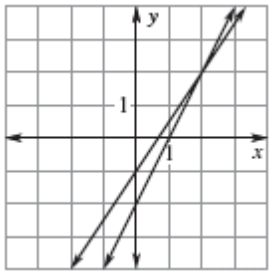
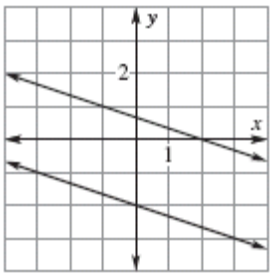


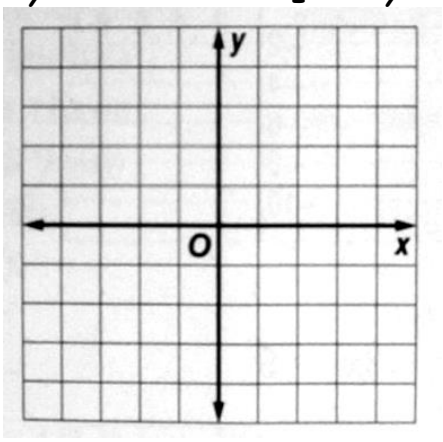
26)



Graph the system of equations. **(2 points)**
State whether the system is parallel, intersecting, or coincides. **(1 point)**
Give the solution for the system. **(1 point)**

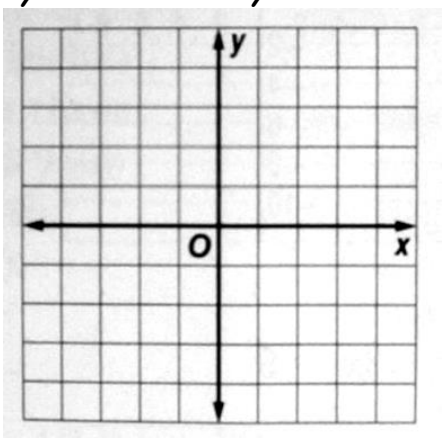
27) _____

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



28) _____

$y = x + 3$; $y = x - 3$



Set up and solve the following systems of equations. Choose your choice of method

29) In one day, a movie theater collected $4600 from 800 people. The price of admission is $7 for an adult and $5 for a child. **How many adults and how many children were admitted to the movie theater that day?**

30) An adult ticket for a school play costs $3 more than a children's ticket. When 552 adult and 397 children's tickets were sold, the total revenue was $8,299. **Find the cost of an adult pass.**

FINALLY DONE