OBJECTIVE:
YOU WILL IDENTIFY SOLUTIONS TO LINEAR EQUATIONS

SOLUTIONS TO LINEAR EQUATIONS

AGENDA

WARM-UP
HW CHECK
NOTES (51)
HOMEWORK

MATH BLITZ TONIGHT
4:30-6:30

WARM-UP

$(\frac{4}{3}, 0)$

1. Find the x and y intercepts of

$y = 3x - 4$

x-int
$0 = 3x - 4$
$\frac{4}{3} = \frac{3x}{3}$
$\frac{4}{3} = x$

y-int
$(0, -4)$

2. The amount of apples and oranges Lauren buys can b modeled by the equation $x + y = 30$ where x represents the number of apples and y represents the number of oranges. Find the x-intercept of this equation and state the meaning.

$x = 30$

$(30, 0)$

apples oranges

Answers:

1. x-intercept: (3,0)
   y-intercept: (0,-3)

2. zero: (-1,0)
   y-intercept: (0, -2)

3. x-intercept: (-2,0)
   y-intercept: (0,4)

4. x-intercept: (-3.5,0)
   y-intercept: (0,3.5)

5. x-intercept: none
   y-intercept: (0, 1)

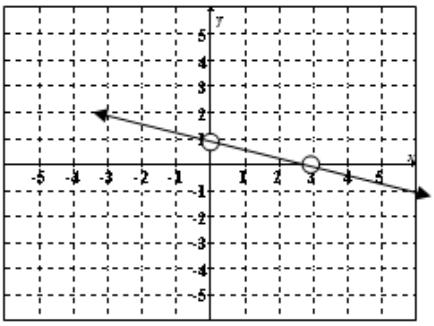
6. x-intercept: (-4,0)
   y-intercept: (0, -6)

7. x-intercept: (30, 0)

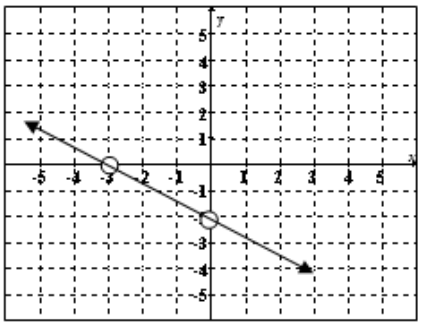
8. The amount of time it takes the elevator to reach its destination.

9. (0, 260) between 240 – 270

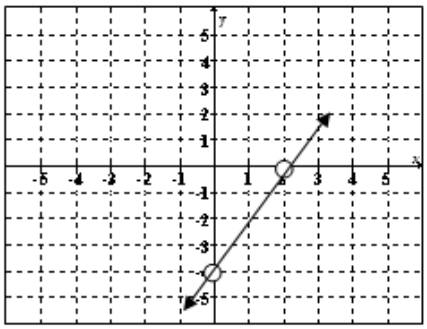
10. x-intercept: (3,0)
    y-intercept: (0,1)



11. x-intercept: (-3, 0)
    y-intercept: (0,-2)



12. x-intercept: (2, 0)
    y-intercept: (0, -4)



13. x-intercept: (3, 0)
    y-intercept: (0, 6)

    Slope: -2

14. x-intercept: (-16, 0)
    y-intercept: (0, 12)

    m: $\frac{3}{4}$

15. (0, -3)

16. B

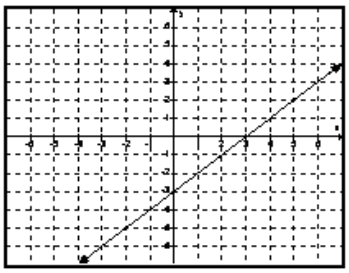
Algebra I - Unit 3: Topic 2

Practice – *x* and *y*-Intercepts pp 303-309

Name _____ Date _____ Period _____

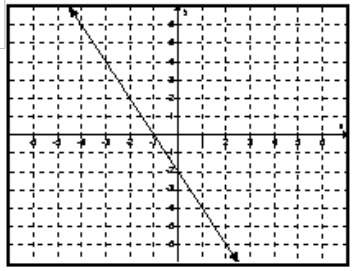
Find the *x* and *y*-intercepts.

1.



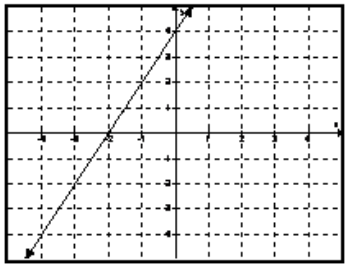
x-intercept _____
y-intercept _____

2.



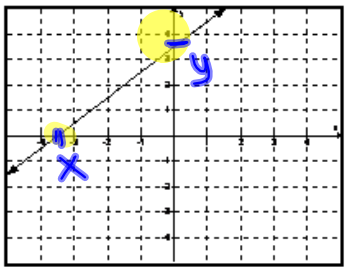
zero: _____
y-intercept_____

3.



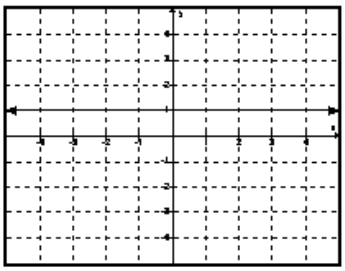
x-intercept: _____
y-intercept: _____

4.



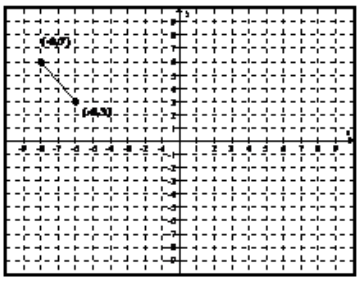
zero: (-3.5, 0)
y-intercept (0, 3.5)

5.



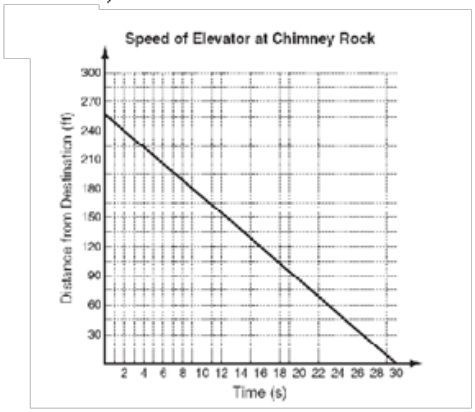
zero: _____
y-intercept_____

6.



x-intercept: _____
y-intercept: _____

The graph shows the distance of an elevator at Chimney Rock, North Carolina, from its destination as a function of time. Use the graph to answer questions 7-9.



7. What is the *x*-intercept of this function?

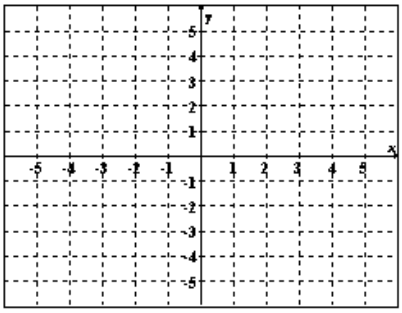
8. What does the x-intercept represent?

9. What is the y-intercept for this function?

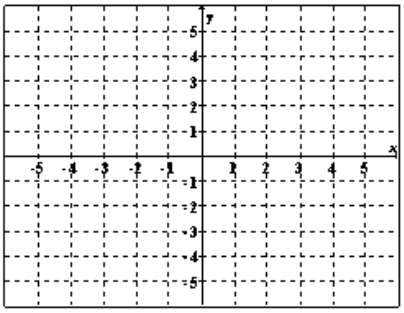
Algebra I - Unit 3: Topic 2

Find the *x*-intercept and *y*-intercept, then use them to graph the equations.

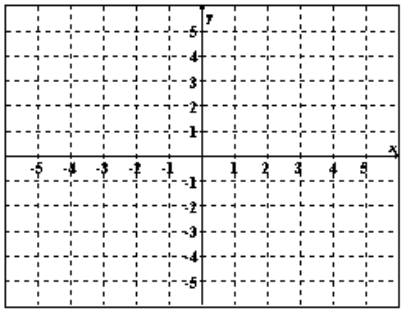
10. $3x+9y=9$



11. $4x=-6y-12$



12. $y=2x-4$



Find the *x* and *y*-intercepts from the table of values or the equation.

PLOT POINTS

13.

x	y
-2	10
0	6
1	4
2	2
3	0

x-intercept: _____

y-intercept: _____

Slope: _____

14.

x	y
-21	-3.75
-18	-1.5
-4	9
2	13.5
4	15

x-intercept: _____

y-intercept: _____

m = _____

15. What is the *y*-intercept of the function $f(x)=\frac{1}{2}(x-6)$?

$\frac{1}{2}x-3$

$(0,-3)$

$y=\frac{1}{2}(\cancel{x}-6)$

16. Which of the following functions has 2 as a zero of the function?

A $f(x)=x+2$

B $f(x)=x-2$

C $f(x)=2x$

D $f(x)=2x+2$

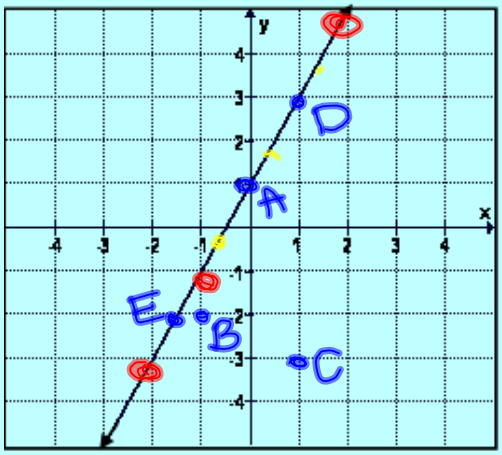
$y=\frac{1}{2}(-6)$

$y=-3$

p.51

1) THE EQUATION $y = 2x + 1$ IS GRAPHED BELOW.
PLOT THE ORDERED PAIRS ON THIS SAME COORDINATE GRID.

(x, y)



A. (0, 1)

B. (-1, -2)

C. (1, -3)

D. (1, 3)

E. $\left(-\frac{3}{2}, -2\right)$

WHICH OF THESE ORDERED PAIRS LIES ON THE LINE GRAPHED ABOVE? A, D, E

A SOLUTION TO A LINEAR EQUATION IS

- any ordered pair that makes the equation true.
- any point that is directly on the line

GIVEN THE EQUATION $y = 2x + 1$ COMPLETE THE TABLE TO FIN
SOME OF THE SOLUTIONS TO THE EQUATION.

x	Process	y	(x , y)
-2	2(-2)+1	-3	(-2, -3)
-1.5	2(-1.5)+1	-2	(-1.5, -2)
-1	2(-1)+1	-1	(-1, -1)
0	2(0)+1	1	(0, 1)
1	2(1)+1	3	(1, 3)
2	2(2)+1	5	(2, 5)

3. Compare these ordered pairs with the solutions to problem 1. What do you notice?

ON THE LINE

4. Are these the only solutions? Why or why not

NO, infinite solutions

SUMMARY OF 1 TO 4:

A ___SOLUTION___ OF AN EQUATION IS:

- AN ORDERED PAIR THAT FALLS ___on the graph___ OF THE LINE
- A SET OF X AND Y VALUES THAT WHEN SUBSTITUTED INTO THE EQUATION MAKE A ___true statement.___

5. Is (-2, 1) a solution to the equation $3x + y = -5$? yes

Justify your answer: $(-2, 1)$ x y

PLUG THE POINT IN

$3(-2)+1 \stackrel{?}{=} -5$

$-6+1 \stackrel{?}{=} -5$

$-5 = -5$ ✓ ← TRUE STATEMENT

6. Which of these ordered pairs is not a solution to the equation $2x - y = 12$?

A. (3, -6) B. (7, 2) C. (-4, -18) D. (-8, -28)

$2(-4) - (-18) \stackrel{?}{=} 12$

$-8 + 18 \stackrel{?}{=} 12$

$10 \neq 12$

7. Find the range of 4y = 4x - 12 given the domain: $\left\{-3, \frac{1}{2}, 1\right\}$

y x

$4y = 4(-3) - 12$ $4y = 4\left(\frac{1}{2}\right) - 12$ $4y = 4(1) - 12$

$4y = -24$ $4y = 2 - 12$ $4y = -8$

$y = -6$ $\frac{4y}{4} = \frac{-10}{4}$ $y = -2$

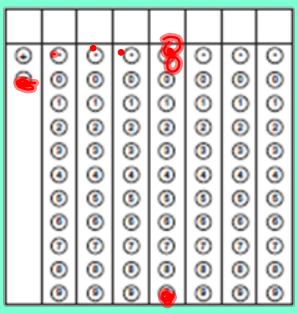
$\boxed{\left\{-6, \frac{-10}{4}, -2\right\}}$

8. Solve the equation 4y = 4x - 12 given the range: $\{0, 6, 14\}$

y

9. Randy earns money by washing cars in his neighborhood. He spent \$215 on supplies and charges \$15 for each car washed, n. Determine the function that represents Randy's profit, p. How many cars does Randy need to wash in order to make a profit of \$130?

10. In the equation $6.5x + 1.4y = 59$, what is the value of x when $y = 5$? Record your answer and fill in the bubbles.



$6.5x + 1.4(5) = 59$

$6.5x + 7 = 59$

$-7 \quad -7$

$\frac{6.5x}{6.5} = \frac{52}{6.5}$

$\boxed{x = 8}$

11. What is the value of y if (x, y) is a solution to the equation $5x - 3y = 18$?

(x,y)

A 3 C 1

B -1 D -11

$5(3) - 3y = 18$

$15 - 3y = 18$

$-3y = 3$

$y = -1$

Algebra I - Unit 3: Topic 2 – Solutions to Linear Equations

Practice – Solutions to Linear Equations **No Textbook Correlation**

Name _____ Date _____ Period _____

Which ordered pair(s) are solutions of each equation? (there can be more than one answer)

1. $3x = 2y - 1$ A (1, -2) B (-1, -1) C $(-2, -\frac{5}{2})$ D (0,-2)

2. $2y = x + 3$ A (-1, -1) B (-3, 0) C (1, -2) D $(0, -\frac{3}{2})$

3. $5x = 2 - y$ A (3, 12) B (-3, -17) C (2, -8) D (-1, 7)

Find the range for each equation if the domain is {-1, 0, 5}.

4. $y = 3x + 2$

5. $2y = 8 - 4x$

Find the domain for each equation if the range is {-2, 0, 2}.

6. $y = -3x + 1$

7. $2x - y = -3$

8. The cost of renting a DVD at a certain store is described by the function $f(x) = 4x + 3$ in which $f(x)$ is the cost and x is the time in days. If Heather has $19 to spend, what is the number of days that she can rent a single DVD if tax is not considered?

Algebra I - Unit 3: Topic 2 – Solutions to Linear Equations

9. A recycling center pays $0.35 per pound of glass that it receives. If students at Falcon High School want to raise $500 in a glass-recycling project, what is a reasonable number of pounds of glass they must collect?

A 750 lb

B 1500 lb

C 500 lb

D 175 lb

Fill in the table for each equation and domain:

10. 2x + y = 9 D: {-3, -1, 1, 3, 5 }

x	y

11. -5x + y = -10 D: {-2, 0, 2, 4, 6, 8}

x	y

12. If $(x, -3.2)$ is a solution to the equation $4x = 5y - 17$, what is the value of x?

A 0.84 B 0.25 C -5.96 D -8.25

13. If $(-7, y)$ is a solution to the equation $2x - 7y - 42 = 0$, what is the value of y?