Solutions to Linear Equations

Agenda

Warm-Up

HW Check

Notes p.49

Assignment #1-6

Reminders

HW 2.5 due @ end of period!

Essential Question

How can I check if an ordered pair is a solution to an equation?

Warm-Up (Friday)

1. Find the x and y intercepts of $y = 3x - 4$

x-int $(\frac{4}{3}, 0)$

$y = 3x - 4$

$+4 \quad +4$

$\frac{4}{3} = \frac{3x}{3}$

y-int $(0, -4)$

$y = -4$

2. The amount of apples and oranges Lauren buys can be modeled by the equation $\mathbf{x + 2y = 30}$ 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.

$x + [\text{illegible}] = 30$

$x = 30$

$(30, 0)$

apples oranges

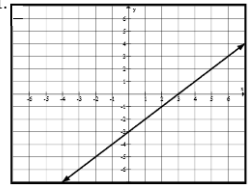
Questions, Comments, Concerns?

Algebra I - Unit 3: Topic 2 – x and y Intercepts

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

Name _____ Date _____ Period _____

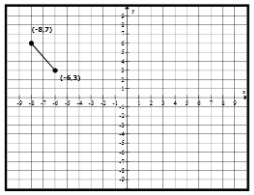
Find the *x* and *y*-intercepts.

1. 

x-intercept _____

y-intercept _____

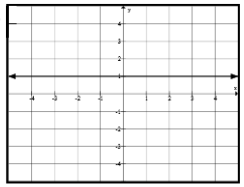
Slope: _____

2. 

zero: _____

y-intercept_____

m = _____

3. 

solution: _____

y-intercept: _____

Rate of Change: _____

4.

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

zero: _____

y-intercept _____

Rate of Change: _____

5.

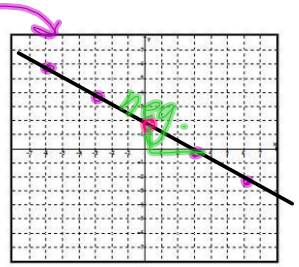
x	*Y*
-6	6
-3	4
3	0
6	-2
9	-4

+3 −2

x-int (3, 0)

(0, 2)

−2/3



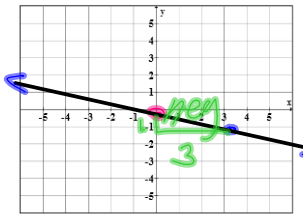
solution: _____

y-intercept: _____

m = _____

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

6. $3x+9y=9$



x-intercept: (3, 0)

y-intercept: (0, 1)

slope: −1/3

$3x+9y=9$

$3x=9$

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

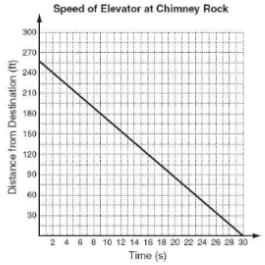
$x=3$

$\frac{9y}{9}=\frac{9}{9}$

$y=1$

Algebra I - Unit 3: Topic 2 – x and y Intercepts

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?

10. What does the y-intercept represent?

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

f(x)=y

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

$y=\frac{1}{2}(0-6)$

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

(0, -3)

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

2 x-int.

A $f(x)=x+2$ y

B $f(x)=x-2$ y

C $f(x)=2x$ y

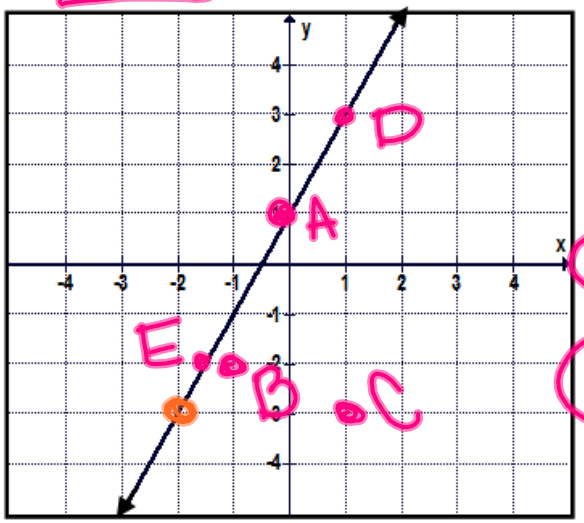
D $f(x)=2x+2$ y

Solutions to Linear Equations p.49

Essential Question

How can I check if an ordered pair is a solution to an equation?

1. The equation $y = 2x + 1$ is graphed below. Plot the ordered pairs below on this same coordinate grid.



A. (0, 1)

B. (-1, -2)

C. (1, -3)

D. (1, 3)

E. $\left(-\frac{3}{2}, -2\right)$ (-1.5, -2)

Which of these ordered pairs lies on the line graphed above? A, D, E

A **solution** to a linear equation is

Any point on the graph of the equation.

Any ordered pair that makes the equation TRUE

Solutions to Linear Equations p.49

Essential Question

How can I check if an ordered pair is a solution to an equation?

2. Given the equation $y = 2x + 1$, complete the table to find some of the solutions to the equation.

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

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

They are all on graph of line.

4. Are these the only solutions to the equation $y = 2x + 1$? Why or why not?

No, there are infinite points on a line.

Solutions to Linear Equations p.49

Essential Question

How can I check if an ordered pair is a solution to an equation?

PLUG IN VALUES. (x, y)

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

Justify your answer:

x y

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

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

$-5 = -5$ ✓ TRUE!

6. In the equation $6.5x + 1.4y = 59$, what is the value of x when $y = 5$?

$6.5x + 1.4(5) = 59$

$6.5x + 7 = 59$

$-7 \quad -7$

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

$x = 8$

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

A 3
B -1
C 1
D -11

$5(3) - 3y = 18$

$15 - 3y = 18$

$-15 \quad -15$

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

$y = -1$

SUMMARY: 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

Completed HW 2.5 is due @ end of period

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 the equation? (there can be more than one answer)

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

2. 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

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

4. Find the range for the equation if the domain is {-1, 0, 5}.
$2y = 8 - 4x$

5. Find the domain for the equation if the range is {-2, 0, 2}.
$y = -3x + 1$

6. 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?

Solutions to Linear Equations