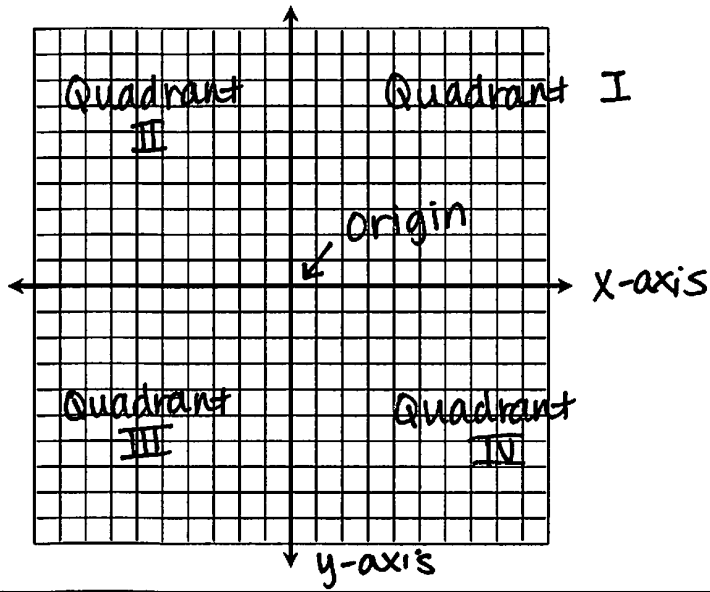


Name:

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Topic:

Class:

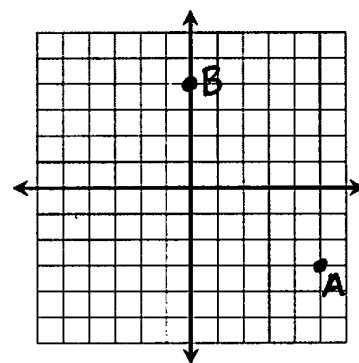
Main Ideas/Questions	Notes/Examples
COORDINATE PLANE	Formed by the intersection of a horizontal number line + a vertical number line; used for graphing
X-AXIS	The horizontal number line
Y-AXIS	The vertical number line
ORIGIN	The point at which the x-axis + y-axis intersect
QUADRANTS	The four regions created by the intersection of the x-axis + y-axis.
IDENTIFYING PARTS	<p>Directions: Label all parts of the coordinate plane below.</p> 
ORDERED PAIR	<p>A pair of numbers written in the form (x, y) that is used to locate a point on the coordinate plane.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;"> <p>The value of x is called the X-coordinate and corresponds to the location on the x-axis</p> </div> <div style="text-align: center;"> <p>(x, y)</p> <p>↑ ↑</p> </div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; text-align: center;"> <p>The value of y is called the y-coordinate and corresponds to the location on the y-axis</p> </div> </div>

GRAPHING POINTS

Example: Plot points $A(5, -3)$ and $B(0, 4)$ on the coordinate plane below.

➤ To plot point A : Start at the origin and and move 5 units right and 3 units down.

➤ To plot point B : Start at the origin and and move 0 units right and 4 units up.



Describe the location of each point above:

A : in Quadrant **IV** B : on the **y-axis**

YOU TRY!

Directions: Graph each point on the coordinate plane below and describe its location.

1. $A(-6, 2)$

Quad **II**

2. $B(-3, 0)$

x-axis

3. $C(4, -1)$

Quad **IV**

4. $D(1, 7)$

Quad **I**

5. $E(-3, -2)$

Quad **III**

6. $F(-5, 4)$

Quad **II**

7. $G(0, -6)$

y-axis

8. $H(2, -8)$

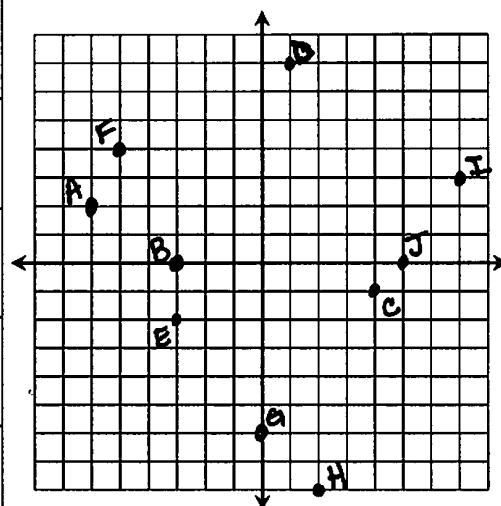
Quad **IV**

9. $I(7, 3)$

Quad **I**

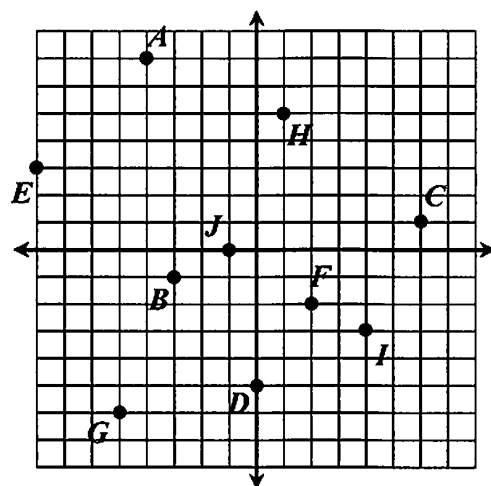
10. $J(5, 0)$

x-axis



WRITING & LOCATING POINTS

Directions: Identify the ordered pair and location for each point.



POINT	ORDERED PAIR	LOCATION
A	$(-4, 7)$	Quad II
B	$(-3, -1)$	Quad III
C	$(6, 1)$	Quad I
D	$(0, -5)$	y-axis
E	$(-8, 3)$	Quad II
F	$(2, -2)$	Quad IV
G	$(-5, -6)$	Quad III
H	$(1, 5)$	Quad I
I	$(4, -3)$	Quad IV
J	$(-1, 0)$	x-axis

Name: _____

Unit 5: Functions & Graphing

Date: _____ Per: _____

Homework 1: The Coordinate Plane

1. Graph each point on the coordinate plane below and describe its location.

1. A(-4, -2)

Quad III

2. B(0, -5)

y-axis

3. C(-8, 2)

Quad II

4. D(6, -3)

Quad IV

5. E(-7, 7)

Quad II

6. F(2, -6)

Quad IV

7. G(0, 2)

y-axis

8. H(1, 5)

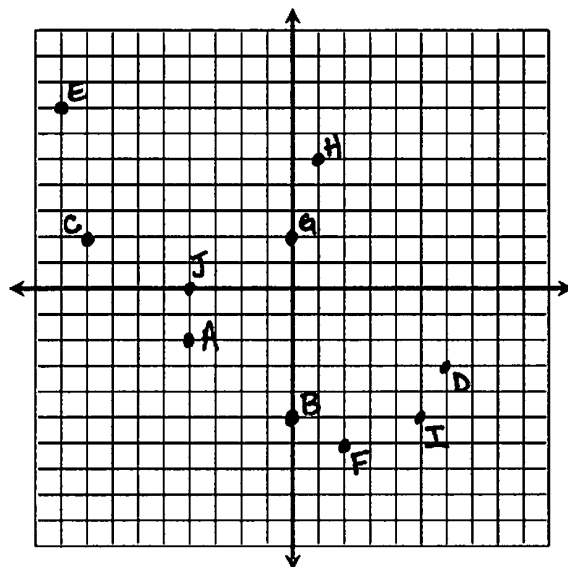
Quad I

9. I(5, -5)

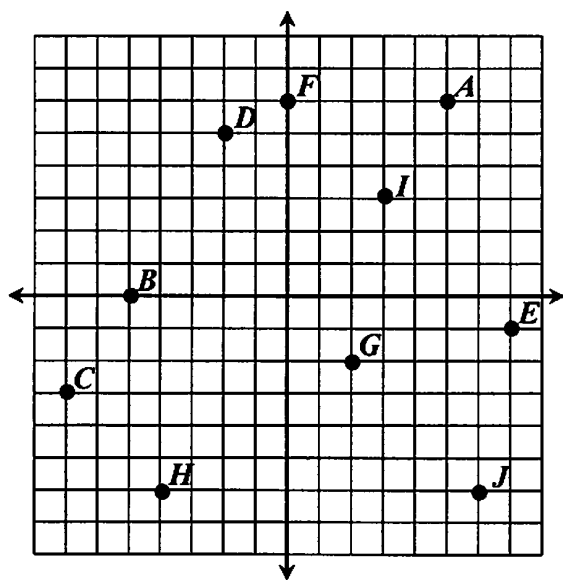
Quad IV

10. J(-4, 0)

x-axis



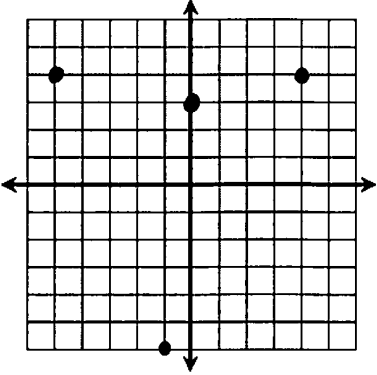
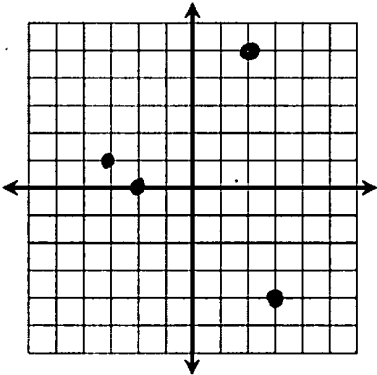
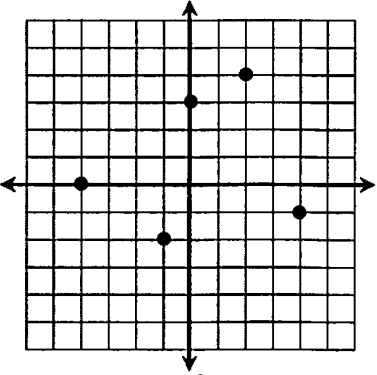
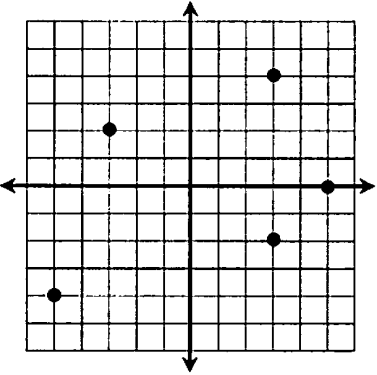
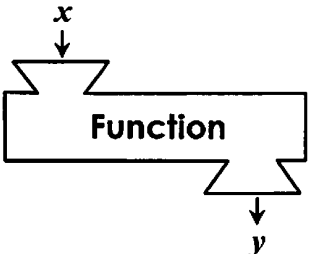
2. Identify the ordered pair and location (quadrant or axis) for each point on the graph.



Point	Ordered Pair	Location
A	(5, 6)	Quad I
B	(-5, 0)	x-axis
C	(-7, -3)	Quad III
D	(-2, 5)	Quad II
E	(7, -1)	Quad IV
F	(0, 6)	y-axis
G	(2, -2)	Quad IV
H	(-4, -7)	Quad III

Directions: Identify and correct each error below.3. To plot the point (-3, 6), start at the origin and move three places down and six places right.Move 3 places left + 6 places up.4. To plot the point (-4, 0), start at the origin and move four places down.Start at the origin + move 4 places left.

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
Relations	<p>A relation is a set of ordered pairs.</p> <p>Example: $\{(-5, 1), (4, 0), (-2, -3), (7, -5)\}$</p>
Examples	<p>Directions: Graph the following relations on the coordinate plane.</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>1. $\{(0, 3), (-5, 4), (-1, -6), (4, 4)\}$</p>  </div> <div style="width: 45%;"> <p>2. $\{(-3, 1), (-2, 0), (3, -4), (2, 5)\}$</p>  </div> </div> <p>Directions: Write the relation shown on the coordinate plane.</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>3.</p>  <p>$\{(-4, 0), (-1, -2), (0, 3), (2, 4), (4, -1)\}$</p> </div> <div style="width: 45%;"> <p>4.</p>  <p>$\{(5, -4), (-3, 2), (3, -2), (3, 4), (5, 0)\}$</p> </div> </div>
Functions	<p>A function is an equation (or rule) that takes an input, x, and generates a single output, y.</p> <p>Example Functions: $y = x + 2$, $y = x - 6$, $y = 2x + 1$</p> <div style="display: flex; align-items: flex-start;"> <div style="flex: 1; text-align: center;">  </div> <div style="flex: 2;"> <p>Think of a function like a machine that takes an x-value and produces a y-value.</p> <ul style="list-style-type: none"> The x-value is called the <u>independent</u> variable (because you pick it!) The y-value is called the <u>dependent</u> variable because its value will depend on the value of x. </div> </div>

Function Tables

Directions: Complete each function table.

5. $y = x - 5$

x	$y = x - 5$	y	(x, y)
0	$y = 0 - 5$	-5	(0, -5)
1	$y = 1 - 5$	-4	(1, -4)
2	$y = 2 - 5$	-3	(2, -3)
3	$y = 3 - 5$	-2	(3, -2)

6. $y = x + 2$

x	$y = x + 2$	y	(x, y)
-5	$y = -5 + 2$	-3	(-5, -3)
-2	$y = -2 + 2$	0	(-2, 0)
3	$y = 3 + 2$	5	(3, 5)
7	$y = 7 + 2$	9	(7, 9)

7. $y = 3x$

x	$y = 3x$	y	(x, y)
-3	$y = 3(-3)$	-9	(-3, -9)
-1	$y = 3(-1)$	-3	(-1, -3)
0	$y = 3(0)$	0	(0, 0)
2	$y = 3(2)$	6	(2, 6)

8. $y = 2x - 3$

x	$y = 2x - 3$	y	(x, y)
-2	$y = 2(-2) - 3$	-7	(-2, -7)
1	$y = 2(1) - 3$	-1	(1, -1)
3	$y = 2(3) - 3$	3	(3, 3)
5	$y = 2(5) - 3$	7	(5, 7)

9. $y = -x + 2$

x	$y = -x + 2$	y	(x, y)
-4	$y = -(-4) + 2$	6	(-4, 6)
-1	$y = -(-1) + 2$	3	(-1, 3)
2	$y = -2 + 2$	0	(2, 0)
5	$y = -5 + 2$	-3	(5, -3)

10. $y = 1 - 4x$

x	$y = 1 - 4x$	y	(x, y)
-2	$y = 1 - 4(-2)$	9	(-2, 9)
0	$y = 1 - 4(0)$	1	(0, 1)
1	$y = 1 - 4(1)$	-3	(1, -3)
2	$y = 1 - 4(2)$	-7	(2, -7)

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

x	$y = \frac{1}{2}x + 5$	y	(x, y)
-2	$y = \frac{1}{2}(-2) + 5$	4	(-2, 4)
0	$y = \frac{1}{2}(0) + 5$	5	(0, 5)
2	$y = \frac{1}{2}(2) + 5$	6	(2, 6)
4	$y = \frac{1}{2}(4) + 5$	7	(4, 7)

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

x	$y = -\frac{3}{4}x - 2$	y	(x, y)
-8	$y = -\frac{3}{4}(-8) - 2$	4	(-8, 4)
-4	$y = -\frac{3}{4}(-4) - 2$	1	(-4, 1)
0	$y = -\frac{3}{4}(0) - 2$	-2	(0, -2)
4	$y = -\frac{3}{4}(4) - 2$	-5	(4, -5)

Name: _____

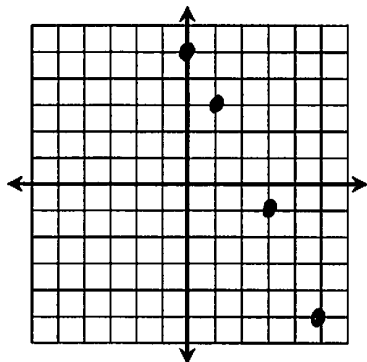
Unit 5: Functions & Graphing

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Homework 2: Relations & Functions

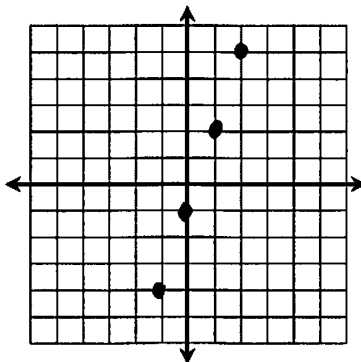
1. Graph the relation:

$\{(0, 5), (3, -1), (1, 3), (5, -5)\}$

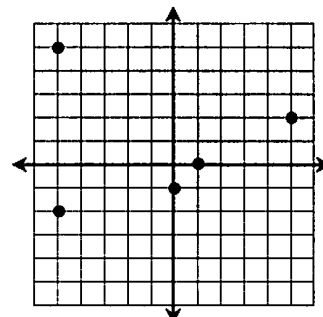


2. Graph the relation:

$\{(-1, -4), (0, -1), (1, 2), (2, 5)\}$



3. Identify the relation graphed below.



$\{(-5, 5), (-5, -2), (0, -1), (1, 0), (5, 2)\}$

Directions: Complete each function table.

4. $y = x - 3$

x	$y = x - 3$	y	(x, y)
-5	$y = -5 - 3$	-8	$(-5, -8)$
-1	$y = -1 - 3$	-4	$(-1, -4)$
3	$y = 3 - 3$	0	$(3, 0)$
7	$y = 7 - 3$	4	$(7, 4)$

5. $y = -2x$

x	$y = -2x$	y	(x, y)
-2	$y = -2(-2)$	4	$(-2, 4)$
0	$y = -2(0)$	0	$(0, 0)$
1	$y = -2(1)$	-2	$(1, -2)$
2	$y = -2(2)$	-4	$(2, -4)$

6. $y = 4x + 4$

x	$y = 4x + 4$	y	(x, y)
-4	$y = 4(-4) + 4$	-12	$(-4, -12)$
-2	$y = 4(-2) + 4$	-4	$(-2, -4)$
0	$y = 4(0) + 4$	4	$(0, 4)$
2	$y = 4(2) + 4$	12	$(2, 12)$

7. $y = -x + 6$

x	$y = -x + 6$	y	(x, y)
-3	$y = -(-3) + 6$	9	$(-3, 9)$
-1	$y = -(-1) + 6$	7	$(-1, 7)$
1	$y = -1 + 6$	5	$(1, 5)$
3	$y = -3 + 6$	3	$(3, 3)$

8. $y = \frac{2}{5}x$

x	$y = \frac{2}{5}x$	y	(x, y)
-10	$y = \frac{2}{5}(-10)$	-4	$(-10, -4)$
-5	$y = \frac{2}{5}(-5)$	-2	$(-5, -2)$
0	$y = \frac{2}{5}(0)$	0	$(0, 0)$
5	$y = \frac{2}{5}(5)$	2	$(5, 2)$

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

x	$y = -\frac{2}{3}x - 5$	y	(x, y)
-3	$y = -\frac{2}{3}(-3) - 5$	-3	$(-3, -3)$
0	$y = -\frac{2}{3}(0) - 5$	-5	$(0, -5)$
3	$y = -\frac{2}{3}(3) - 5$	-7	$(3, -7)$
6	$y = -\frac{2}{3}(6) - 5$	-9	$(6, -9)$

Name:

Date:

Topic:

Class:

Main Ideas/Questions

Notes/Examples

GRAPHING FUNCTIONS

using tables

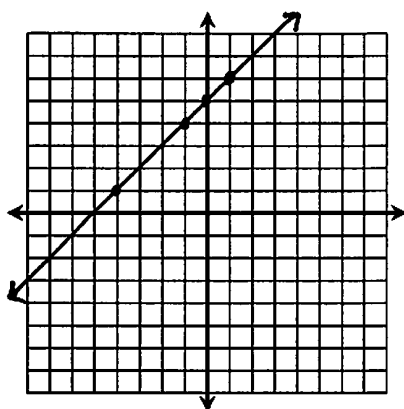
Steps to graph a function using a table:

- ① Choose x -values that are within the graphing window.
- ② Find the y -values by evaluating the function for each x -value.
- ③ Graph each ordered pair.
- ④ Connect the points and put arrows on each end.

Directions: Use the table to graph each function.

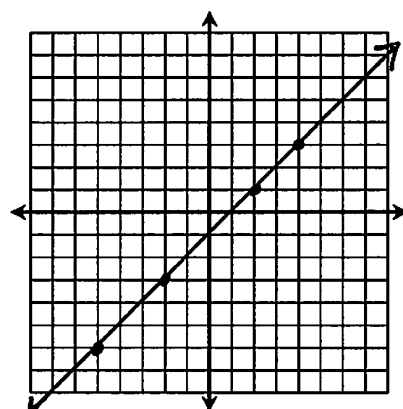
1. $y = x + 5$

x	y
-4	1
-1	4
0	5
1	6



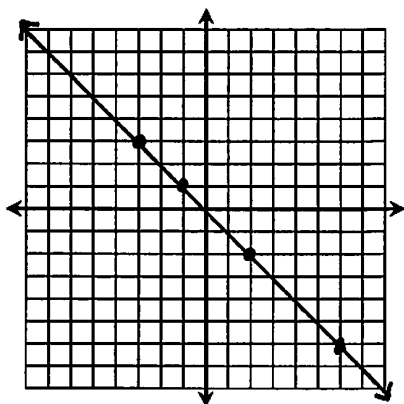
2. $y = x - 1$

x	y
-5	-6
-2	-3
2	1
4	3



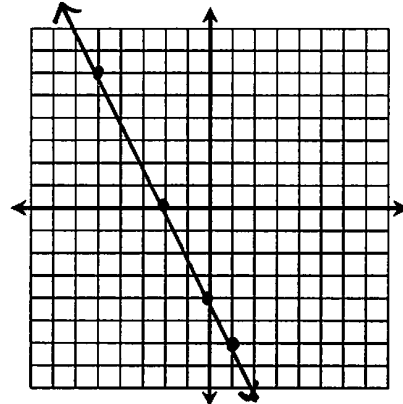
3. $y = -x$

x	y
-3	3
-1	1
2	-2
6	-6



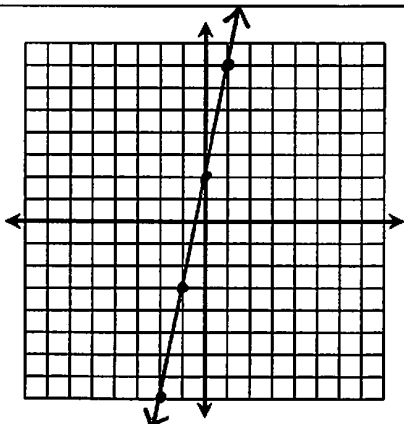
4. $y = -2x - 4$

x	y
-5	6
-2	0
0	-4
1	-6



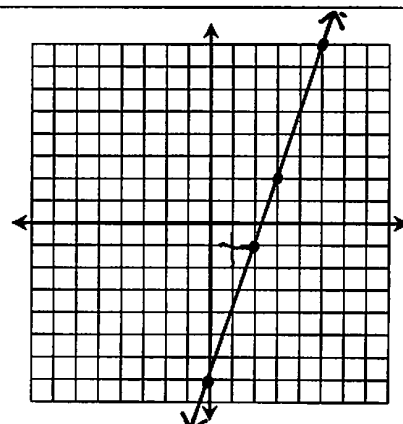
5. $y = 5x + 2$

x	y
-2	-8
-1	-3
0	2
1	7



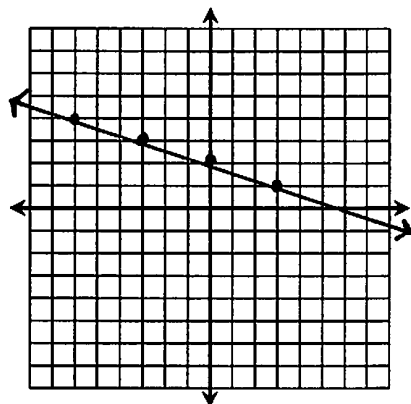
6. $y = -7 + 3x$

x	y
0	-7
2	-1
3	2
5	8



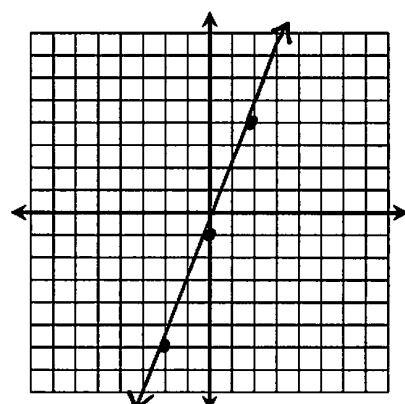
7. $y = -\frac{1}{3}x + 2$

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



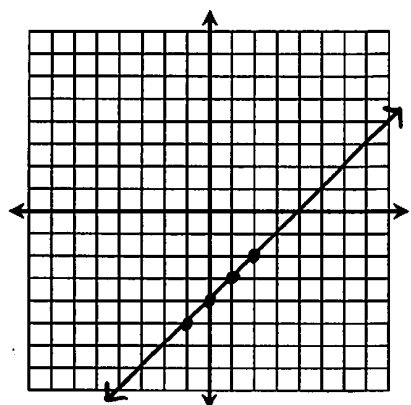
8. $y = \frac{5}{2}x - 1$

x	y
-4	-11
-2	-6
0	-1
2	4



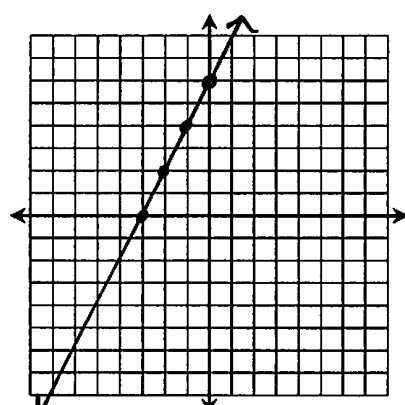
9. $y = x - 4$

x	y
-1	-5
0	-4
1	-3
2	-2



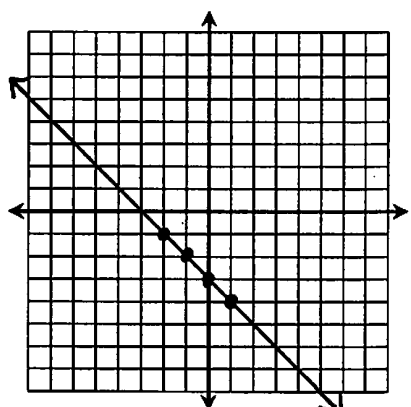
10. $y = 2x + 6$

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



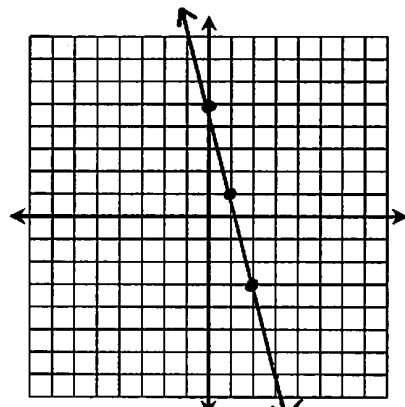
11. $y = -3 - x$

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



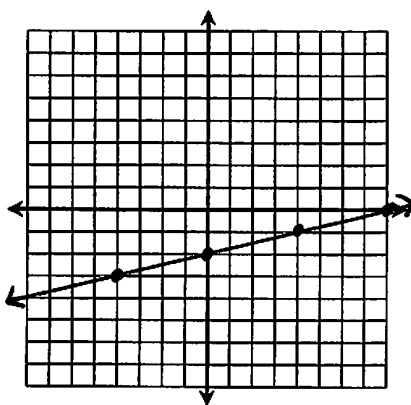
12. $y = -4x + 5$

x	y
-1	9
0	5
1	1
2	-3



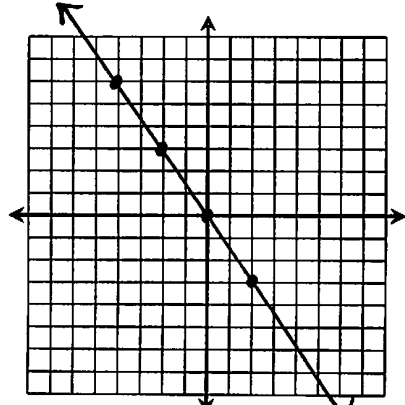
13. $y = \frac{1}{4}x - 2$

x	y
-4	-3
0	-2
4	-1
8	0



14. $y = -\frac{3}{2}x$

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



MULTIPLE REPRESENTATIONS

Functions can be represented many ways. Common representations are tables, graphs, equations, and verbal descriptions. Using #1 as an example, complete the table by filling in the missing parts.

TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
<div>1</div> <table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>2</td></tr><tr><td>1</td><td>3</td></tr><tr><td>2</td><td>4</td></tr><tr><td>3</td><td>5</td></tr></table>	x	y	0	2	1	3	2	4	3	5		$y = x + 2$	"A number is two more than another number."
x	y												
0	2												
1	3												
2	4												
3	5												
<div>2</div> <table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>-5</td></tr><tr><td>1</td><td>-3</td></tr><tr><td>2</td><td>-1</td></tr><tr><td>3</td><td>1</td></tr></table>	x	y	0	-5	1	-3	2	-1	3	1		$y = 2x - 5$	"A number is five less than twice another number."
x	y												
0	-5												
1	-3												
2	-1												
3	1												
<div>3</div> <table><tr><td>x</td><td>y</td></tr><tr><td>-2</td><td>6</td></tr><tr><td>-1</td><td>3</td></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>-3</td></tr></table>	x	y	-2	6	-1	3	0	0	1	-3		$y = -3x$	A number is negative three times another number.
x	y												
-2	6												
-1	3												
0	0												
1	-3												

TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
<table><tr><td>x</td><td>y</td></tr><tr><td>-2</td><td>-5</td></tr><tr><td>0</td><td>-3</td></tr><tr><td>4</td><td>1</td></tr><tr><td>6</td><td>3</td></tr></table>	x	y	-2	-5	0	-3	4	1	6	3		$y = x - 3$	A number is three less than another number.
x	y												
-2	-5												
0	-3												
4	1												
6	3												
<table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>0</td></tr><tr><td>2</td><td>1</td></tr><tr><td>4</td><td>2</td></tr><tr><td>6</td><td>3</td></tr></table>	x	y	0	0	2	1	4	2	6	3		$y = \frac{1}{2}x$	A number is one-half the value of another number.
x	y												
0	0												
2	1												
4	2												
6	3												
<table><tr><td>x</td><td>y</td></tr><tr><td>-3</td><td>3</td></tr><tr><td>-1</td><td>1</td></tr><tr><td>0</td><td>0</td></tr><tr><td>4</td><td>-4</td></tr></table>	x	y	-3	3	-1	1	0	0	4	-4		$y = -x$	A number is negative one times another number.
x	y												
-3	3												
-1	1												
0	0												
4	-4												

Name: _____

Unit 5: Functions & Graphing

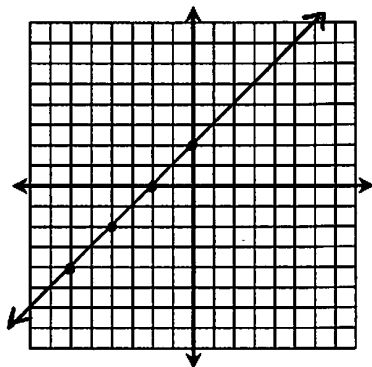
Date: _____ Per: _____

Homework 3: Graphing Functions

**** This is a 2-page document! ******Directions:** Use the table to graph each function.

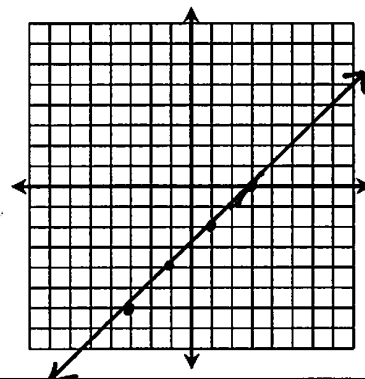
1. $y = x + 2$

x	y
-6	-4
-4	-2
-2	0
0	2



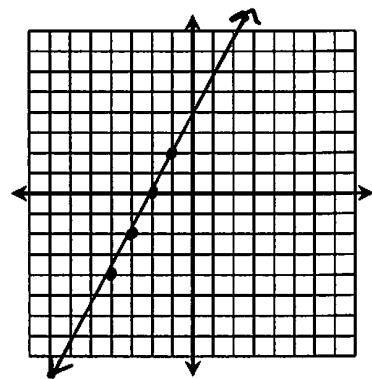
2. $y = x - 3$

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



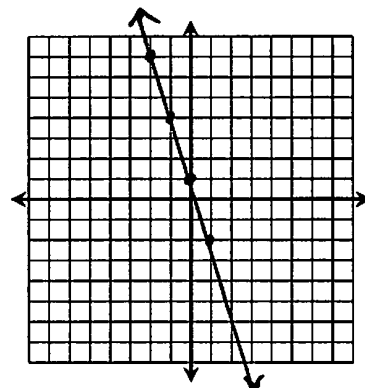
3. $y = 2x + 4$

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



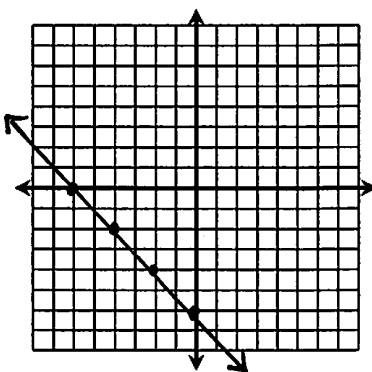
4. $y = -3x + 1$

x	y
-2	7
-1	4
0	1
1	-2



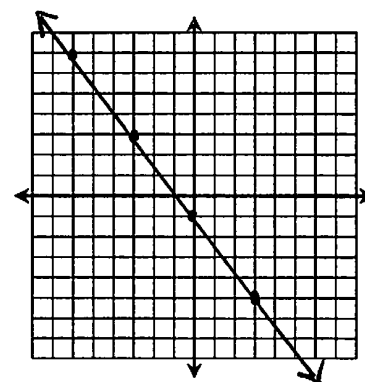
5. $y = -6 - x$

x	y
-6	0
-4	-2
-2	-4
0	-6



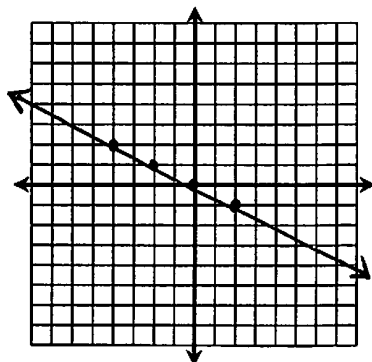
6. $y = -\frac{4}{3}x - 1$

x	y
-6	7
-3	3
0	-1
3	-5



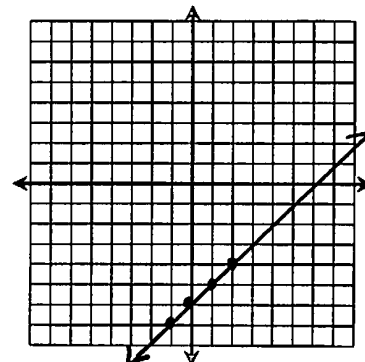
7. $y = -\frac{1}{2}x$

x	y
-4	2
-2	1
0	0
2	-1



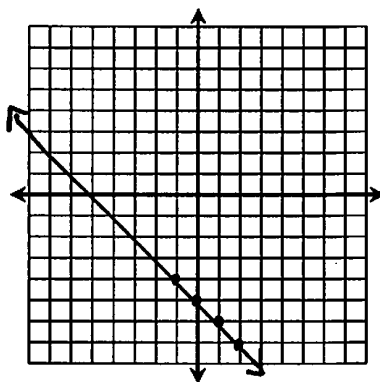
8. $y = x - 6$

x	y
-1	-7
0	-6
1	-5
2	-4



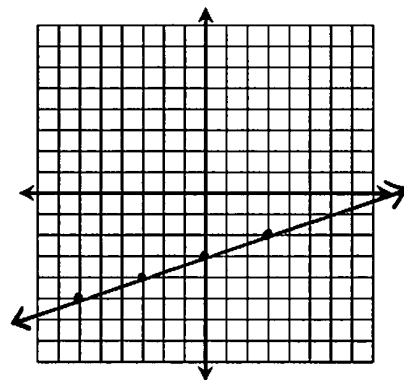
9. $y = -5 - x$

x	y
-1	-4
0	-5
1	-6
2	-7



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

x	y
-6	-5
-3	-4
0	-3
3	-2



Directions: Complete the table by filling in the missing parts.

TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
11. <table><tr><td>x</td><td>y</td></tr><tr><td>-2</td><td>4</td></tr><tr><td>0</td><td>2</td></tr><tr><td>3</td><td>-1</td></tr><tr><td>7</td><td>-5</td></tr></table>	x	y	-2	4	0	2	3	-1	7	-5		$y = -x + 2$	A number is two more than negative one times another number.
x	y												
-2	4												
0	2												
3	-1												
7	-5												
12. <table><tr><td>x</td><td>y</td></tr><tr><td>-1</td><td>-7</td></tr><tr><td>0</td><td>-5</td></tr><tr><td>1</td><td>-3</td></tr><tr><td>2</td><td>-1</td></tr></table>	x	y	-1	-7	0	-5	1	-3	2	-1		$y = 2x - 5$	A number is five less than twice another number.
x	y												
-1	-7												
0	-5												
1	-3												
2	-1												
13. <table><tr><td>x</td><td>y</td></tr><tr><td>-4</td><td>4</td></tr><tr><td>-2</td><td>5</td></tr><tr><td>0</td><td>6</td></tr><tr><td>2</td><td>7</td></tr></table>	x	y	-4	4	-2	5	0	6	2	7		$y = \frac{1}{2}x + 6$	"A number is six more than one-half of another number."
x	y												
-4	4												
-2	5												
0	6												
2	7												

Name: _____

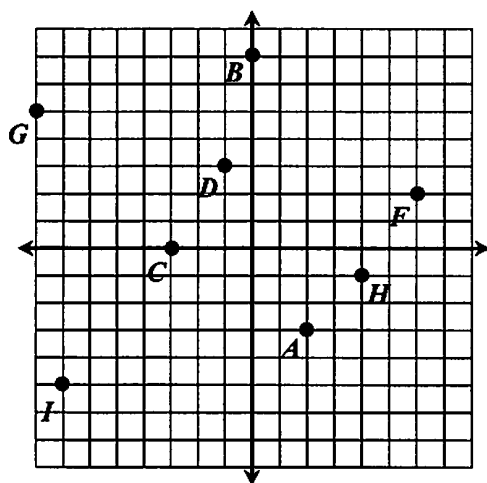
Math 7

Date: _____ Per: _____

Unit 4: Ratio, Proportion, & Percent

Quiz 5-1: The Coordinate Plane, Relations, and Functions

Use the graph below for questions 1-6.

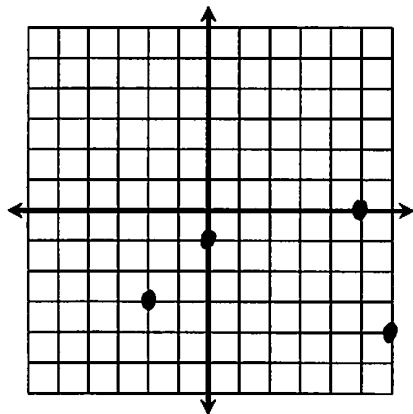


1. Write an ordered pair for point F .
2. Write an ordered pair for point C .
3. Write an ordered pair for point A .
4. Describe the location of point H .
5. Describe the location of point B .
6. Name all points located in quadrant II.

1. $(4, 1)$ 2. $(-4, 1)$ 3. $(2, -2)$ 4. Quadrant IV5. y-axis6. D, G

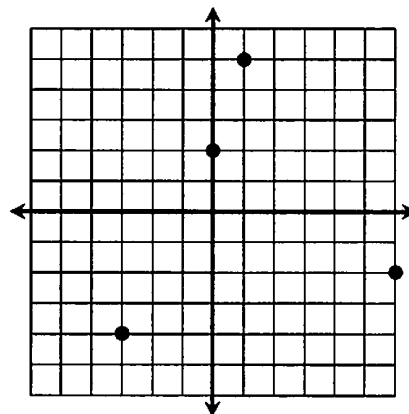
7. Graph the relation below:

$$\{(6, -4), (0, -1), (-2, -3), (5, 0)\}$$



8. Write a relation given the graph below:

$$\{(-3, -4), (0, 2), (1, 5), (6, -2)\}$$



For questions 9-10, complete each function table.

9. $y = -x + 5$

x	$y = -x + 5$	y	(x, y)
-3	$y = -(-3) + 5$	8	$(-3, 8)$
-1	$y = -(-1) + 5$	6	$(-1, 6)$
2	$y = -2 + 5$	3	$(2, 3)$
5	$y = -5 + 5$	0	$(5, 0)$

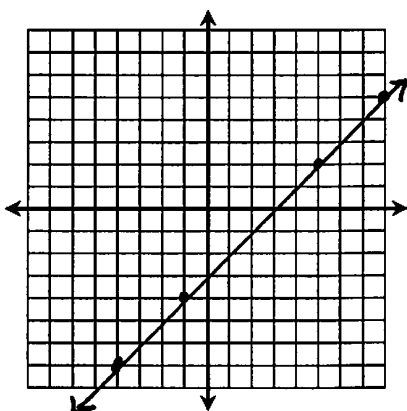
10. $y = \frac{3}{4}x - 1$

x	$y = \frac{3}{4}x - 1$	y	(x, y)
-8	$y = \frac{3}{4}(-8) - 1$	-7	$(-8, -7)$
-4	$y = \frac{3}{4}(-4) - 1$	-4	$(-4, -4)$
0	$y = \frac{3}{4}(0) - 1$	-1	$(0, -1)$
12	$y = \frac{3}{4}(12) - 1$	8	$(12, 8)$

For questions 11-14, graph the function using the table.

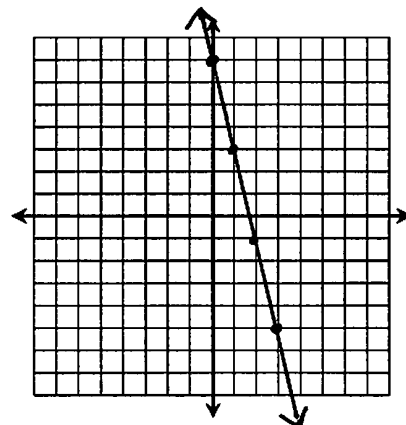
11. $y = x - 3$

x	y
-4	-7
-1	-4
5	2
8	5



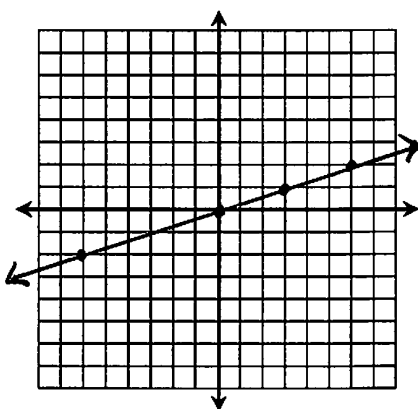
12. $y = -4x + 7$

x	y
0	7
1	3
2	-1
3	-5



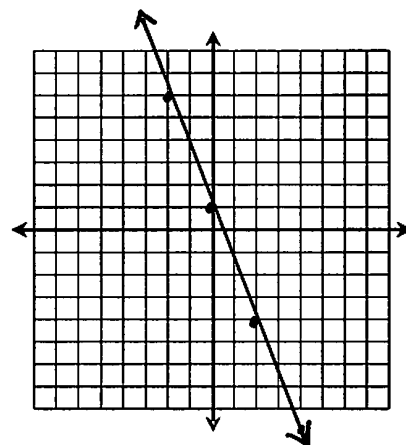
13. $y = \frac{1}{3}x$

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

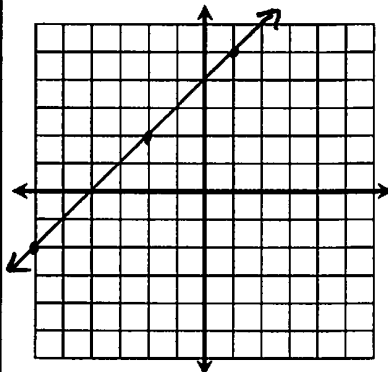
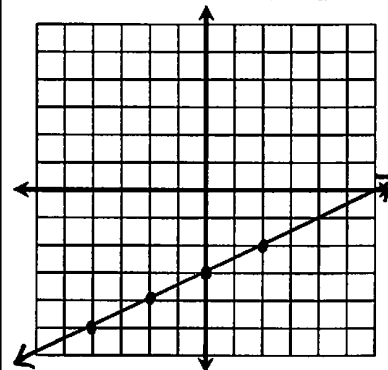


14. $y = -\frac{5}{2}x + 1$

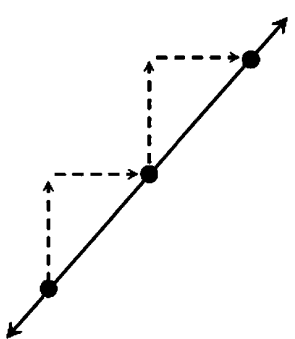
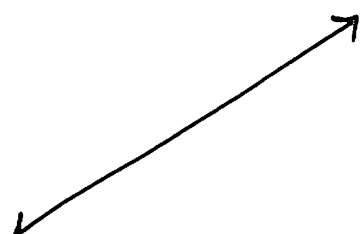
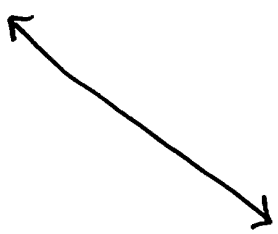
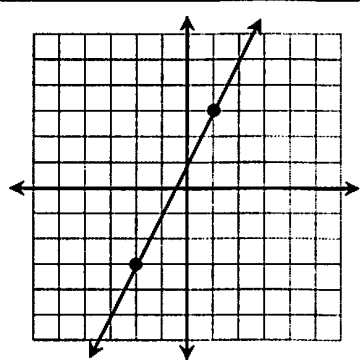
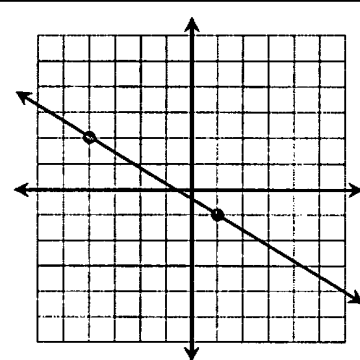
x	y
-2	6
0	1
2	-4
4	-9



Complete each row of the chart below.

TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
15. <table><tr><th>x</th><th>y</th></tr><tr><td>-6</td><td>-2</td></tr><tr><td>-2</td><td>2</td></tr><tr><td>1</td><td>5</td></tr><tr><td>3</td><td>7</td></tr></table>	x	y	-6	-2	-2	2	1	5	3	7		$y = x + 4$	A number is four more than another number.
x	y												
-6	-2												
-2	2												
1	5												
3	7												
16. <table><tr><th>x</th><th>y</th></tr><tr><td>-4</td><td>-5</td></tr><tr><td>-2</td><td>-4</td></tr><tr><td>0</td><td>-3</td></tr><tr><td>2</td><td>-2</td></tr></table>	x	y	-4	-5	-2	-4	0	-3	2	-2		$y = \frac{1}{2}x - 3$	"A number is three less than half of another number."
x	y												
-4	-5												
-2	-4												
0	-3												
2	-2												

Name:	Date:
Topic:	Class:

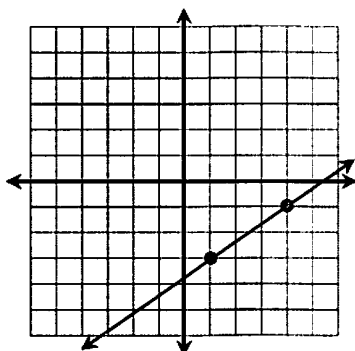
Main Ideas/Questions	Notes/Examples	
<h1>SLOPE</h1> 	<ul style="list-style-type: none"> Slope is the <u>rate of change</u> between any two points on a line. Slope measures the <u>steepness</u> of a line. Slope is a <u>ratio</u> of the vertical change, called the <u>rise</u>, to the horizontal change, called the <u>run</u>, between any two points on the line. Slope is written as a <u>fraction</u> in <u>simplest form</u>. Variable for slope: <u>m</u> 	
<h1>TYPES</h1> <p>of slope</p>	positive	Negative
	 <p>When the line slopes upward from left to right.</p>	 <p>When the line slopes downward from left to right.</p>
<h1>GUIDED EXAMPLES</h1>	<p>1.</p>  $m = \frac{\text{vertical change (rise)}}{\text{horizontal change (run)}} = \frac{6}{3} = \boxed{2}$	<p>2.</p>  $m = \frac{\text{vertical change (rise)}}{\text{horizontal change (run)}} = \boxed{-\frac{3}{5}}$

YOU TRY!

$$m = \frac{\text{rise}}{\text{run}}$$

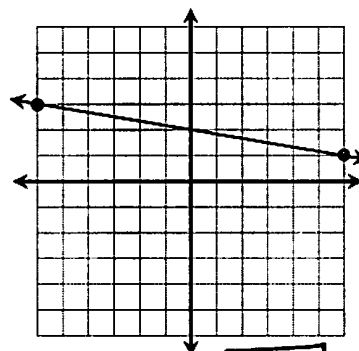
Directions: Find the slope of each line. Write your answer in simplest form!

3.



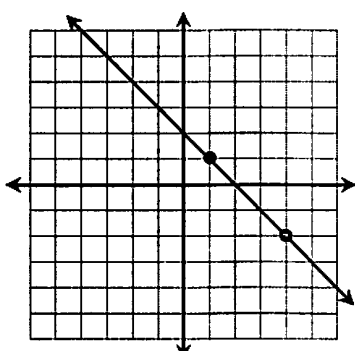
$$m = \frac{2}{3}$$

4.



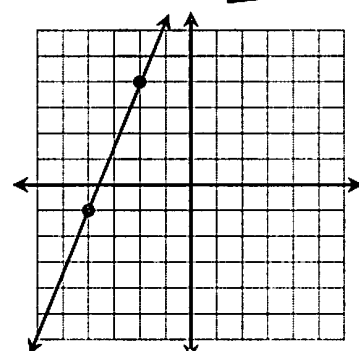
$$m = \frac{-2}{12} = -\frac{1}{6}$$

5.



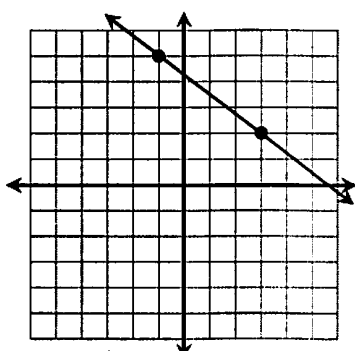
$$m = \frac{-3}{3} = -1$$

6.



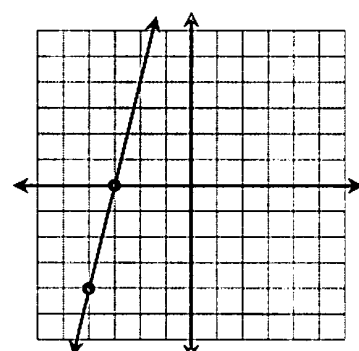
$$m = \frac{5}{2}$$

7.



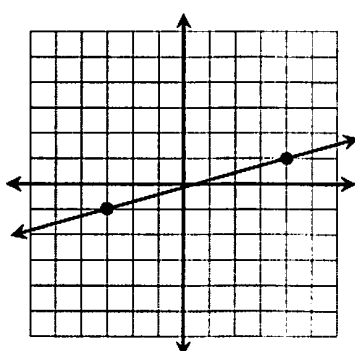
$$m = \frac{-3}{4}$$

8.



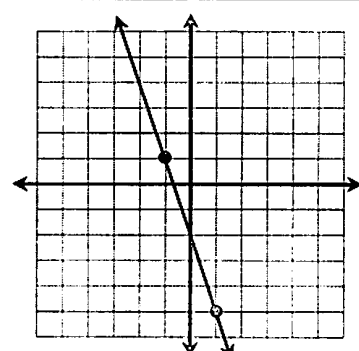
$$m = \frac{4}{1} = 4$$

9.



$$m = \frac{2}{7}$$

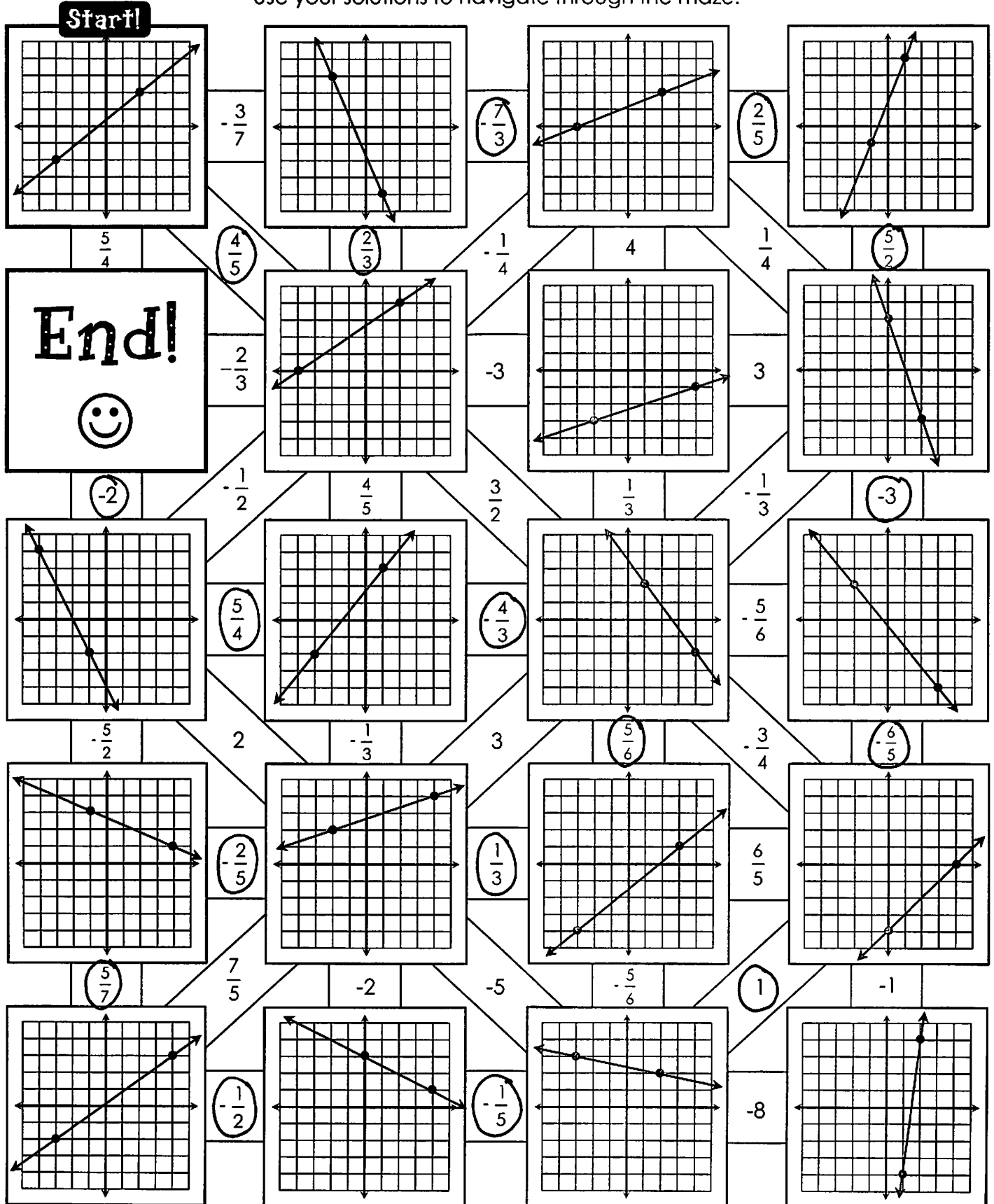
10.



$$m = \frac{-6}{2} = -3$$

Slope Given a Graph Maze!

Directions: Begin at the **Start** box. Find the slope of the line shown on the graph. Use your solutions to navigate through the maze.



Name: _____

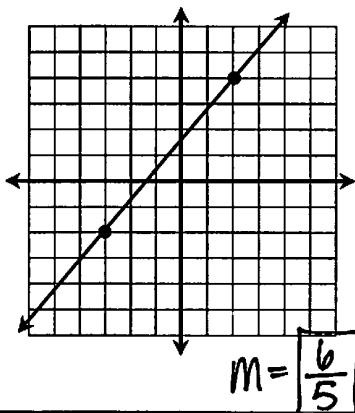
Unit 5: Functions & Graphing

Date: _____ Per: _____

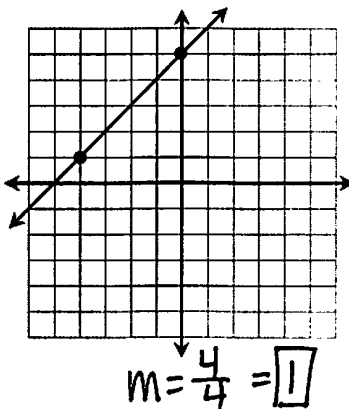
Homework 4: Slope

Directions: Find the slope of each line.

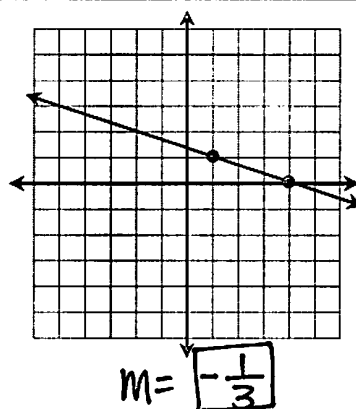
1.



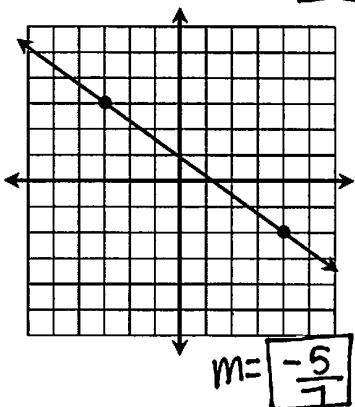
2.



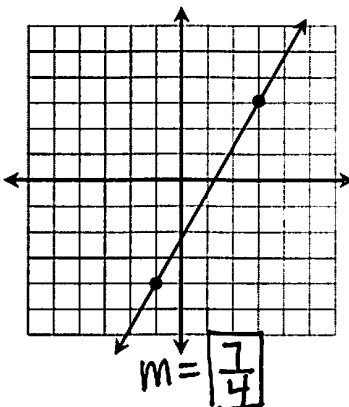
3.



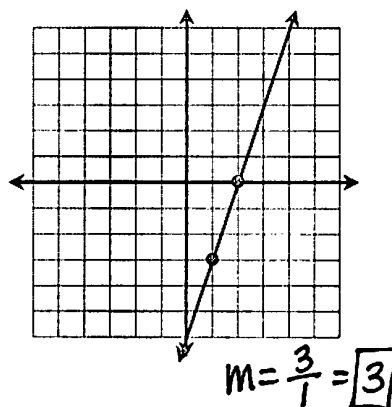
4.



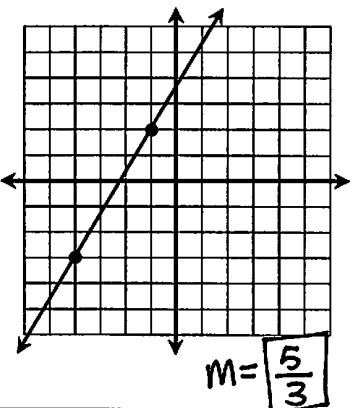
5.



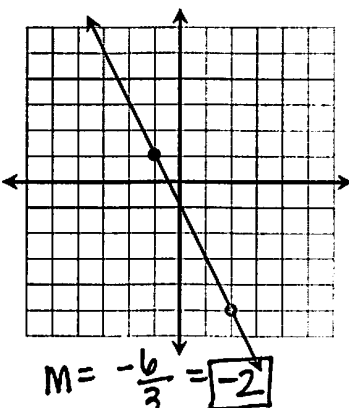
6.



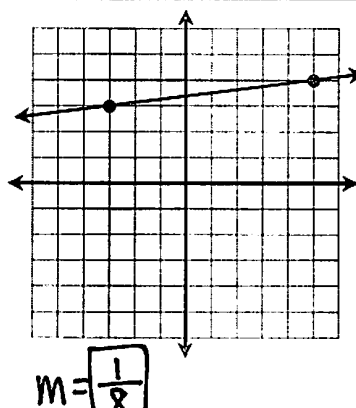
7.



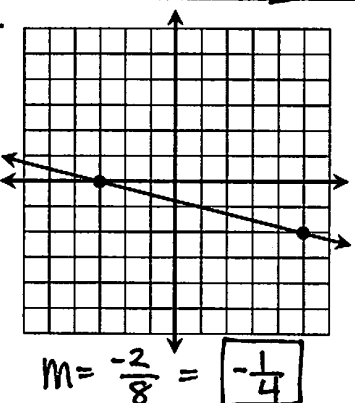
8.



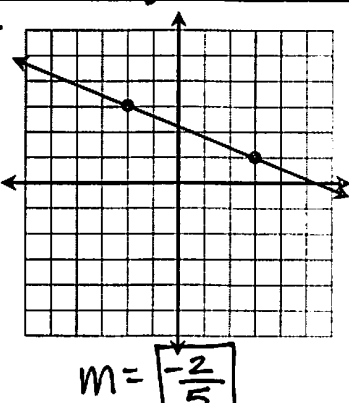
9.



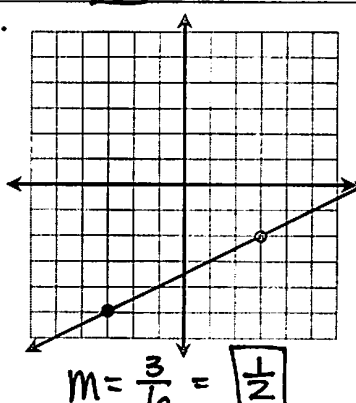
10.



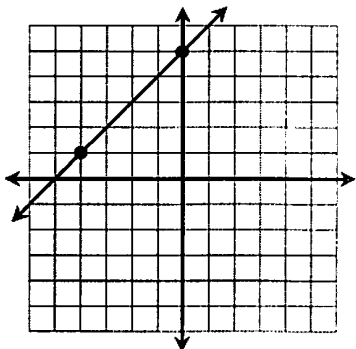
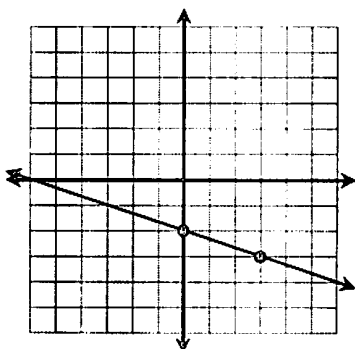
11.



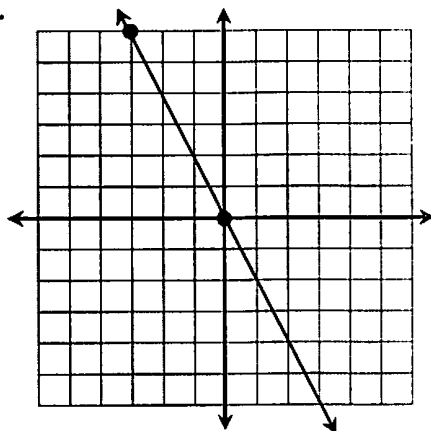
12.



Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
Linear Function	A function that creates a straight line.	
Slope-Intercept Form	<p>Linear functions are frequently written in slope-intercept form:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> $y = mx + b$ </div> <p>m is the <u>slope</u> and b is the <u>y-intercept</u></p> <p><small>*The y-intercept is the point where the line intersects the y-axis!*</small></p>	
Examples	Directions: Given the slope and y-intercept of the line, write the equation in slope-intercept form.	
	1. slope = 3; y-intercept = -5	$y = 3x - 5$
	2. slope = $-\frac{1}{2}$; y-intercept = -3	$y = -\frac{1}{2}x - 3$
	3. slope = -1; y-intercept = -7	$y = -x - 7$
	4. slope = $\frac{5}{6}$; y-intercept = 0	$y = \frac{5}{6}x$
	5. slope = -4; y-intercept = 1	$y = -4x + 1$
Given Graphs	Directions: Identify the slope and y-intercept of the line on the graph. Then, write the equation of the line in slope-intercept form.	
	6.  $m = \frac{4}{4} = 1$ $b = 5$ Equation: $y = x + 5$	7.  $m = -\frac{1}{3}$ $b = -2$ Equation: $y = -\frac{1}{3}x - 2$

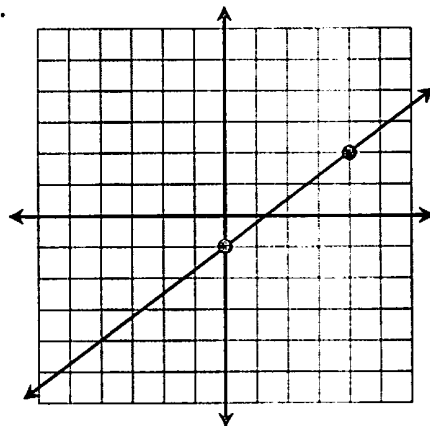
8.



$$m = -\frac{6}{3} = -2 \quad b = 4$$

$$\text{Equation: } y = -2x + 4$$

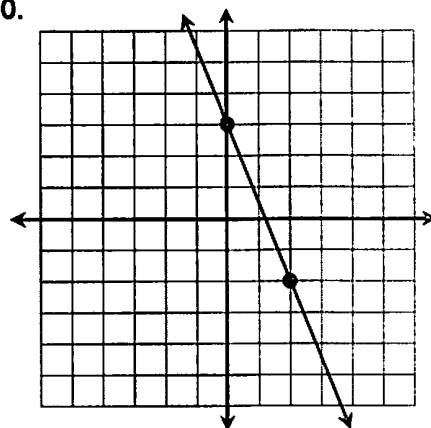
9.



$$m = \frac{3}{4} \quad b = -1$$

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

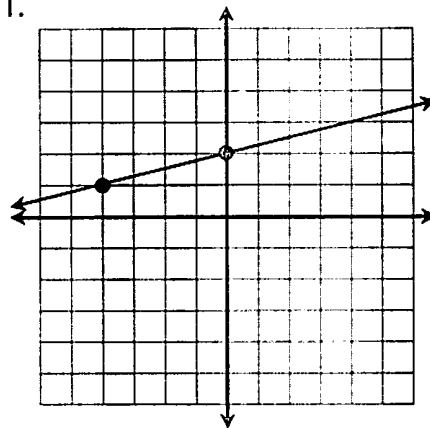
10.



$$m = -\frac{5}{2} \quad b = 3$$

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

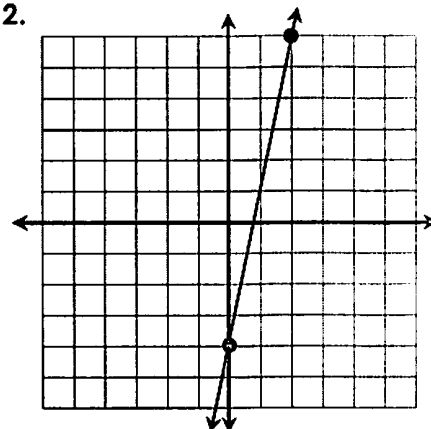
11.



$$m = \frac{1}{4} \quad b = 2$$

$$\text{Equation: } y = \frac{1}{4}x + 2$$

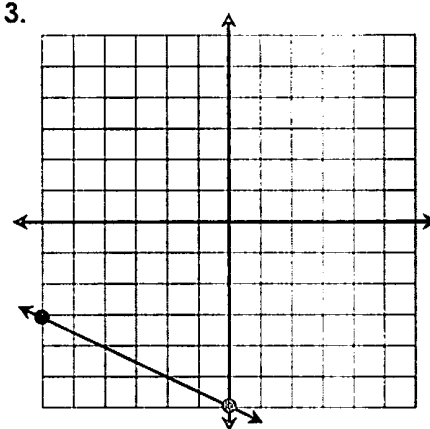
12.



$$m = \frac{10}{2} = 5 \quad b = -4$$

$$\text{Equation: } y = 5x - 4$$

13.



$$m = -\frac{3}{6} = -\frac{1}{2} \quad b = -6$$

$$\text{Equation: } y = -\frac{1}{2}x - 6$$

Name: _____

Unit 5: Functions & Graphing

Date: _____ Per: _____

Homework 5: Slope-Intercept Form

Directions: Given the slope and y-intercept of the line, write the equation in slope-intercept form.

1. slope = -2; y-intercept = 7

$$y = -2x + 7$$

2. slope = $\frac{1}{2}$; y-intercept = 0

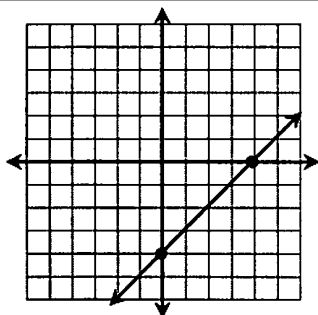
$$y = \frac{1}{2}x$$

3. slope = -1; y-intercept = -1

$$y = -x - 1$$

Directions: Identify the slope and y-intercept of the line on the graph. Then, write the equation of the line in slope-intercept form.

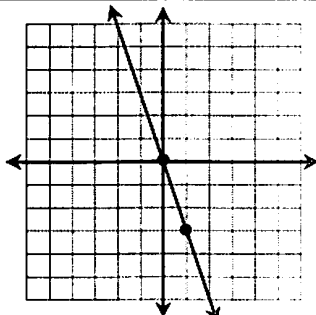
4.



$$m = \frac{4}{4} = 1 \quad b = -4$$

Equation: $y = x - 4$

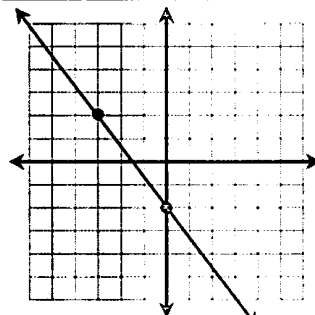
5.



$$m = \frac{-3}{1} = -3 \quad b = 0$$

Equation: $y = -3x$

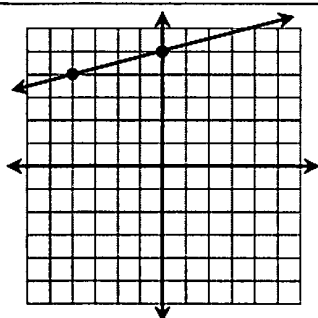
6.



$$m = \frac{-4}{3} \quad b = -2$$

Equation: $y = -\frac{4}{3}x - 2$

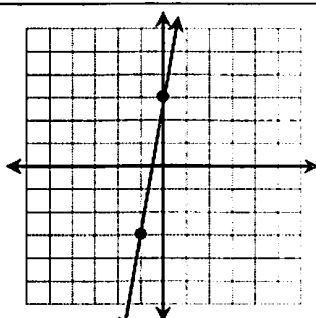
7.



$$m = \frac{1}{4} \quad b = 5$$

Equation: $y = \frac{1}{4}x + 5$

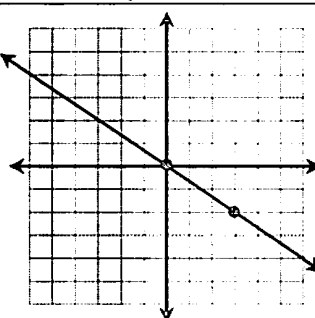
8.



$$m = \frac{6}{1} = 6 \quad b = 3$$

Equation: $y = 6x + 3$

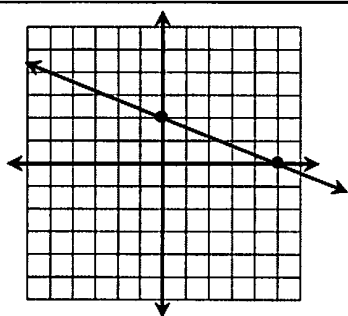
9.



$$m = \frac{-2}{3} \quad b = 0$$

Equation: $y = -\frac{2}{3}x$

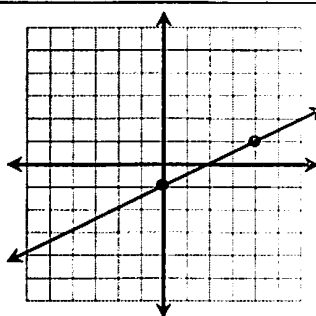
10.



$$m = \frac{-2}{5} \quad b = 2$$

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

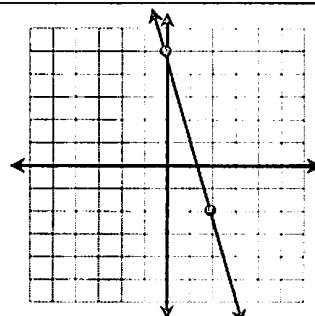
11.



$$m = \frac{2}{4} = \frac{1}{2} \quad b = -1$$

Equation: $y = \frac{1}{2}x - 1$

12.



$$m = \frac{-7}{2} \quad b = 5$$

Equation: $y = -\frac{7}{2}x + 5$

Name:

Date:

Topic:

Class:

Main Ideas/Questions

Notes/Examples

GRAPHING LINEAR FUNCTIONS

(By Slope-Intercept)

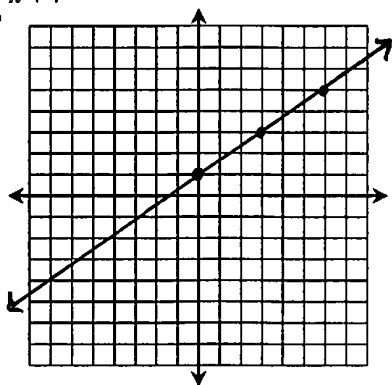
Use the steps below to graph an equation using slope-intercept form:

- ① Graph the **y-intercept**. This is always point $(0, b)$.
- ② Use the **slope** of the line to create more points. Remember slope is rise/run!
- ③ Use a ruler to draw a line that extends through the points, placing an arrow on both ends.

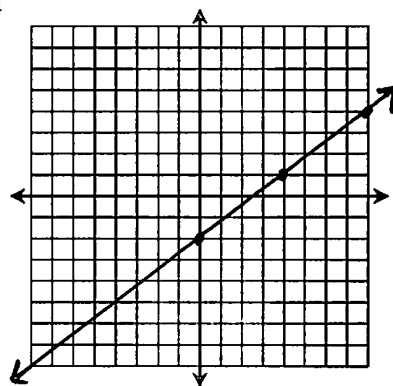
EXAMPLES

Graph each line using its slope and y-intercept!

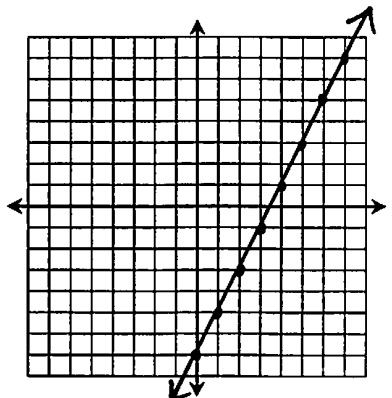
1. $y = \frac{2}{3}x + 1$



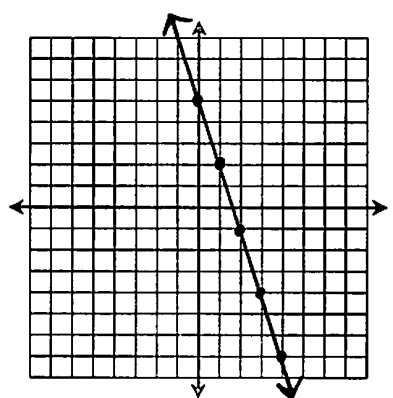
2. $y = \frac{3}{4}x - 2$



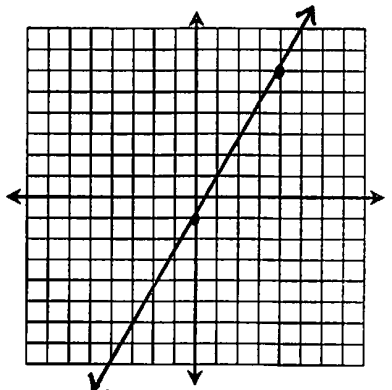
3. $y = 2x - 7$



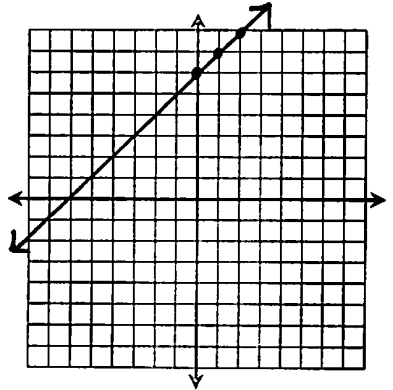
4. $y = -3x + 5$



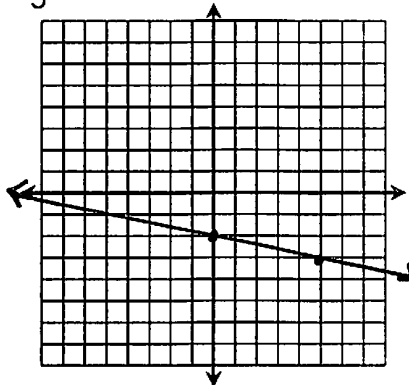
5. $y = \frac{7}{4}x - 1$



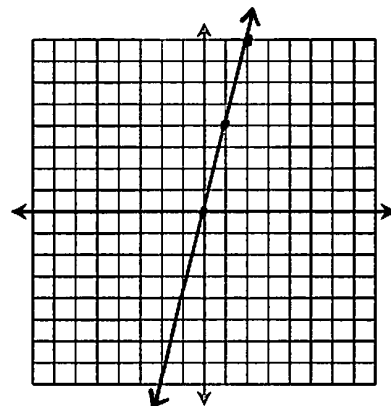
6. $y = x + 6$



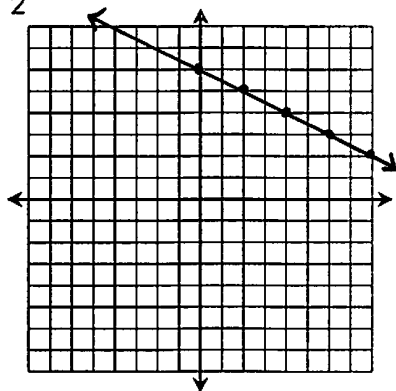
$$7. y = -\frac{1}{5}x - 2$$



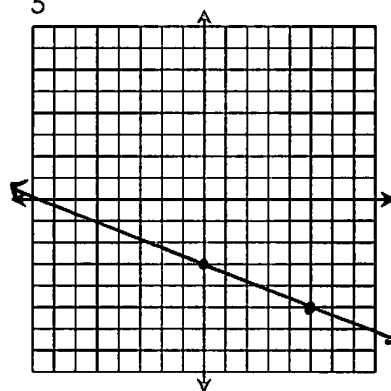
$$8. y = 4x$$



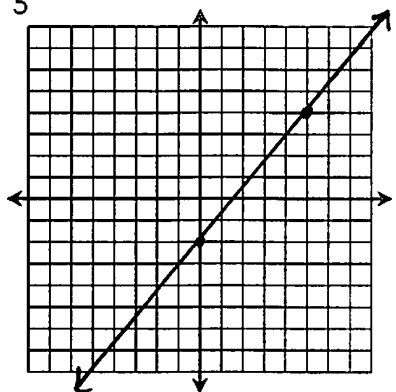
$$9. y = -\frac{1}{2}x + 6$$



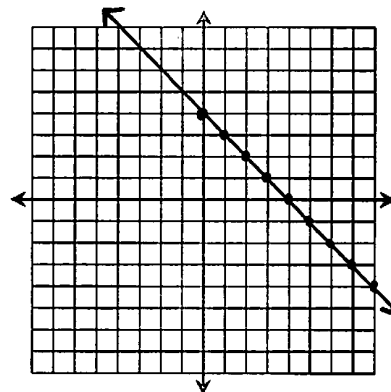
$$10. y = -\frac{2}{5}x - 3$$



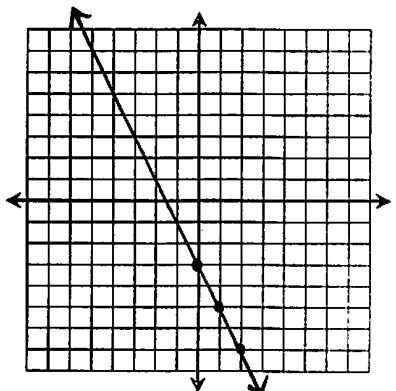
$$11. y = \frac{6}{5}x - 2$$



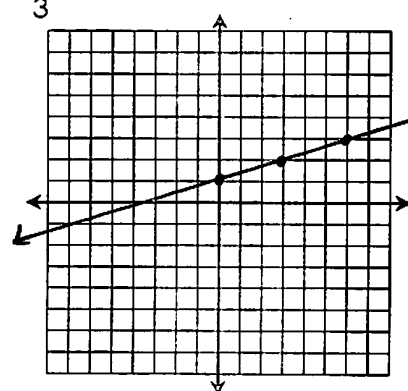
$$12. y = -x + 4$$



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



$$14. y = \frac{1}{3}x + 1$$



Name: _____

Unit 5: Functions & Graphing

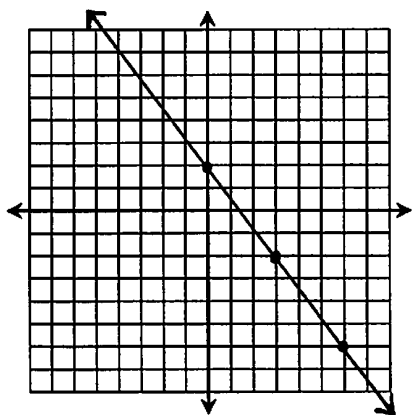


Date: _____ Per: _____

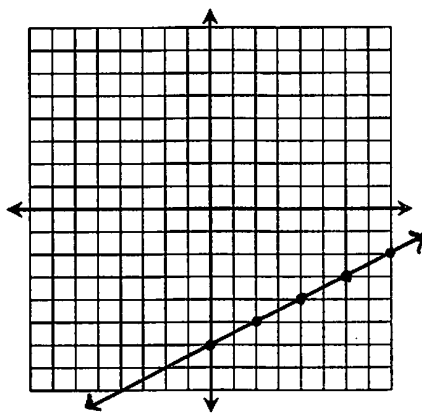
Homework 6: Graphing Linear Functions by Slope-Intercept Form

Directions: Graph each equation using its slope and y-intercept.

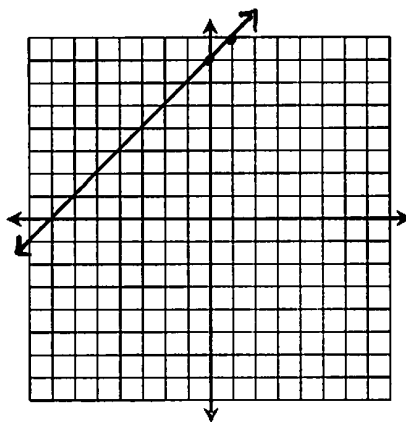
1. $y = -\frac{4}{3}x + 2$



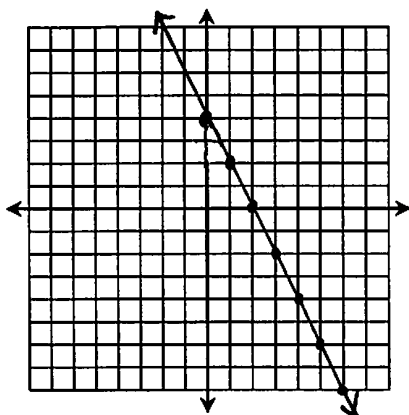
2. $y = \frac{1}{2}x - 6$



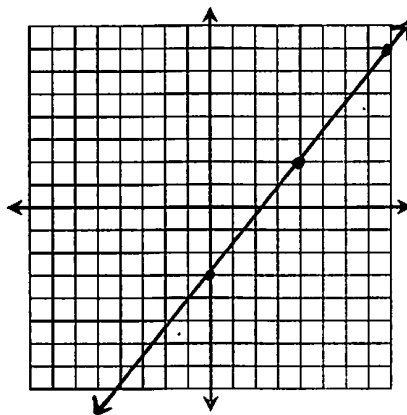
3. $y = x + 7$



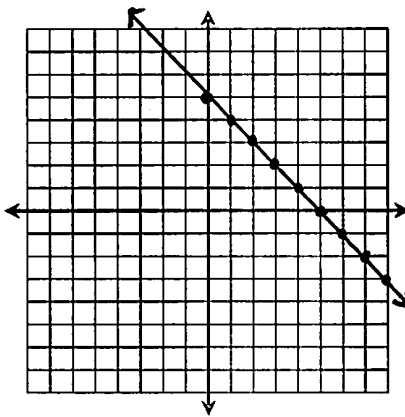
4. $y = -2x + 4$



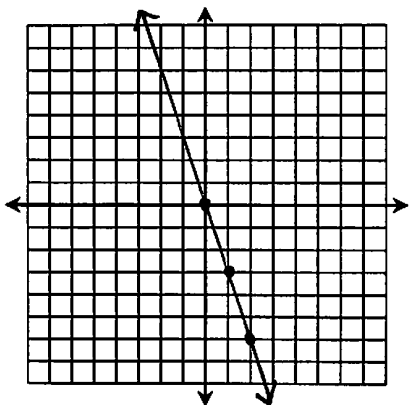
5. $y = \frac{5}{4}x - 3$



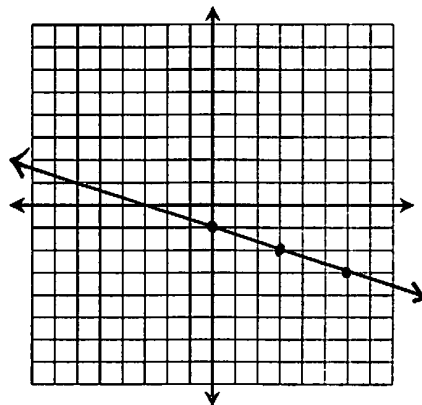
6. $y = -x + 5$



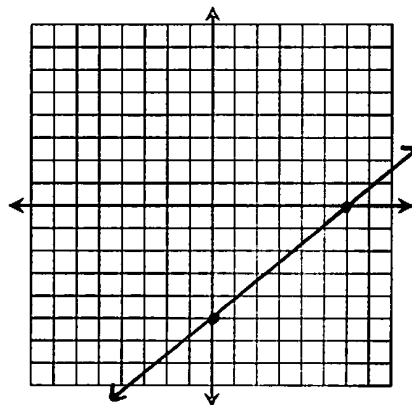
7. $y = -3x$



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

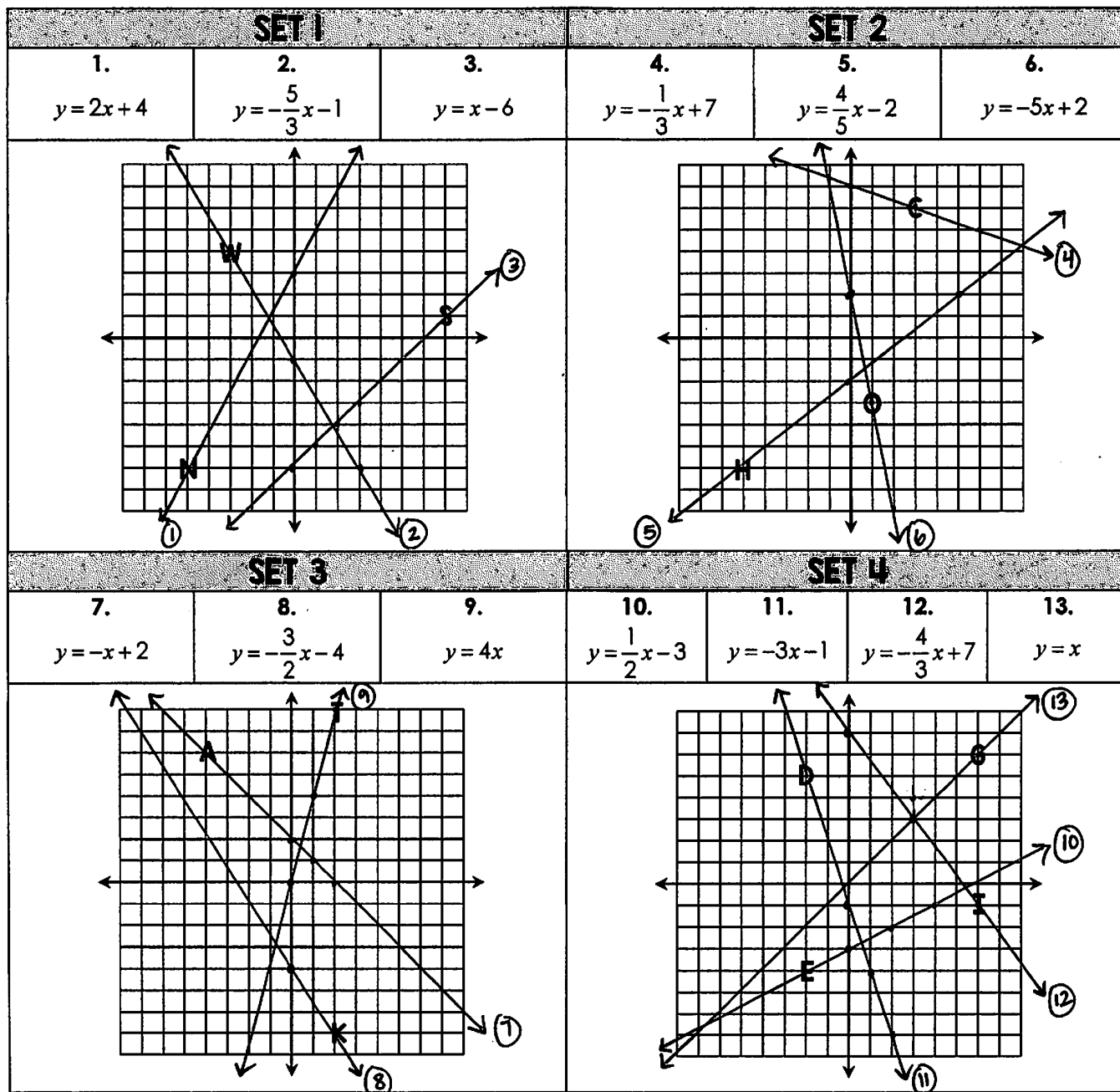


9. $y = \frac{5}{6}x - 5$



Why Couldn't the Pirate Play Cards?

Directions: Graph the equations in each set. Each line will cross a letter on the graph. Write the letter in each box below that corresponds to its question number.



ANSWER:

5.	10.		2.	7.	3.		3.	12.	9.	9.	12.	1.	13.
H	E		W	A	S		S	I	T	T	I	N	G

6.	1.		9.	5.	10.		11.	10.	4.	8.	!
O	N		T	H	E		D	E	C	K	!

Slope-Intercept Form Applications

Problems that involve an initial starting value and a constant rate of change can be modeled using a linear equation written in slope-intercept form ($y = mx + b$).

Important Parts!	Rate of change = <u>m</u>	Initial Value = <u>b</u>
	Independent Variable = <u>x</u>	Dependent Variable = <u>y</u>

<p>1 Manny is having new carpet installed in his home. The flooring company charges \$195 for installation, then \$3.50 per square foot of carpet. Identify your variables, then write an equation to represent the total cost Manny will pay to for new carpet.</p> <p>let $x = \text{sq. feet}$ let $y = \text{total cost}$</p> <p>$y = 3.50x + 195$</p>	a) What is the rate of change? \$3.50/sq. foot
	b) What is the initial value? \$195
	c) What is the independent variable? square feet
	d) What is the dependent variable? total cost
<p>2 A taxi charges \$2.50 per mile in addition to a \$2 transportation fee. Identify your variables, then write an equation to represent the total cost to take a taxi cab.</p> <p>let $x = \text{miles}$ let $y = \text{total cost}$</p> <p>$y = 2.50x + 2$</p>	a) What is the rate of change? \$2.50/mile
	b) What is the initial value? \$2
	c) What is the independent variable? miles
	d) What is the dependent variable? total cost
<p>3 The cost to make a long-distance phone call is 20 cents per minute plus a \$1.75 connection fee. Identify your variables, then write an equation to represent the total cost to make a phone call.</p> <p>let $x = \text{minutes}$ let $y = \text{total cost}$</p> <p>$y = 0.20x + 1.75$</p>	a) What is the rate of change? \$0.20/minute
	b) What is the initial value? \$1.75
	c) What is the independent variable? minutes
	d) What is the dependent variable? total cost
<p>4 A skydiver starts at an altitude of 3,500 feet and begins to descend at a rate of 12 feet per second. Identify your variables, then write an equation to represent the altitude of the skydiver.</p> <p>let $x = \text{seconds}$ let $y = \text{altitude (ft)}$</p> <p>$y = -12x + 3500$</p>	a) What is the rate of change? -12 ft/sec
	b) What is the initial value? 3500 ft
	c) What is the independent variable? seconds
	d) What is the dependent variable? feet

Directions: Read each problem, write an equation, then solve using your equation.

- 5 The Peach Festival charges \$5 for admission then \$1.25 per pound of peaches picked. If Savannah went to the festival and picked 2.4 pounds of peaches, how much did she pay in total at the festival?

$$y = 1.25x + 5$$

$$y = 1.25(2.4) + 5$$

$$y = 8$$

\$8

- 6 A blue whale is approximately 3 tons (6,000 pounds) at birth. If it gains approximately 200 pounds each day during its first year, find the weight of the of a 30-day old blue whale.

$$y = 200x + 6000$$

$$y = 200(30) + 6000$$

$$y = 12000$$

12,000 lb.

- 7 A catering company charges \$95 plus \$12.75 per plate of food. If the cost to cater a party was \$656 how many people were at the party?

$$y = 12.75x + 95$$

$$670 = 12.75x + 95$$

$$561 = 12.75x$$

$$44 = x$$

44 people

- 8 While on a hike, Vera reached the peak of a mountain 3,000 feet above sea level. If she climbed down the mountain at a steady rate of five feet per minute, find her location after three hours.

$$y = -5x + 3000$$

$$y = -5(180) + 3000$$

$$y = 2100$$

2100 ft

- 9 The parking garage of a hotel is located 25 feet below ground. If Rob enters the elevator at the parking garage and it rises at a rate of four feet per second, find the height of the elevator after one minute.

$$y = 4x - 25$$

$$y = 4(60) - 25$$

y = 215 ft above ground

- 10 Tom works in an appliance store. He has a fixed salary of \$75 per day, plus 10% commission on all his sales. If he wishes to make \$200 in a single day, find the total value of the merchandise he must sell that day.

$$y = 0.10x + 75$$

$$200 = 0.10x + 75$$

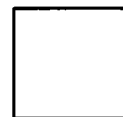
$$125 = 0.10x$$

$$1250 = x$$

\$1250

Name: _____

Unit 5: Functions & Graphing



Date: _____ Per: _____

Homework 7: Slope-Intercept Form Applications

**** This is a 2-page document! ****

<p>1. An art class costs \$45 for materials and then \$10 per class. Write an equation to represent the total spent for any given number of art classes. Identify your variables.</p> <p>let x = classes let y = total spent</p> $y = 10x + 45$	<p>a) What is the rate of change? \$10/class</p> <p>b) What is the initial value? \$45</p> <p>c) What is the independent variable? classes</p> <p>d) What is the dependent variable? total spent</p>
<p>2. Marco has \$100 in a savings account. He puts in an additional \$15 per week. Write an equation to represent the total amount in Marco's account after each week. Identify your variables.</p> <p>let x = weeks let y = total amount</p> $y = 15x + 100$	<p>a) What is the rate of change? \$15/week</p> <p>b) What is the initial value? \$100</p> <p>c) What is the independent variable? weeks</p> <p>d) What is the dependent variable? total amount</p>
<p>3. When Ariana was 3 years old she was 32 inches tall. She grew at a rate of 2 inches per year. Write an equation to represent Ariana's height after each year. Identify your variables.</p> <p>let x = years (after 3) let y = height</p> $y = 2x + 32$	<p>a) What is the rate of change? 2 in/year</p> <p>b) What is the initial value? 32 in</p> <p>c) What is the independent variable? years</p> <p>d) What is the dependent variable? height</p>
<p>4. A bus service charges \$1.75 per trip plus \$0.50 for every ten miles. Write an equation to represent the total cost of a bus ride after every ten miles traveled. Identify your variables.</p> <p>let x = miles (every 10) let y = total cost</p>	<p>a) What is the rate of change? \$.50/10 miles</p> <p>b) What is the initial value? \$1.75</p> <p>c) What is the independent variable? miles (every 10)</p> <p>d) What is the dependent variable? total cost</p>

Directions: Write and solve an equation to solve each problem.

5. Caroline walked 3 miles to warm up. She then ran at a rate of 7 miles per hour. Find the total number of miles completed if she ran for 2 hours.

$$y = 7x + 3$$

$$y = 7(2) + 3$$
$$y = 17$$

17 miles

6. After a blizzard, 18 inches of snow sat on Maggie's driveway. She measured the snow each hour and determined that it was melting at a rate of 0.5 inches per hour. Find the height of the snow in her driveway after 9 hours.

$$y = -0.5x + 18$$

$$y = -0.5(9) + 18$$
$$y = 13.5$$

13.5 in

7. Andrew's bus pass has \$35 on it. Each time he rides the bus \$1.50 is deducted from his card. How many times can he ride the bus before he ends up with only \$5 left?

$$y = -1.50x + 35$$

$$5 = -1.50x + 35$$
$$-30 = -1.50x$$
$$20 = x$$

20 rides

8. Daniel went hiking. He began his hike at an altitude of 120 feet. He climbed at a rate of 25 feet every half hour. What is Daniel's altitude after 6 hours of hiking?

$$y = 25x + 120$$

$$(x = 12)$$

$$y = 25(12) + 120$$
$$y = 420$$

420 ft

9. Roberta baked 6 dozen mini cookies and puts them in a cookie jar. Each day 5 cookies are eaten. After how many days are there 32 cookies left in the jar?

$$y = -5x + 72$$

$$32 = -5x + 72$$
$$-40 = -5x$$
$$8 = x$$

8 days

10. At the county fair, an unlimited ride ticket costs \$15 and games cost \$2 each. Laura went on rides and played games at the fair. If she spent a total of \$41, how many games did she play?

$$y = 2x + 15$$

$$41 = 2x + 15$$
$$26 = 2x$$
$$13 = x$$

13 games

Name: _____

Math 7

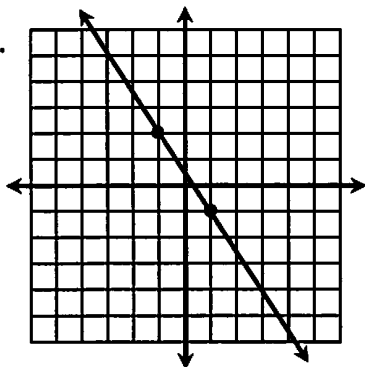
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Unit 4: Ratio, Proportion, & Percent

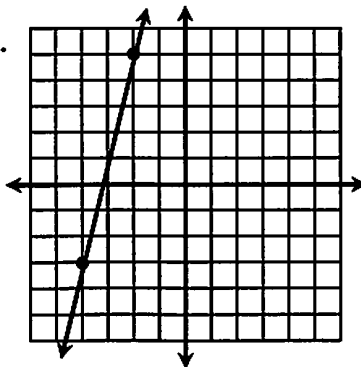
Quiz 5-2: Slope and Slope-Intercept Form

For questions 1-4, find the slope of the line. Write your answer in simplest form!

1.



2.



$\frac{8}{2}$

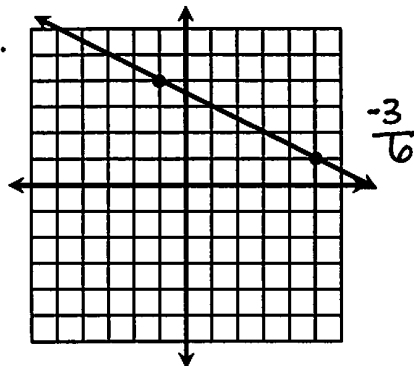
1. $-\frac{3}{2}$

2. 4

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

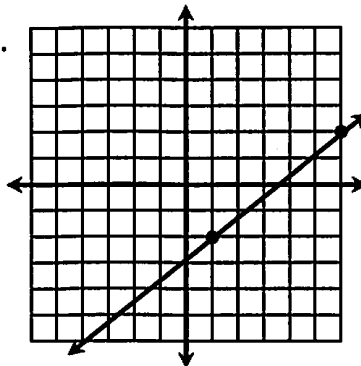
4. $\frac{4}{5}$

3.



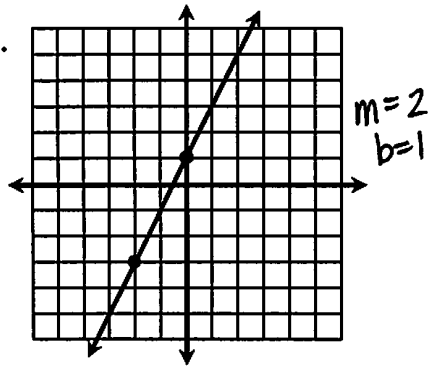
$-\frac{3}{6}$

4.



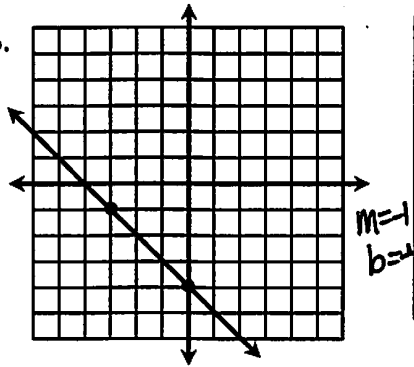
For questions 5-8, write the equation of the line in slope-intercept form.

5.



$m=2$
 $b=1$

6.



$m=-1$
 $b=-4$

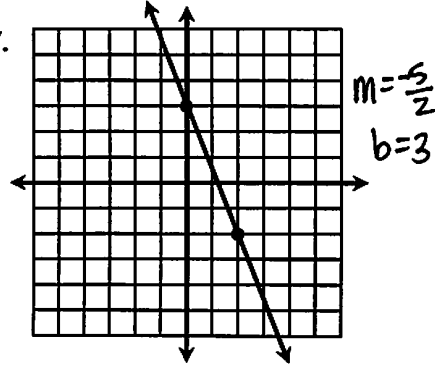
5. $y = 2x + 1$

6. $y = -x - 4$

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

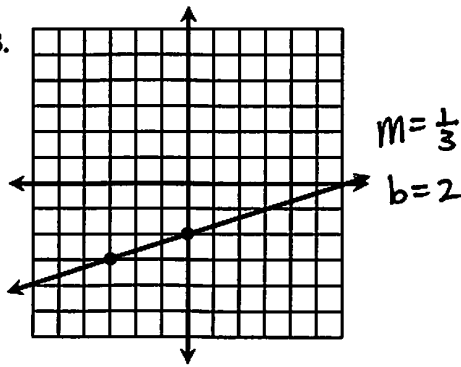
8. $y = \frac{1}{3}x + 2$

7.



$m=-\frac{5}{2}$
 $b=3$

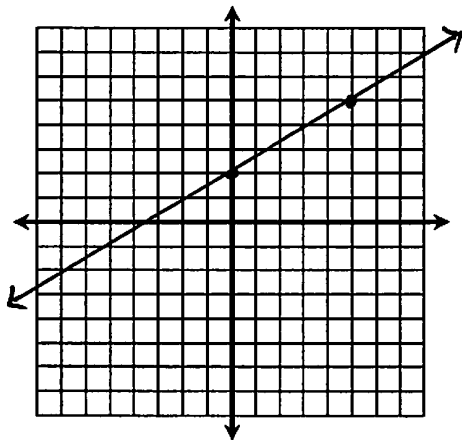
8.



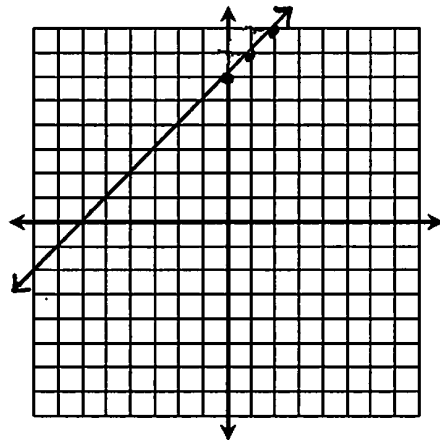
$m=\frac{1}{3}$
 $b=2$

For questions 9-12, identify the slope and y-intercept of the line. Then, graph the equation.

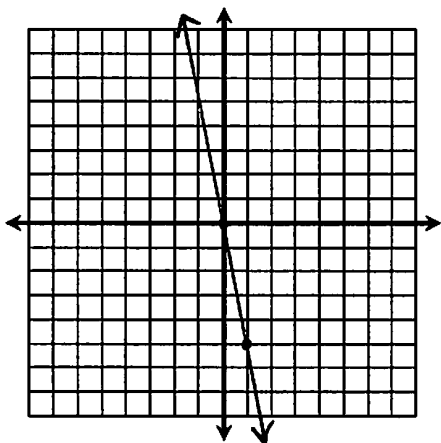
9. $y = \frac{3}{5}x + 2$ $m = \frac{3}{5}$; $b = 2$



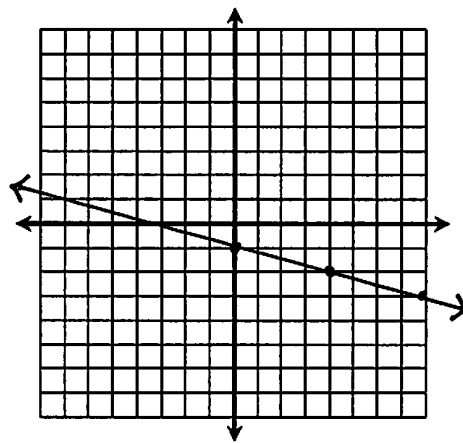
10. $y = x + 6$ $m = 1$; $b = 6$



11. $y = -5x$ $m = -5$; $b = 0$



12. $y = -\frac{1}{4}x - 1$ $m = -\frac{1}{4}$; $b = -1$



Use for questions 13-15: At the beginning of the school year, Jayden's mother put \$80 in his cafeteria account. Each time Jayden orders lunch, it deducts \$2.75 from his account balance.

13. Place the letter on the line that correctly identifies the value.

B Rate of Change

A. \$80

A Initial Value

B. -\$2.75/lunch

D Independent Value

C. account balance

C Dependent Value

D. lunches

14. Write an equation in slope-intercept form to represent this situation. $y = -2.75x + 80$

15. If Jayden orders lunch 12 times, find his account balance. \$47

$$y = -2.75(12) + 80$$

Name:

Date:

Topic:

Class:

Main Ideas/Questions

Notes/Examples

PROPORTIONAL
RELATIONSHIP

- Two variables have a **proportional relationship** when there is a constant unit rate between the variables.
- This constant rate is called the constant of proportionality and known as variable k.
- To find the constant of proportionality, divide y by x. ($\frac{y}{x}$)

EXAMPLES

Directions: Determine if the data shown in the table represents a proportional relationship. If yes, identify the constant of proportionality, k .

1.

Minutes	Beats
1	62
2	124
3	186
4	248

yes; $k=62$

2.

Ounces	Cost to Ship
2	\$0.98
5	\$2.45
9	\$4.05
15	\$6.30

No

3.

Seconds	Feet
5	4
10	8
15	12
20	16

yes; $k=0.8$

Directions: Use the information given to complete each table.

4. Alex makes \$12.50 per hour.

Hours	Pay
1	\$12.50
2	\$25
3	\$37.50
4	\$50

5. One-half cup of milk is needed for each batch of brownies.

Batches	Milk
1	0.5
2	1
3	1.5
4	2

PROPORTIONAL
RELATIONSHIP
Equations

A proportional relationship between two variables, x and y , with constant of proportionality k , can be expressed using the following equation:

$$y = k \cdot x$$

Directions: Given the values in the table, identify the constant of proportionality and write an equation to represent the relationship.

6.

Hours	Tickets
1	17
2	34
3	51
4	68

$$k=17$$

$$y=17x$$

7.

Minutes	Calories
6	48
15	120
24	192
30	240

$$k=8$$

$$y=8x$$

8.

Pounds	Cost
0.5	\$0.75
1	\$1.50
1.5	\$2.25
2	\$3.00

$k=1.5$
 $y=1.5x$

9.

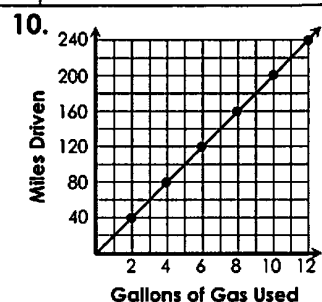
List Price	Sale Price
\$12	\$9.00
\$25	\$18.75
\$30	\$22.50
\$48	\$36.00

$k=0.75$
 $y=0.75x$

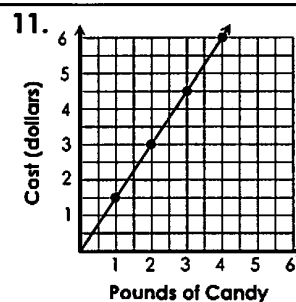
PROPORTIONAL RELATIONSHIP Graphs

- The graph of a proportional relationship is a line that **ALWAYS** goes through the origin.
- To find the constant of proportionality given a graph, pick any point and divide by x.

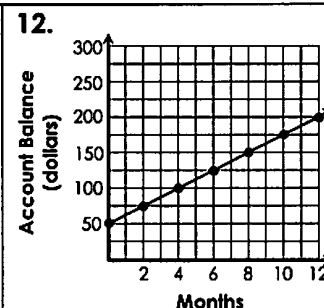
Directions: Determine if the graph represents a proportional relationship. If yes, identify the constant of proportionality and write an equation to represent the relationship.



yes; $k=20$; $y=20x$



yes; $k=\frac{3}{2}$; $y=\frac{3}{2}x$



No

PUT IT ALL TOGETHER!

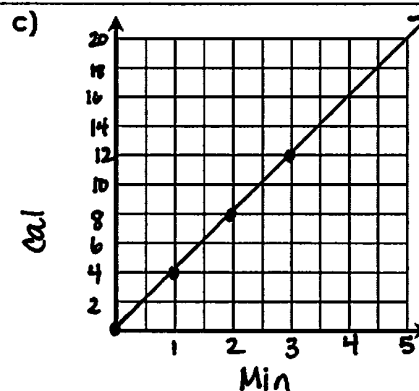
For each problem:
a) complete the table,
b) write an equation,
then c) graph

13. Troy burns four calories per minute while walking his dog.

a)

Minutes	Calories
0	0
1	4
2	8
3	12

b) $y=4x$

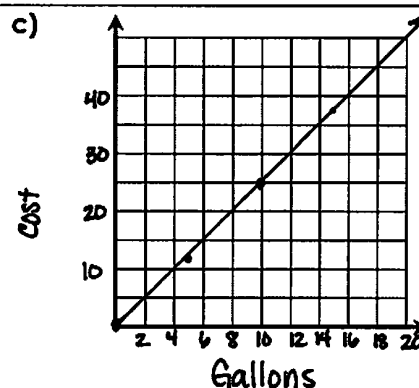


14. Gas costs \$2.50 per gallon.

a)

Gallons	Cost
0	0
5	\$12.50
10	\$25
15	\$37.50

b) $y=2.50x$



PROPORTIONAL RELATIONSHIPS

Proportional relationships are frequently expressed using a constant of proportionality, an equation, a table, or a graph. If you know one, you can always find the others. Complete each set below by filling in the missing parts.

1	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = 2$	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> </tr> <tr> <td>2</td> <td>4</td> </tr> <tr> <td>3</td> <td>6</td> </tr> <tr> <td>4</td> <td>8</td> </tr> </tbody> </table>	x	y	1	2	2	4	3	6	4	8	
x	y												
1	2												
2	4												
3	6												
4	8												
	EQUATION												
	$y = 2x$												
2	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = \frac{1}{3}$	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>1</td> </tr> <tr> <td>6</td> <td>2</td> </tr> <tr> <td>9</td> <td>3</td> </tr> <tr> <td>12</td> <td>4</td> </tr> </tbody> </table>	x	y	3	1	6	2	9	3	12	4	
x	y												
3	1												
6	2												
9	3												
12	4												
	EQUATION												
	$y = \frac{1}{3}x$												
3	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = 0.9$	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>3</td> <td>2.7</td> </tr> <tr> <td>7</td> <td>6.3</td> </tr> <tr> <td>10</td> <td>9</td> </tr> </tbody> </table>	x	y	0	0	3	2.7	7	6.3	10	9	
x	y												
0	0												
3	2.7												
7	6.3												
10	9												
	EQUATION												
	$y = 0.9x$												
4	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = 6$	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>2</td> <td>12</td> </tr> <tr> <td>4</td> <td>24</td> </tr> <tr> <td>6</td> <td>36</td> </tr> </tbody> </table>	x	y	0	0	2	12	4	24	6	36	
x	y												
0	0												
2	12												
4	24												
6	36												
	EQUATION												
	$y = 6x$												

5	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$y = \frac{4}{3}$	<table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>0</td></tr><tr><td>6</td><td>8</td></tr><tr><td>12</td><td>16</td></tr><tr><td>18</td><td>24</td></tr></table>	x	y	0	0	6	8	12	16	18	24	
x	y												
0	0												
6	8												
12	16												
18	24												
	EQUATION												
	$y = \frac{4}{3}x$												
6	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = 5$	<table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>10</td></tr><tr><td>3</td><td>15</td></tr></table>	x	y	0	0	1	5	2	10	3	15	
x	y												
0	0												
1	5												
2	10												
3	15												
	EQUATION												
	$y = 5x$												
7	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = 1.5$	<table><tr><td>x</td><td>y</td></tr><tr><td>1</td><td>1.5</td></tr><tr><td>2</td><td>3</td></tr><tr><td>4</td><td>6</td></tr><tr><td>6</td><td>9</td></tr></table>	x	y	1	1.5	2	3	4	6	6	9	
x	y												
1	1.5												
2	3												
4	6												
6	9												
	EQUATION												
	$y = 1.5x$												
8	CONSTANT OF PROPORTIONALITY	TABLE	GRAPH										
	$k = \frac{1}{4}$	<table><tr><td>Package Weight (oz)</td><td>Cost to Mail (\$)</td></tr><tr><td>0</td><td>0</td></tr><tr><td>16</td><td>4</td></tr><tr><td>32</td><td>8</td></tr><tr><td>40</td><td>10</td></tr></table>	Package Weight (oz)	Cost to Mail (\$)	0	0	16	4	32	8	40	10	
Package Weight (oz)	Cost to Mail (\$)												
0	0												
16	4												
32	8												
40	10												
	EQUATION												
	$y = \frac{1}{4}x$												

Name: _____

Unit 5: Functions & Graphing



Date: _____ Per: _____

Homework 8: Proportional Relationships

**** This is a 2-page document! ****

Directions: Determine if the data shown in the table represents a proportional relationship. If yes, identify the constant of proportionality, k .

1.

Minutes	Words
1	55
2	110
3	165
4	220

yes; $k=55$

2.

Height (in)	Weight (lbs)
45	35
50	50
55	70
60	95

No

3.

Hours	Miles
2	120
4	240
6	360
8	480

yes; $k=60$

Directions: Use the information given to complete each table.

4. Nona spends \$14.50 per hour on a babysitter.

Hours	Total
1	\$14.50
2	\$29
3	\$43.50
4	\$58

5. Two-thirds cups of sugar are needed for each jug of lemonade.

Jugs	Sugar
3	2
6	4
9	6
12	8

6. Carnival ride tickets cost \$0.75 each.

Tickets	Cost
5	\$3.75
10	\$7.50
15	\$11.25
20	\$15

Directions: Given the values in the table, identify the constant of proportionality and write an equation to represent the relationship.

7.

Time (hrs)	Distance (mi)
1	4
2	8
3	12
4	16

 $k=4$ $y=4x$

8.

Hours	People
2	70
4	140
6	210
8	280

 $k=35$ $y=35x$

9.

Gallons	Sugar (c)
3	1
6	2
9	3
12	4

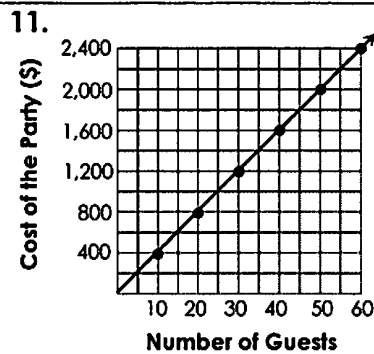
 $k=\frac{1}{3}$ $y=\frac{1}{3}x$

10.

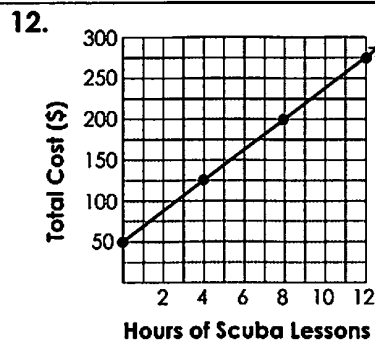
Apples (lbs)	Cost (\$)
1	1.75
2	3.5
3	5.25
4	7

 $k=1.75$ $y=1.75x$

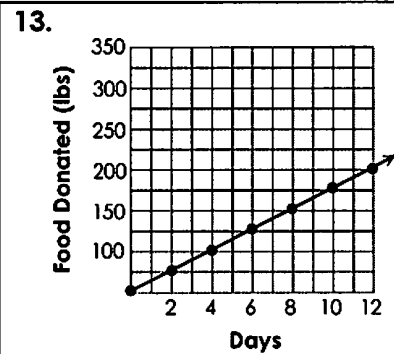
Directions: Determine if the graph represents a proportional relationship. If yes, identify the constant of proportionality and write an equation to represent the relationship.



Yes; $k=40$; $y=40x$



No



Yes; $k=25$; $y=25x$

Directions: For each problem: (a) complete the table, (b) write an equation, then (c) graph.

14. Movie tickets cost \$11.50 each.

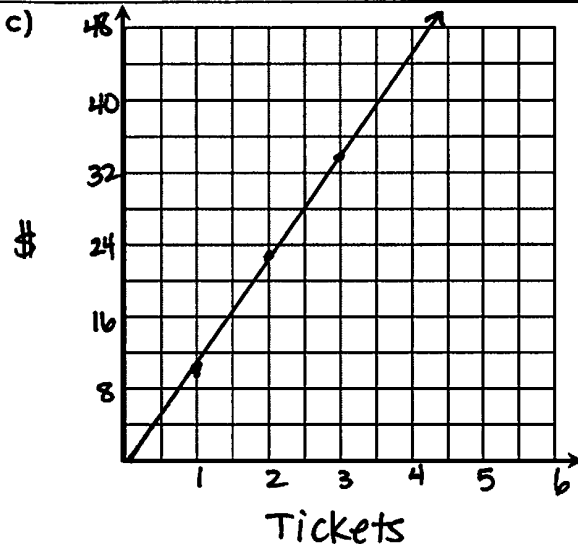
a)

Tickets	Cost
0	\$0
1	\$11.50
2	\$23
3	\$34.50

b)

$$y = 11.5x$$

c)



15. On a field trip, each bus can seat 45 students.

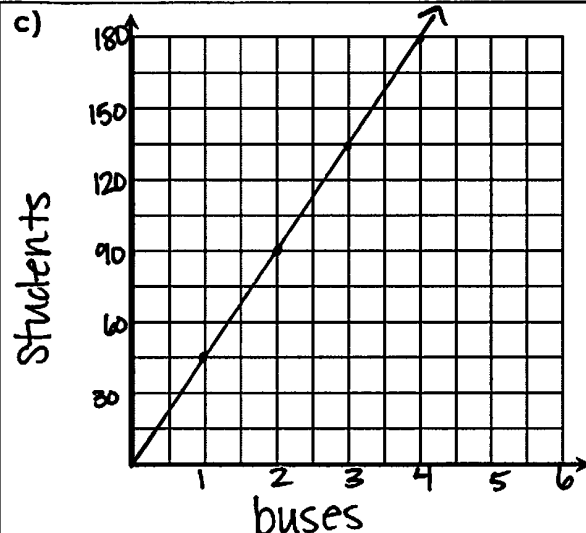
a)

Buses	Students
1	45
2	90
3	135
4	180

b)

$$y = 45x$$

c)



Unit 5 Test Study Guide

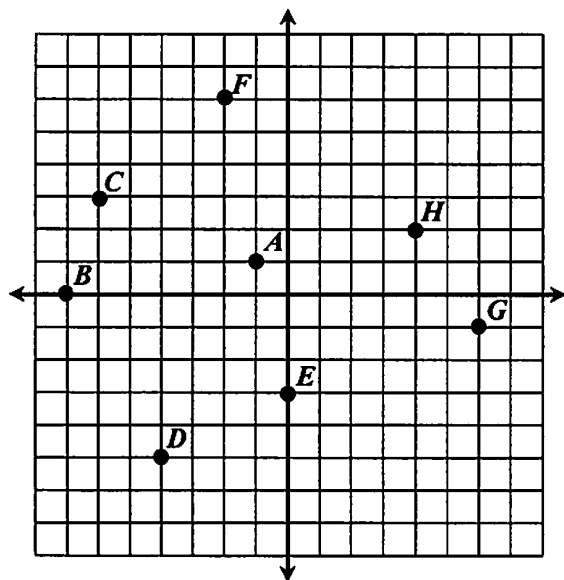
(Functions and Graphing)

Name: _____

Date: _____ Per: _____

Topic 1: The Coordinate plane

Directions: Identify the ordered pair and location (quadrant or axis) for each point on the graph.

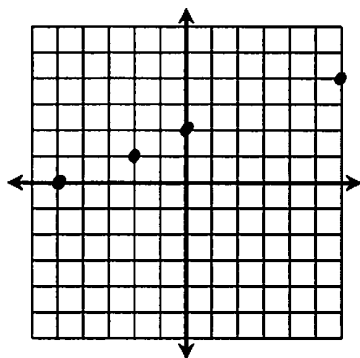


Point	Ordered Pair	Location
A	$(-1, 1)$	Quad II
B	$(-7, 0)$	x-axis
C	$(-6, 3)$	Quad II
D	$(-4, -5)$	Quad III
E	$(0, -3)$	y-axis
F	$(-2, 6)$	Quad II
G	$(6, -1)$	Quad IV
H	$(4, 2)$	Quad I

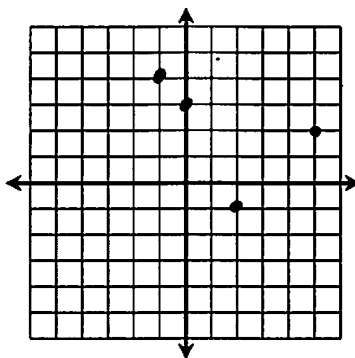
Topic 2: Relations and Functions

Directions: Graph each relation.

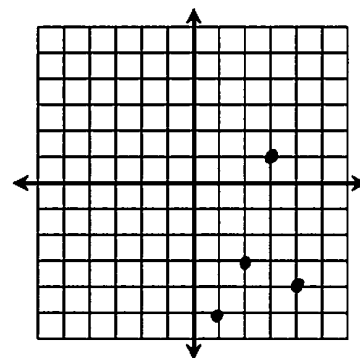
1. $\{(-4, 0), (-2, 1), (0, 2), (6, 4)\}$



2. $\{(-1, 4), (0, 3), (5, 2), (2, -1)\}$



3. $\{(4, -4), (3, 1), (2, -3), (1, -5)\}$



Directions: Complete each function table.

4. $y = -4x - 3$

x	$y = -4x - 3$	y	(x, y)
-2	$-4(-2) - 3$	5	$(-2, 5)$
-0	$-4(0) - 3$	-3	$(0, -3)$
2	$-4(2) - 3$	-11	$(2, -11)$
4	$-4(4) - 3$	-19	$(4, -19)$

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

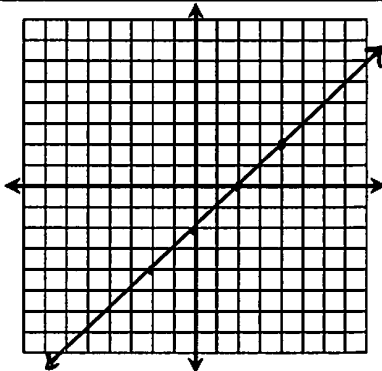
x	$y = \frac{1}{2}x + 1$	y	(x, y)
-8	$\frac{1}{2}(-8) + 1$	-3	$(-8, -3)$
-2	$\frac{1}{2}(-2) + 1$	0	$(-2, 0)$
2	$\frac{1}{2}(2) + 1$	2	$(2, 2)$
6	$\frac{1}{2}(6) + 1$	4	$(6, 4)$

Topic 3: Graphing Functions

Directions Use the table to graph each function.

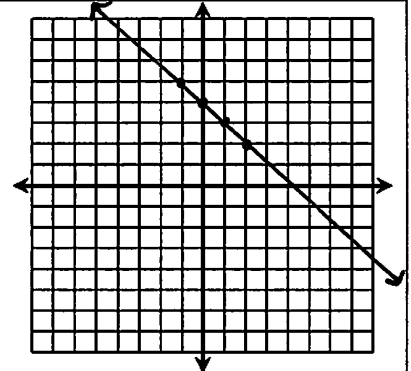
6. $y = x - 2$

x	y
-2	-4
0	-2
2	0
4	2



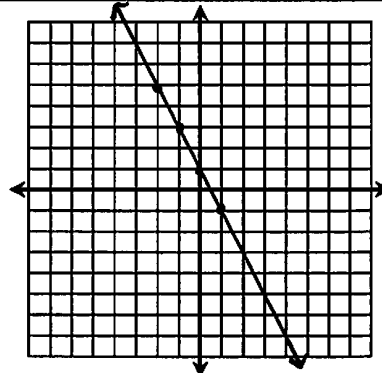
7. $y = -x + 4$

x	y
-1	5
0	4
1	3
2	2



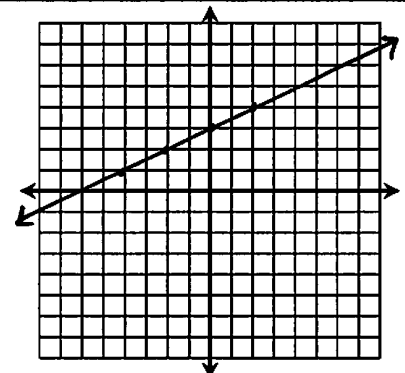
8. $y = -2x + 1$

x	y
-2	5
-1	3
0	1
1	-1



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

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



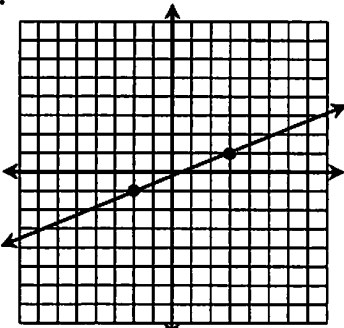
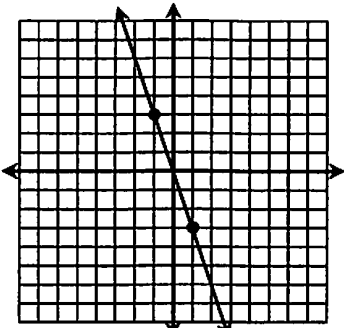
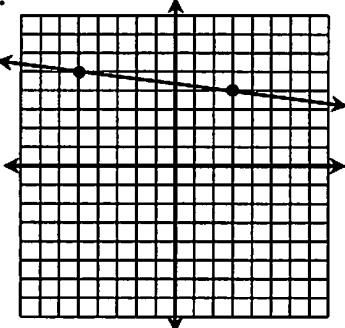
Topic 4: Multiple Representations

Directions Complete the table by filling in the missing parts.

TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
10. <table><tr><th>x</th><th>y</th></tr><tr><td>-6</td><td>-1</td></tr><tr><td>-4</td><td>1</td></tr><tr><td>-2</td><td>3</td></tr><tr><td>0</td><td>5</td></tr></table>	x	y	-6	-1	-4	1	-2	3	0	5		$y = x + 5$	5 more than a number is another number
x	y												
-6	-1												
-4	1												
-2	3												
0	5												
11. <table><tr><th>x</th><th>y</th></tr><tr><td>-1</td><td>3</td></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>-3</td></tr><tr><td>2</td><td>-6</td></tr></table>	x	y	-1	3	0	0	1	-3	2	-6		$y = -3x$	Negative three times a number is another number.
x	y												
-1	3												
0	0												
1	-3												
2	-6												

Topic 5: Slope

Directions Find the slope of each line. Write your answer in simplest form!

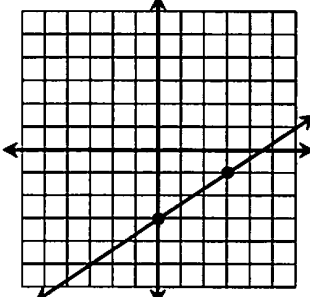
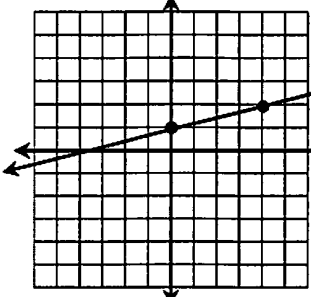
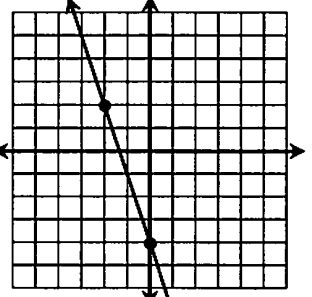
<p>12.</p>  <p style="text-align: center;">$m = \frac{2}{5}$</p>	<p>13.</p>  <p style="text-align: center;">$m = -3$</p>	<p>14.</p>  <p style="text-align: center;">$m = -\frac{1}{8}$</p>
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Topic 6: Slope-Intercept Form

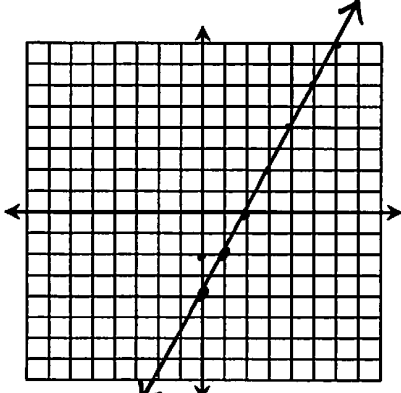
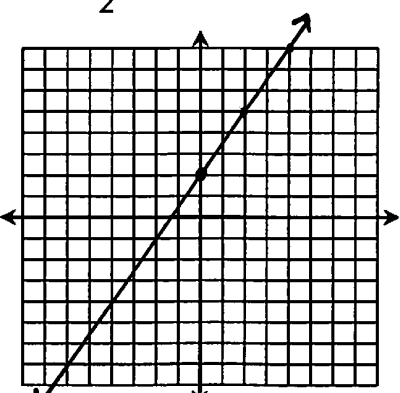
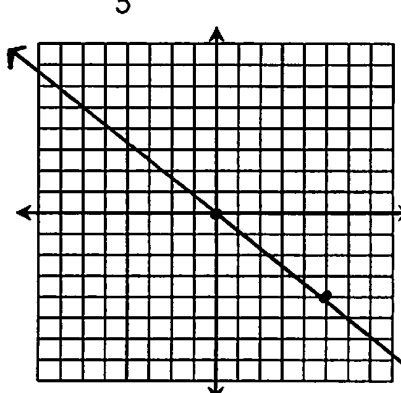
Directions: Given the slope and y-intercept, write the equation in slope-intercept form.

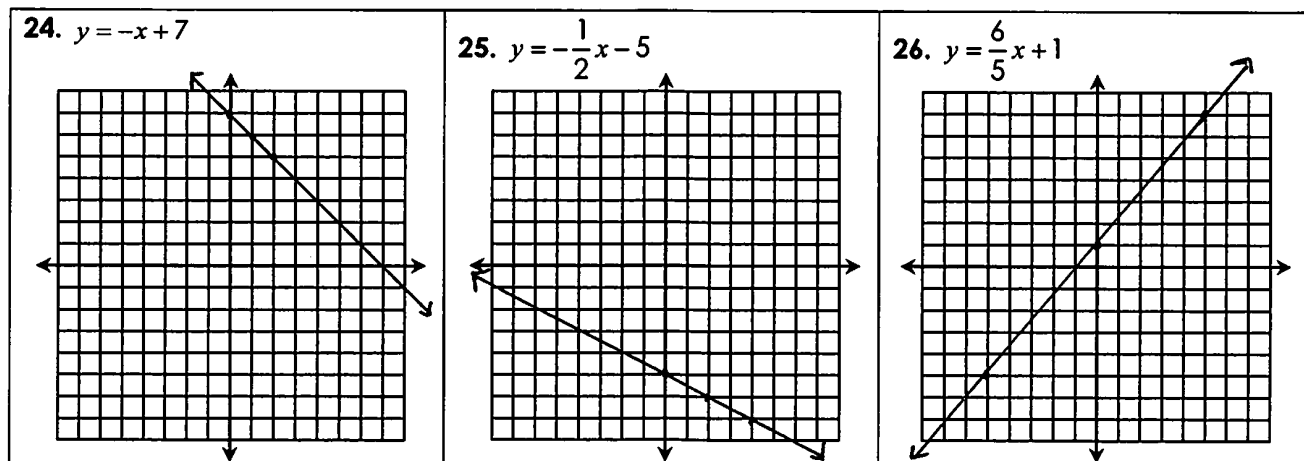
<p>15. slope = -1; y-intercept = 0</p> <p style="text-align: center;">$y = -x$</p>	<p>16. slope = $-\frac{4}{3}$; y-intercept = 3</p> <p style="text-align: center;">$y = -\frac{4}{3}x + 3$</p>	<p>17. slope = 5; y-intercept = 1</p> <p style="text-align: center;">$y = 5x + 1$</p>
---	---	--

Directions: Identify the slope and y-intercept of the line on the graph. Then, write the equation of the line in slope-intercept form.

<p>18.</p>  <p>$m = \frac{2}{3}$ $b = -3$</p> <p>Equation: $y = \frac{2}{3}x - 3$</p>	<p>19.</p>  <p>$m = \frac{1}{4}$ $b = 1$</p> <p>Equation: $y = \frac{1}{4}x + 1$</p>	<p>20.</p>  <p>$m = -3$ $b = -4$</p> <p>Equation: $y = -3x - 4$</p>
--	---	--

Directions: Graph each equation using its slope and y-intercept.

<p>21. $y = 2x - 4$</p> 	<p>22. $y = \frac{3}{2}x + 2$</p> 	<p>23. $y = -\frac{4}{5}x$</p> 
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Topic 7: Slope-Intercept Form Applications

<p>27. Naomi's family went bowling. They had to pay a \$15 fee for the lane and an additional \$4 per person. Write an equation to represent the total amount her family spent bowling. Identify your variables.</p> <p>$y = \text{total cost}$ $x = \text{people}$</p> <p style="text-align: right;">$y = 4x + 15$</p>	<p>a) What is the rate of change? \$4</p> <p>b) What is the initial value? \$15</p> <p>c) What is the independent variable? # people</p> <p>d) What is the dependent variable? total cost</p>
<p>28. Harvey has a lawn company. He charges \$40 to mow any lawn smaller than an acre. He charges \$5 for each additional quarter acre. Write an equation to represent the total Harvey charges to cut someone's lawn. Identify your variables.</p> <p>$y = \text{total cost}$ $x = \text{each add. } \frac{1}{2} \text{ acre}$</p> <p style="text-align: right;">$y = 5x + 40$</p>	<p>a) What is the rate of change? \$5</p> <p>b) What is the initial value? \$40</p> <p>c) What is the independent variable? acres</p> <p>d) What is the dependent variable? total cost</p>
<p>29. Melissa is placing an ad in the newspaper for her business. She is charged \$45 for the ad and an additional \$0.15 per line. Write and solve a linear equation to determine how many lines her ad was if she spent a total of \$46.35.</p> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> $y = 0.15x + 45$ </div> <div style="text-align: center;"> $46.35 = 0.15x + 45$ $1.35 = 0.15x$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$x = 9 \text{ lines}$</div> </div> </div>	
<p>30. Amelia is selling lemonade. Beginning at 8 a.m., she had enough lemonade in jugs to sell 125 cups. If she sold an average of 4 cups of lemonade every 30 minutes, write and solve a linear equation to find the number of cups of lemonade left at 5:00 p.m. ($x = 18$)</p> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> $y = -4x + 125$ </div> <div style="text-align: center;"> $y = -4(18) + 125$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$y = 53 \text{ cups}$</div> </div> </div>	

Topic 8: Proportional Relationships

Directions: Determine if the data shown in the table represents a proportional relationship. If yes, identify the constant of proportionality, k and write an equation.

31.

Gallons	Cost (\$)
5	15.75
10	31.50
15	47.25
20	63.00

yes; $k = 3.15$

32.

Hour	Temperature
2	60
3	63
4	70
5	73

No

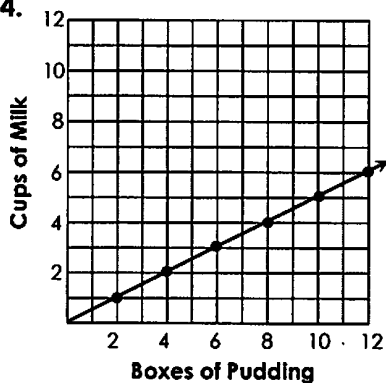
33.

Pictures	Album Pages
40	10
60	15
80	20
100	25

yes; $k = \frac{1}{4}$

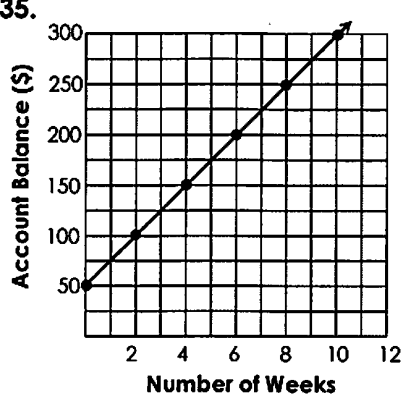
Directions: Determine if the data shown in the table represents a proportional relationship. If yes, identify the constant of proportionality, k and write an equation.

34.



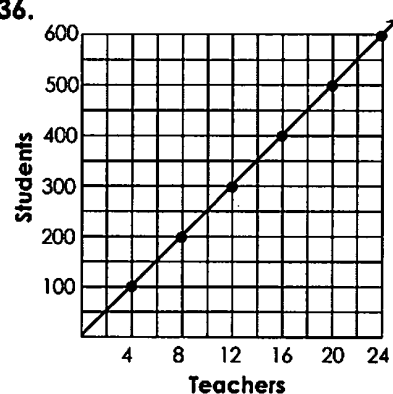
yes; $k = \frac{1}{2}$; $y = \frac{1}{2}x$

35.



No

36.



yes; $k = 25$; $y = 25x$

Directions: For the problem below: (a) complete the table, (b) write an equation, then (c) graph.

37. Grapes at the grocery store are on sale for \$2.50 per pound.

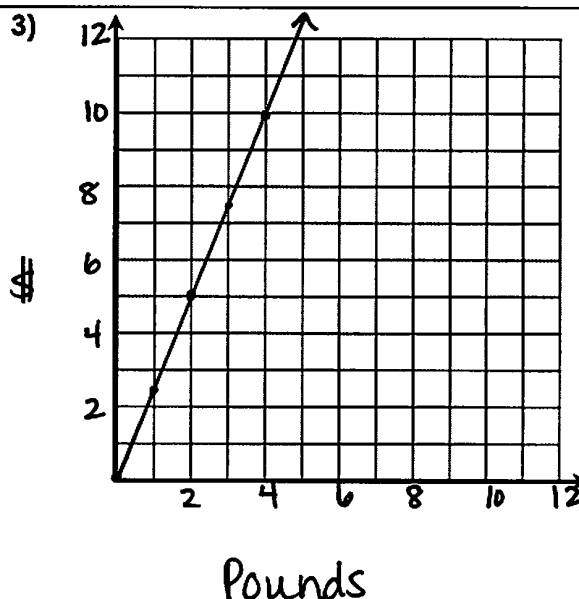
a)

Pounds of Grapes, x	Total Cost, y
0	0
1	2.50
2	5
3	7.50
4	10

b)

$$y = 2.50x$$

3)



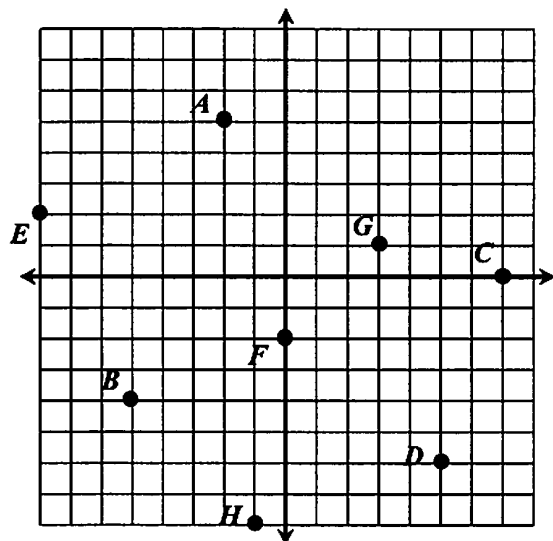
Name: _____

Date: _____ Per: _____

Unit 5 Test

Functions & Graphing

Use the graph below to answer questions 1-4.



1. Write an ordered pair to represent point G .

$(3, 1)$

2. Write an ordered pair to represent point A .

$(-2, 5)$

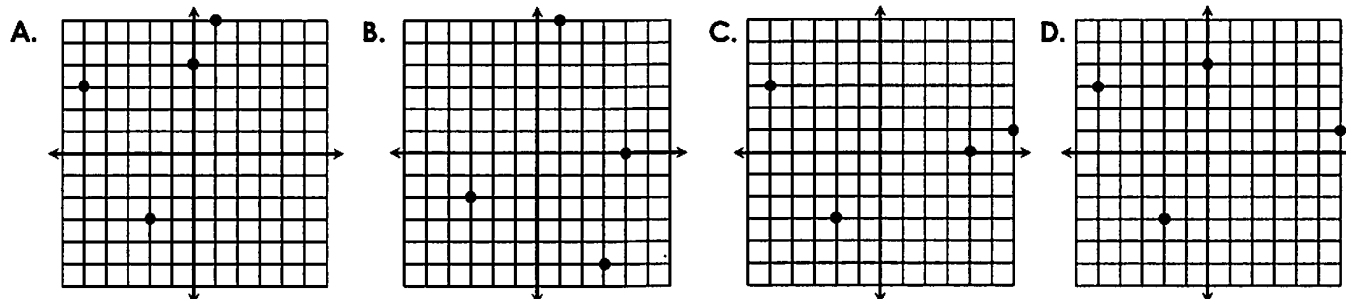
3. Write an ordered pair for the point located on the x -axis.

C

4. List all points located in quadrant III.

B, H

5. Which graph represents the relation $\{(-5, 3), (0, 4), (-2, -3), (6, 1)\}$?

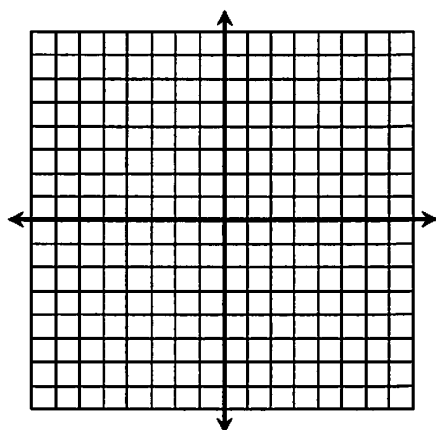


D

For questions 6 and 7, complete the table, then graph the function.

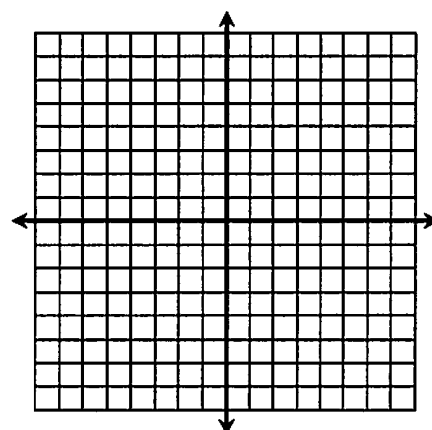
6. $y = -x + 5$

x	y
-3	8
-1	6
4	1
7	-2



7. $y = \frac{5}{2}x - 4$

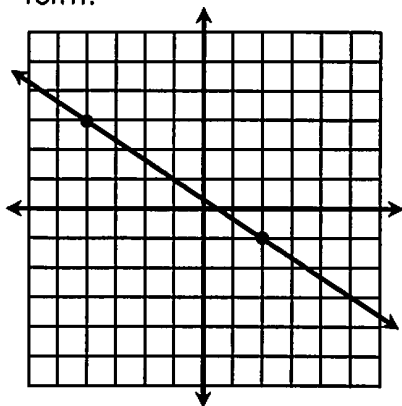
x	y
-2	-9
0	-4
2	1
4	6



For questions 8 and 9, fill in the missing parts for each function.

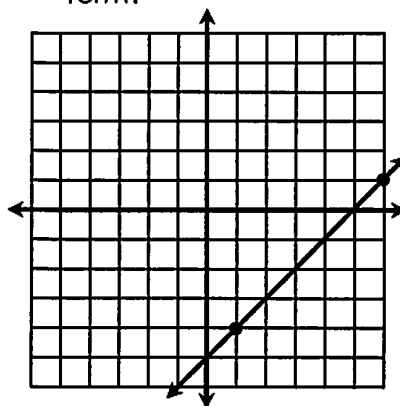
TABLE	GRAPH	EQUATION	VERBAL DESCRIPTION										
8. <table><tr><td>x</td><td>y</td></tr><tr><td>0</td><td>-5</td></tr><tr><td>1</td><td>-3</td></tr><tr><td>2</td><td>-1</td></tr><tr><td>3</td><td>1</td></tr></table>	x	y	0	-5	1	-3	2	-1	3	1		$y = 2x - 5$	"A number is five less than twice another number."
x	y												
0	-5												
1	-3												
2	-1												
3	1												
9. <table><tr><td>x</td><td>y</td></tr><tr><td>-3</td><td>1</td></tr><tr><td>0</td><td>0</td></tr><tr><td>3</td><td>-1</td></tr><tr><td>6</td><td>-2</td></tr></table>	x	y	-3	1	0	0	3	-1	6	-2		$y = -\frac{1}{3}x$	A number is negative one-third of another number.
x	y												
-3	1												
0	0												
3	-1												
6	-2												

10. Give the slope of the line below in simplest form.



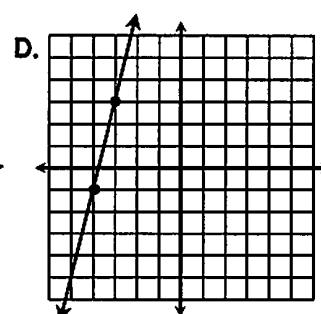
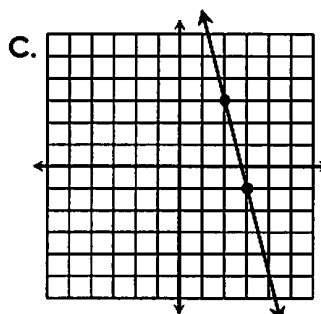
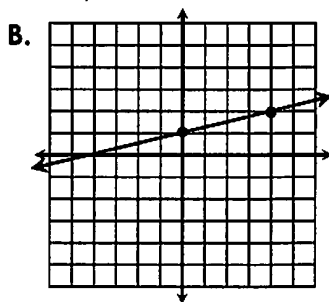
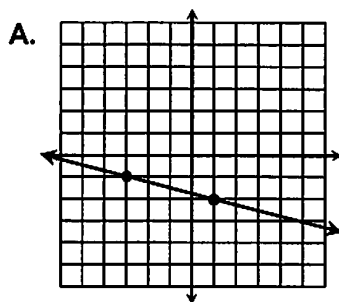
$$m = -\frac{2}{3}$$

11. Give the slope of the line below in simplest form.



$$m = 1$$

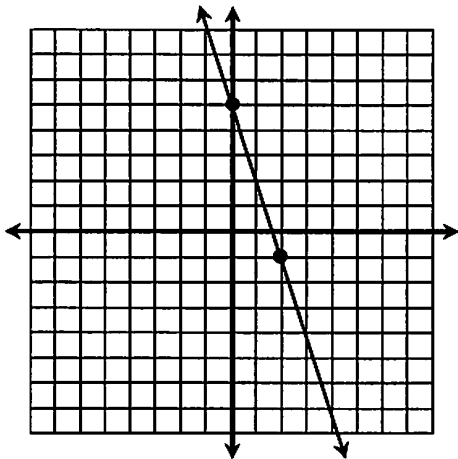
12. Which line has a slope of $-\frac{1}{4}$?



A

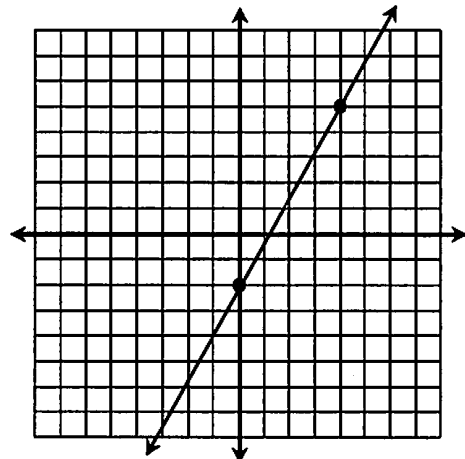
For questions 13 and 14, write the equation of the line in slope-intercept form.

13.



$$y = -3x + 5$$

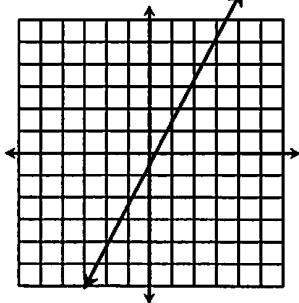
14.



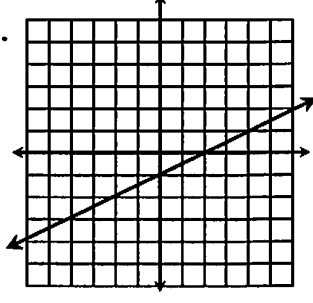
$$y = \frac{3}{4}x - 2$$

15. Which graph best represents the equation $y = 2x - 1$?

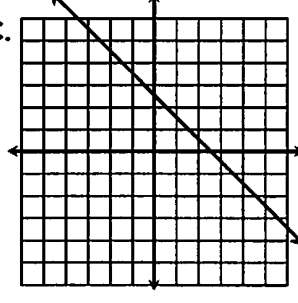
A.



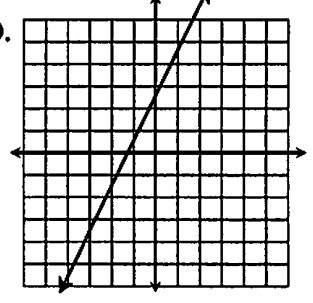
B.



C.



D.



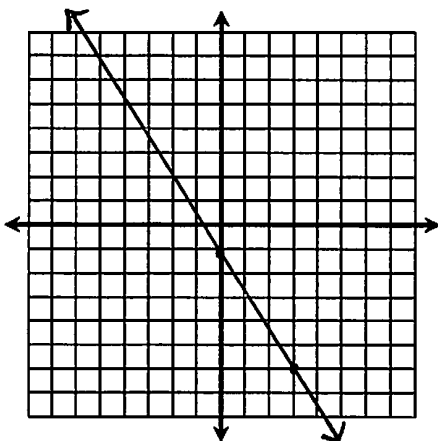
A

For questions 16-18, identify the slope and y-intercept of the line. Then, graph the line.

16. $y = -\frac{5}{3}x - 1$

$$m = -\frac{5}{3}$$

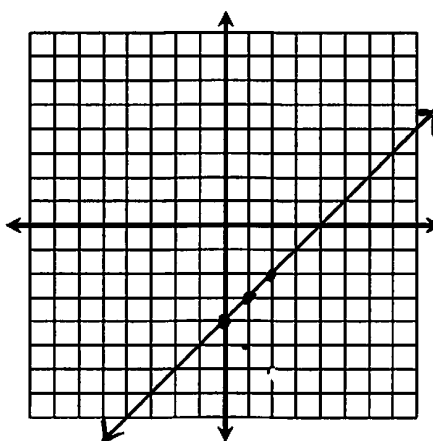
$$b = -1$$



17. $y = x - 4$

$$m = 1$$

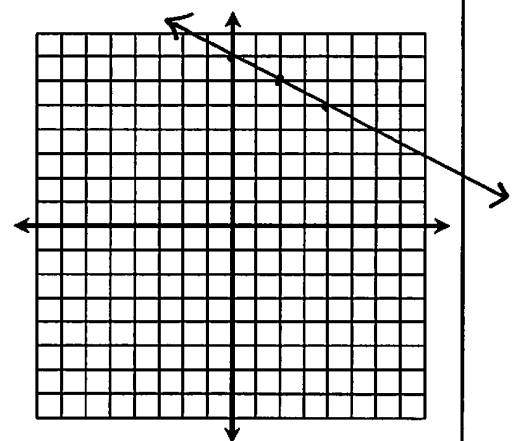
$$b = -4$$



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

$$m = -\frac{1}{2}$$

$$b = 7$$



Use for questions 19 and 20: Rex's Pizza is currently having a special for delivery orders. Pizzas are \$8 each and the delivery charge is \$1.75.

19. Write an equation for the total cost, c , for a delivery order of p pizzas.

$$C = 8p + 1.75$$

20. What is the independent variable in this situation?

- A. p
- B. c
- C. \$8
- D. \$1.75

A

Use for questions 21-24: At 4:00 p.m., the temperature was $90^\circ F$. After this point, the temperature dropped $1.5^\circ F$ per hour until sunrise the next morning.

21. Write an equation to represent the temperature, t , after h hours.

$$t = -1.5h + 90$$

22. What is the rate of change in this situation?

- A. t
- B. h
- C. 90°
- D. -1.5°

D

23. If sunrise was at 6:00 a.m. the next morning, what was the temperature?

$$-1.5(14) + 90$$

- A. 66°
- B. 67°
- C. 68°
- D. 69°

D

24. At what time did the temperature reach 75° ?

$$75 = -1.5h + 90$$

$$-15 = -1.5h$$

$$10 = h$$

- A. 1:00 a.m.
- B. 2:00 a.m.
- C. 3:00 a.m.
- D. 4:00 a.m.

B

25. Which of the following tables represent a proportional relationship? Check all that apply.



x	y
5	7
10	14
15	21
20	28



x	y
1	2
2	3
3	4
4	5



x	y
0	0
4	0.5
8	1
12	1.5



x	y
0	0
1	6
2	12
3	18

26. Given the table of values below, identify the constant of proportionality and write an equation to represent the relationship.

Seconds, x	Feet, y
0	0
5	4
10	8
15	12
20	16

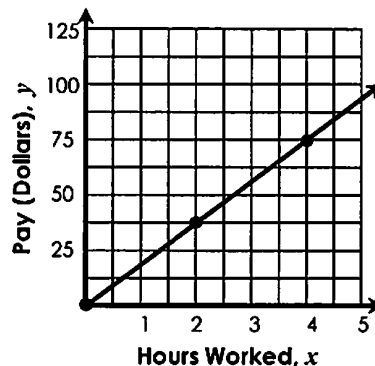
Constant of Proportionality

$$k = \frac{4}{5}$$

Equation

$$y = \frac{4}{5}x$$

27. Given the graph below, identify the constant of proportionality and write an equation to represent the relationship.



Constant of Proportionality

$$k = 18.75$$

Equation

$$y = 18.75x$$

28. The constant of proportionality of a proportional relationship is $\frac{1}{4}$. Which point does a line representing this relationship pass through on a graph?

$$k = \frac{y}{x}$$

A. $(0, \frac{1}{4})$

C. $(4, 1) \rightarrow \frac{1}{4}$

B. $(\frac{1}{4}, 1)$

D. $(1, 4)$

C

29. The points (4, 6), (12, 18), and (16, 24) represent the same proportional relationship. Which point does **not** represent this relationship?

$$k = \frac{3}{2}$$

A. $(3, 2) \rightarrow k = \frac{2}{3}$

B. $(8, 12)$

C. $(10, 15)$

D. $(9, 13.5)$

A

30. A cleaning product is created by using 1.75 cups of water for every cup of cleaning solution.

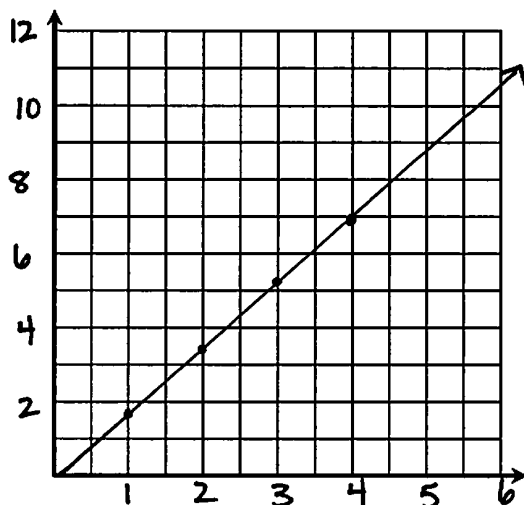
a) Complete the table.

Cups of Water, x	Cups of Solution, y
0	0
1	1.75
2	3.50
4	7
6	10.50

b) Write an equation to represent the relationship.

$$y = 1.75x$$

c) Graph the relationship.



CREDITS

I use clipart and
fonts in my products by:



Art with Jenny K



Many thanks to these
talented artists!