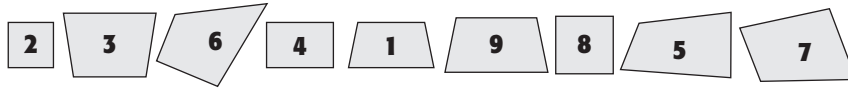


Practice: Skills, Concepts, and Problem Solving

List the objects in each category.



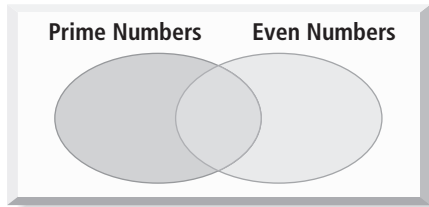
- 1 square _____
- 2 rectangle _____
- 3 parallelogram _____
- 4 quadrilateral _____

Use a Venn diagram to sort numbers.

- 5 Use a Venn diagram to sort the numbers. Classify them as Prime Numbers and Even Numbers.

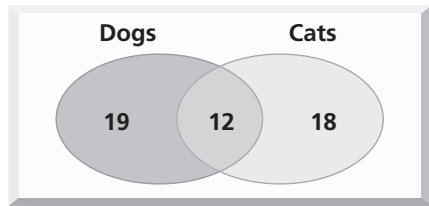
2, 3, 8, 9, 17, 21, 25, 37, 41

Prime Numbers	Even Numbers	Neither
_____	_____	_____



Solve.

- 6 **SURVEY** Malcolm took a survey to find out how many students have dogs, cats, or both pets. Malcolm surveyed 64 students and recorded his results in the Venn diagram shown below. Of the students surveyed, how many do not have a dog as a pet? _____



Write the vocabulary word that completes each sentence.

- 7 Objects can be sorted according to their _____.
- 8 A _____ uses overlapping and separate circles to organize and show data.

Practice: Skills, Concepts, and Problem Solving

List the repeating terms of each pattern.

- 1 1, 4, 4, 1, 1, 4, 4, 1 _____
- 2 Z, z, A, a, Z, z, A, a, Z, z, A, a _____
- 3 Blue, Green, Red, Blue, Green, Red _____
- 4 $\rightarrow \downarrow \rightarrow \uparrow \rightarrow \downarrow \rightarrow \uparrow$ _____

What is the pattern? Write the next three terms in the pattern.

- 5 A, X, A, Z, A, X, A, Z, A, X
The repeating terms are _____, _____, _____, _____.
The next three terms are _____, _____, _____.
- 6 8, 80, 8, 800, 8, 80, 8, 800, 8
The repeating terms are _____, _____, _____, _____.
The next three terms are _____, _____, _____.

Solve.

- 7 **SAVINGS** The table shows the amount of money Jason saves each month. If the pattern continues, how much money will he save in October? _____

January	February	March	April	May	June	July
\$5	\$10	\$20	\$5	\$10	\$20	\$5

Vocabulary Check

Write the vocabulary word that completes each sentence.

- 8 A _____ is a sequence of numbers, figures, or symbols that follows a rule or design.
- 9 A _____ is one of the quantities that forms a series or pattern.

Practice: Skills, Concepts, and Problem Solving

What is the rule for each pattern?

- 1 7, 21, 63, 189 _____
- 2 125, 100, 75, 50 _____
- 3 234, 245, 256, 267 _____

Write the next three terms in each pattern.

- 4 189, 173, 157, 141
The next three terms are _____, _____, and _____.
- 5 729, 243, 81, 27
The next three terms are _____, _____, and _____.

Write the next three conversions in each pattern.

6	Number of Tricycles	1	2	3	4
	Number of Wheels	3			

7	Number Hours	1	2	3	4
	Number of Minutes	60			

Solve.

- 8 **RACING** Lance is training for a bike race. Starting on Tuesday, each day he bikes 3 more miles than he did the day before. On Monday he bikes 3 miles. How many miles does he bike on Friday? _____

Vocabulary Check

Write the vocabulary word that completes each sentence.

- 9 A _____ tells how numbers are related to each other.
- 10 A _____ is a sequence of numbers, figures, or symbols that follows a rule or design.

Practice: Skills, Concepts, and Problem Solving**Solve each equation when $x = 7$.**

1 $y = 9x + 8$ _____

2 $y = 4x - 6$ _____

3 $y = 7x$ _____

4 $y = \frac{28}{x} - 1$ _____

Write an equation for each conversion using x and y . Solve for the number of units given.

5 number of pints $\div 2 =$ number of quarts; 102 pints _____

6 number of years $\times 52 =$ number of weeks; 6 years _____

Solve each equation when $x = 2, 9,$ and 15 .

7 $y = 3x - 5$

$y =$ _____, _____, and _____.

8 $y = 11x$

$y =$ _____, _____, and _____.

Solve.

- 9 **CONVERSIONS** A bottle of juice contains 32 fluid ounces. _____
A cup contains 8 fluid ounces. How many cups does the
bottle contain? _____

- 10 **ART** The Dixon family went to the art museum. Adult tickets _____
cost \$8 each and children's tickets cost \$4 each. Mr. Dixon
bought 2 adult tickets and 1 children's ticket. How much did
he spend in all? _____

Write the vocabulary word that completes the sentence.

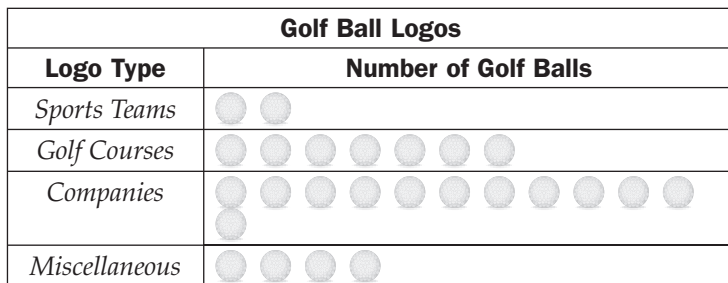
- 11 The amount of a number is its _____.


- 12 An _____ is a mathematical sentence that contains an equal sign.

Practice: Skills, Concepts, and Problem Solving

Use the pictograph to answer each question.

Ryan collects golf balls with logos on them.



Key: 1  = 5 logo golf balls

1 Which type of logo golf ball did Ryan have the least?


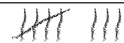

2 Which type of logo golf ball did Ryan have the most?

3 Which category did Ryan have 20 logo golf balls? _____

4 How many golf course logo balls did Ryan have? _____

Use the tally chart to answer each question.

5 The tally chart shows the types of framed photographs that Juana has in her home. Make a pictograph of the data in the tally chart. Choose an appropriate picture and include the key.

Framed Photographs	
Type of Photo	Number of Photos
Family	
Friends	
Pets	

Of whom are most of the photographs in Juana's house?

How many photographs of pets are framed in Juana's house?

Solve.

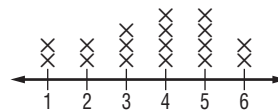
6 **PATTERN BLOCKS** Prem uses pattern blocks to make a tally chart and a bar graph. His categories are: three-sided polygons, four-sided polygons, and six-sided polygons. What do his tally chart and bar graph look like?

Practice: Skills, Concepts, and Problem Solving

Use the line plot to answer questions 1–4.

The line plot shows the results of rolling a number cube 20 times.

Results of 20 Rolls



- 1 Which number(s) did the cube land on the most number of times?
- 2 How many times did the cube land on “3”?
- 3 On which numbers did the cube land three times?
- 4 How many times did the cube land on “4”?

Use the information below to answer questions 5–8.

- 5 Jenna spun a spinner 30 times and it landed 1, 2, 3, or 4. Use the data in the tally chart to create a line plot to display the data.

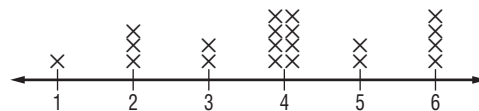
Number	Frequency
1	
2	
3	
4	

- 6 What number did the spinner land on the most?
- 7 What number did the spinner land on the least?
- 8 What numbers were landed on 8 times?

Solve.

- 9 **GAMES** Maria rolled a number cube 20 times. The line plot shows her results. Which number occurred 4 times?

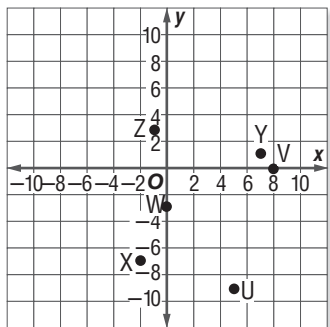
Molly's Results



Practice: Skills, Concepts, and Problem Solving

Name the ordered pair for each point.

- 1 Z _____
- 2 Y _____
- 3 X _____
- 4 W _____
- 5 V _____
- 6 U _____



Graph the ordered pairs.

- 7 Graph the ordered pairs $T(8, -2)$ and $S(-3, -2)$. Then connect the points.

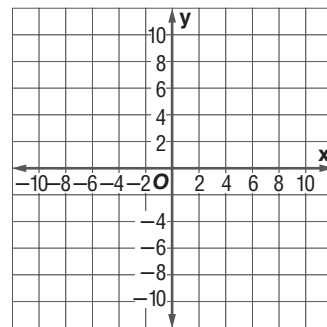
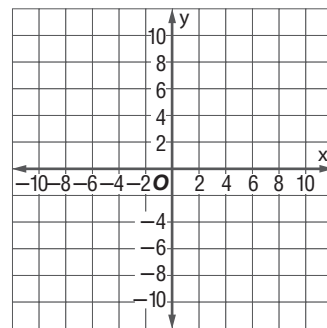
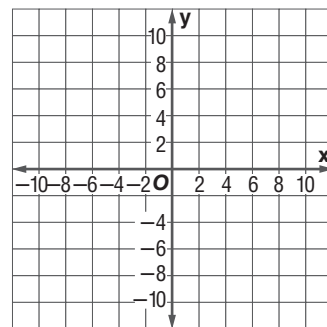
$(8, -2)$ and $(-3, -2)$ are on the same line because they have the same _____-coordinate.

- 8 Graph the ordered pairs $R(-2, 7)$ and $Q(-2, 0)$. Then connect the points.

$(-2, 7)$ and $(-2, 0)$ are on the same line because they have the same _____-coordinate.

Solve.

- 9 **GRAPHING SENSE** Graph the points $(-4, -1)$ and $(-4, -6)$ on the coordinate grid shown. What is the distance between these two points? Give two ways to find the distance.



Vocabulary Review

Write the vocabulary word that completes each sentence.

- 10 A _____ grid is a graph that displays a set of points and gives the position of a point on a line, in a plane, or in a three-dimensional space in terms of numbers.

Practice: Skills, Concepts, and Problem Solving

Make an input/output table for each equation.

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

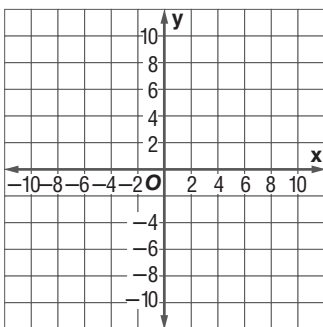
Input, x	Output, y
-6	
-3	
0	
3	
6	

2 $y = -3x - 1$

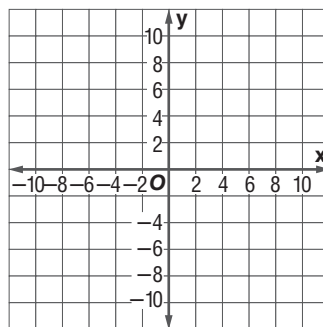
Input, x	Output, y
-2	
-1	
0	
1	
2	

Graph each equation.

3 Graph the equation from Problem 1.



4 Graph the equation from Problem 2.



Solve.

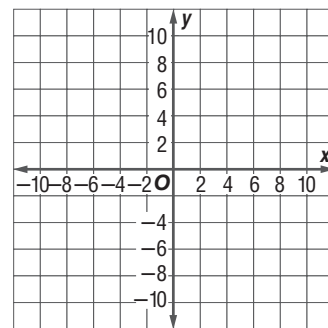
5 The cost to go on rides at a fair is $x + 5$, where x is the total number of rides. Show the relationship between the number of rides and the total cost in an input-output table and on a coordinate plane. How much money will it cost to go on 4 rides?

x	$x + 5$	y	Ordered Pair
1			
2			
3			
4			
5			

Vocabulary Check.

Write the vocabulary word that completes the sentence.

6 A pair of numbers that is the coordinates of a point in a coordinate plane or grid is called an _____ pair.



Practice: Skills, Concepts, and Problem Solving

List a possible situation for each rule.

- 1 Multiply by 13. _____
- 2 Add 4. _____

Complete each sentence given the rule.

- 3 There are 6 sides on 1 cube. How many sides are there on 9 cubes? There are _____ sides on 9 cubes.
- 4 There are 4 tires on 1 car. How many tires are there on 6 cars? There are _____ tires on 6 cars.
- 5 Dion drives 45 miles in 1 hour. How many miles does Dion drive in 4 hours? Dion drives _____ miles in 4 hours.
- 6 There are 5 bananas in 1 bunch. How many bananas are there in 7 bunches? There are _____ bananas in 7 bunches.
- 7 Sandy needs 6 cups of water for 1 pitcher of lemonade. How many cups of water does she need for 4 pitchers of lemonade? Sandy needs _____ cups of water for 4 pitchers of lemonade.

Solve. Write in simplest form.

- 8 **CABINETRY** Nari is installing new cabinet doors in her kitchen. She needs 8 screws for each cabinet door. There are 15 doors. How many screws does Nari need? _____
- 9 **WEIGHT LIFTING** Alonso started weight lifting. The first week he was able to bench-press 145 pounds. Each week he has been able to bench-press an additional 5 pounds. How much is Alonso able to bench-press on the seventh week? _____

Write the vocabulary word that completes each sentence.

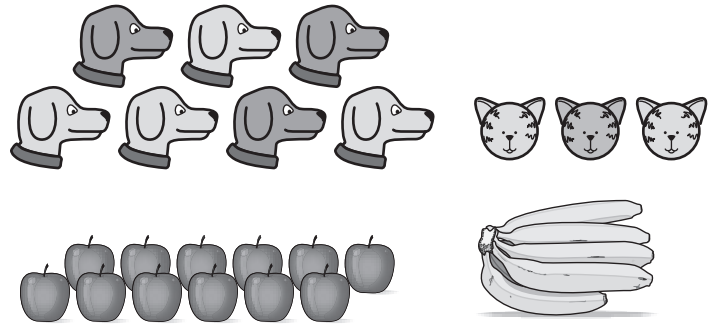
- 10 A(n) _____ is a sequence of numbers, figures, or symbols that follows a rule or design.
- 11 A(n) _____ tells how numbers are related to each other.

Practice: Skills, Concepts, and Problem Solving

Write the ratio.

- 1 What is the ratio of dogs to cats?

- 2 What is the ratio of bananas to apples?



Find each unit price.

- 3 Andrea's mom bought 5 teddy bears for \$90.
The unit price is \$_____ for 1 teddy bear.
- 4 The Hans bought 8 movie tickets for \$60.
The unit price is \$_____ for 1 movie ticket.
- 5 Lenny bought 12 roses for \$48.
The unit price is \$_____ for 1 rose.

Find each total.

- 6 Backpacks are on sale at the outdoor store. Each backpack costs \$29.
How much do 3 backpacks cost? The total price for 3 backpacks is \$_____.
- 7 Mona bought 7 bottles of nail polish. Each bottle cost \$4.25.
How much did Mona spend? Mona spent a total of \$_____.
- 8 Jorge bought 4 boxes of cereal. Each box cost \$2.90.
How much did Jorge spend? Jorge spent a total of \$_____.

Convert each unit of measure.

- 9 1 ft = 0.3 m; 9 ft = _____ m
- 10 1 gal = 8 pt; 10 gal = _____ pt

Solve.

- 11 **MACHINERY** The assembly line for making small motors can assemble 4 motors every minute. How many motors can the assembly line make in an 8-hour shift?

Write the vocabulary word that completes each sentence.

- 12 _____ is the price of a single piece or item.

Practice: Skills, Concepts, and Problem Solving

Find the value of each variable.

1 $\frac{18}{20} = \frac{9}{t}$ $t =$ _____

2 $\frac{8}{s} = \frac{56}{35}$ $s =$ _____

3 $\frac{8}{y} = \frac{10}{25}$ $y =$ _____

4 $\frac{r}{3} = \frac{42}{18}$ $r =$ _____

5 $\frac{18}{24} = \frac{l}{16}$ $l =$ _____

6 $\frac{n}{9} = \frac{30}{45}$ $n =$ _____

Write an equivalent ratio in simplest form.

7 $\frac{14}{21} =$ _____

8 $\frac{10}{50} =$ _____

9 $\frac{12}{14} =$ _____

10 $\frac{6}{8} =$ _____

11 $\frac{10}{18} =$ _____

12 $\frac{35}{55} =$ _____

Solve.

- 13 **SNACKS** A can of nuts has 8 peanuts for every 2 cashews. How many cashews are in a can with 100 peanuts? _____ cashews
- 14 **CANDY** A bag of jelly beans has 7 green jelly beans for every 8 red jelly beans. How many red jelly beans are in a bag with 56 green jelly beans?
_____ red jelly beans
- 15 **SWIMMING** The swim team has 5 seniors for every 3 freshmen. If there are 18 freshmen on the team, how many seniors are there?
_____ seniors
- 16 **CHEMISTRY** Hassan is mixing a solution and needs 30 mL of ammonia for every 2 L of solution. How much ammonia does Hassan need to make 5 L of solution? _____

Write the vocabulary word that completes each sentence.

- 17 The _____ is the relationship between two quantities in which the first measures a certain number of units and the second measures another number of units.
- 18 A(n) _____ is an equation stating that two ratios or rates are equivalent.

Practice: Skills, Concepts, and Problem Solving

Write a function to represent each situation.

- 1 There are 8 notes in every octave. _____
- 2 Frankie earns \$5 more per hour than Doris. _____
- 3 Nicole earns \$7 for each necklace she makes and sells. _____

Write a function, make a function table, and make a graph.

- 4 **CHEMISTRY** In a lab experiment, a scientist used 3 times as much water as solution.
Let y = the amount of water and let x = the amount of solution.

$$y = \underline{\hspace{2cm}}$$

Amount of solution, x	2	4	6	8	10
Amount of water, y					

The scientist used 8 liters of solution. How many liters of water did he use? _____

- 5 **AGE** Ahanu is 22 years younger than his mother. Let y = Ahanu's age and x = Ahanu's mother's age.

$$y = \underline{\hspace{2cm}}$$

Ahanu's mother's age, x	30	35	40	45	50
Ahanu's age, y					

How old is Ahanu when his mother is 45? _____

Vocabulary Check

Write the vocabulary word that completes the sentence.

- 6 A function whose graph is a straight line is called a _____ function.

Practice: Skills, Concepts, and Problem Solving

Write a function to represent each situation.

- 1 The volume of a certain rectangular prism is two times the cube of its length. _____
- 2 Gabe earns \$2 less than the square of the number of hours worked. _____

Write a function, make a function table, and make a graph.

Is the function linear or nonlinear?

- 3 **GEOMETRY** The surface area of a cube is 6 times the square of the length of one of its sides.

$y =$ _____

Length, x	1	2	3	4	5
Area, y					

What is the surface area of a cube with sides that are 4 yards long? _____

The function is _____.

Match each function with its function table and its graph.

- | | | | |
|---|--|--|--|
| <p>4 $y = -(x^2) + 3$
function
table _____
graph _____</p> | <p>5 $y = x + 1$
function
table _____
graph _____</p> | <p>6 $y = -2x^3 - 1$
function
table _____
graph _____</p> | <p>7 $y = -2x^2 - 1$
function
table _____
graph _____</p> |
|---|--|--|--|

A.

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

B.

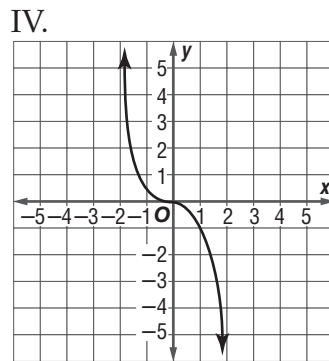
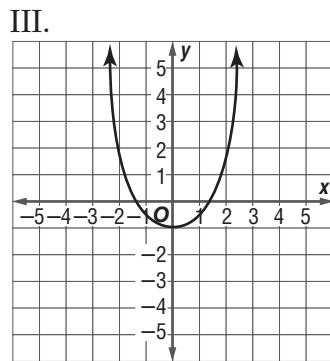
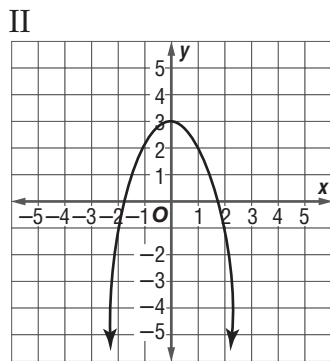
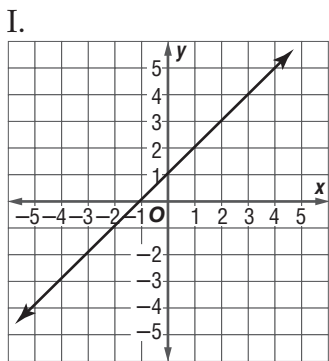
x	-2	-1	0	1	2
y	15	1	-1	-3	-17

C.

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

D.

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



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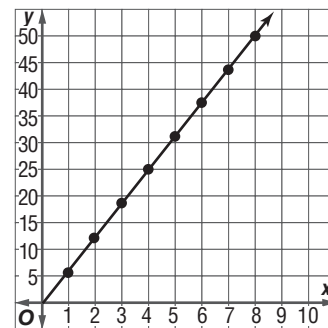
Practice: Skills, Concepts, and Problem Solving

Interpret each ratio.

- 1 The ratio of the number of nickels, y , to the number of dollars, x , is $\frac{20}{1}$.

- 2 The ratio of the points for a test score, y , to the number of correct answers, x , is $\frac{5}{1}$.

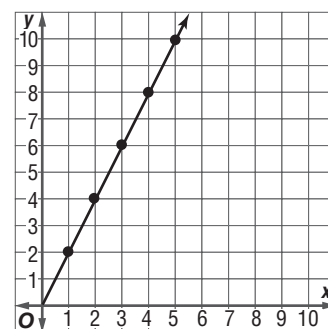
- 3 **GEOMETRY** The graph shows the ratio of the number of sides, y , to the number of hexagons, x . Use the graph to find the slope. Interpret the slope.



The ratio is constant. The slope is _____ or _____.

In this problem, the slope _____ means that there are _____ sides on every _____ hexagon.

- 4 **BIOLOGY** The graph shows the ratio of the number of body parts, y , to the number of spiders, x . Use the graph to find the slope. Interpret the slope.



The ratio is constant. The slope is _____ or _____.

In this problem, the slope _____ means that there are _____ body parts for every _____ spider.

Is each table below the function table of a linear function? Explain.

5

x	0	1	2	3	4
y	4	8	12	16	20

This function is _____ because the ratios are _____.

6

x	1	2	3	4	5
y	1	4	9	16	25

This function is _____ because the ratios are _____.

Write the vocabulary word that completes the sentence.

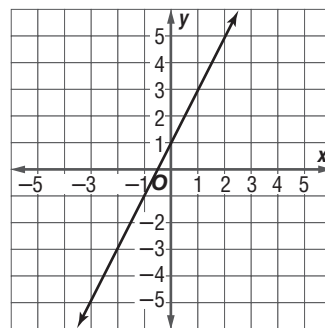
- 7 A _____ represents a constant rate of change between two quantities.

4-4

Practice: Skills, Concepts, and Problem Solving

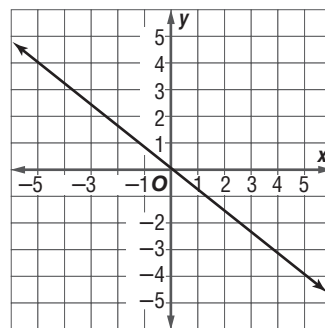
Use the graph at the right to answer Exercises 1–3.

- 1 What is the y -intercept of the line? _____
- 2 What is the slope of the line? _____
- 3 What is the equation of the line? _____



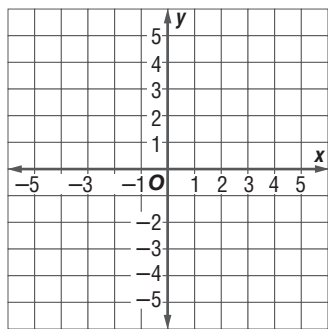
Use the graph at the right to answer Exercises 4–6.

- 4 What is the y -intercept of the line? _____
- 5 What is the slope of the line? _____
- 6 What is the equation of the line? _____

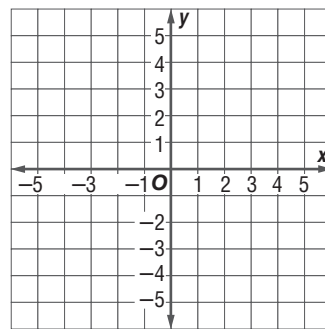


Graph each equation.

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



8 $y = -\frac{1}{4}x + 5$



Solve.

- 9 **ANIMALS** A pig can run at approximately 10 miles per hour. Graph an equation to represent the data.

$$f(y) = \underline{\hspace{2cm}}$$

Vocabulary Check

Write the vocabulary word that completes the sentence.

- 10 The point on a line where it crosses the y -axis is called the _____.