SAMPLE PAGES FOR

THE READY EOG ASSESSMENT

THE COMPETITIVE EDGE

EIGHTH GRADE MATHEMATICS

with COMMON CORE STATE STANDARDS

2014 Edition

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TABLE OF CONTENTS

CHAPTER 3

Functions

PART I—INTRODUCTION TO FUNCTIONS

A **function** is a relation where each member of the domain (x coordinates) is paired with exactly one member of the range (y coordinates). x is the input of the function (independent variable), and y is the output (dependent variable) of the function. A change in the variable in a functional relationship results in a change in the other variable.

EXAMPLES

Is this relation a function?

Relation	**Diagram** domain (x)	range(y)	
(–5, 14), (3, 25)	–5	14	*Yes*, it is a function because
(4, 18), (31, 20)	3	25	each domain is paired with
	4	18	one range only.
	31	20	

Is this relation a function?

Relation	**Diagram** domain (x)	range(y)	
(–6, 10), (–6, 21)	–6	10 and 21	*No*, it is not a function because
(7, 18), (10, 34)	7	18	–6 is paired with 2 range
	10	34	values.

Using Tables to Determine Functions

EXAMPLES

Determine whether this relation is a function.

{(4, 3), (2, 4), (3, 6), (5, 7)}

Draw a table to determine if each element of the domain (x) is paired with one element of the range (y).

x	4	2	3	5
y	3	4	6	7

This is a function. For each element of the domain (x), there is only 1 element in the range (y).

Determine whether this relation is a function.

{(5, 6), (5, 7), (6, 1), (10, 12)}

Draw a table to determine if each element of the domain (x) is paired with one element of the range (y).

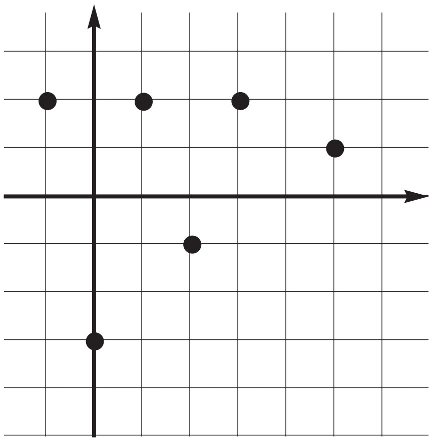
x	5	5	6	10
y	6	7	1	12

This is not a function. For 5 in the domain (x), there are 2 elements in the range (y).

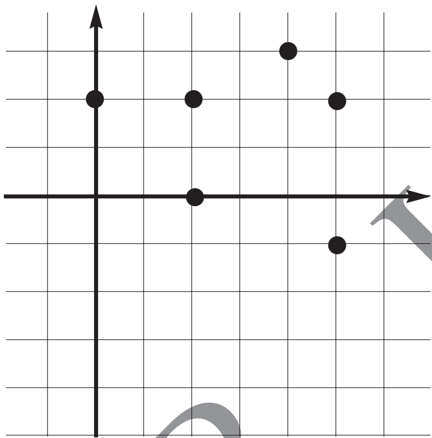
Using the Vertical Line Test to Determine Functions

Plot all of your points on a coordinate plane. Move a clear ruler across the coordinate plane. If the clear ruler passes through more than one point for each value in the domain (x), then it is not a function. If the ruler does not pass through more than one point for each value in the domain (x), then it is a function.

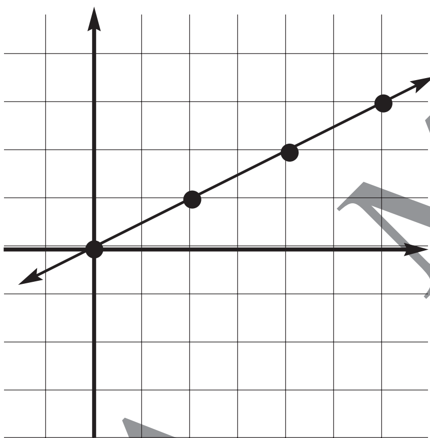
Function



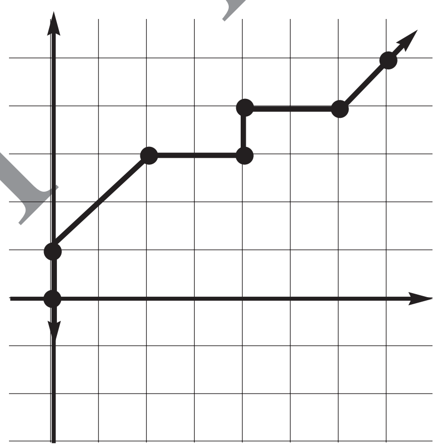
Not a Function



Function



Not a Function



EXAMPLE

The following equation represents a function.

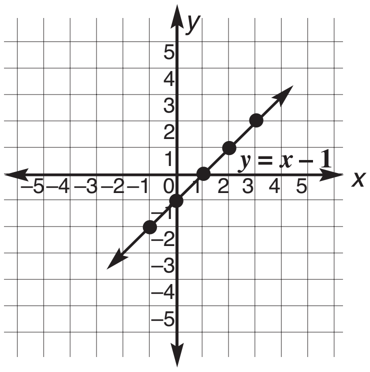
$y = x - 1$ (y is equal to one less than x.)

x	$x - 1$	y
–1	(–1) – 1	–2
0	(0) – 1	–1
1	(1) – 1	0
2	(2) – 1	1
3	(3 – 1)	2

Make a table as shown on the left. Choose any 5 values for x (Smaller numbers are best.), then solve for y.

These ordered pairs represent the function.

Now graph using the x, y columns for your ordered pairs. This is the graph of the function. A change in x results in a change in the value of y.



A function can be evaluated for the output, range, if you know the input, domain.

EXAMPLE

Evaluate this function when $x = 2$.

$y = 3x + 4$

$y = 3x + 4$ Substitute 2 for x.

$y = 3(2) + 4$

$y = 6 + 4$

$y = 10$

In the function $y = 3x + 4$, *when the input is 2, the output is 10.*

A function can be evaluated for the input, domain, if you know the output, range.

EXAMPLE

Evaluate this function when $y = 4$.

$y = –4x + 8$

$y = –4x + 8$ Substitute 4 for y.

$4 = –4x + 8$

$–4 = –4x$

$1 = x$

In this function, $y = –4x + 8$, *when the output is 4, the input is 1.*

PRACTICE

For #1–16, determine whether each relation is a function.

1. {(–3, 7), (5, 4), (1, 17), (2, 3)} ______________________________
2. {(–3, 6), (5, 2) (14, -3), (8, 9)} ______________________________
3. {(10, 14), (0, 3), (7, 14), (7, 29)} ______________________________
4. {(–1, –3), (–3, 4), (–1, –2), (4, 6)} ______________________________

5.

x	–3	–2	1	4
y	–1	0	2	5

____

6.

x	–3	–7	–7	9
y	6	2	3	0

____

7.

x	–3	1	16	16
y	4	3	4	–5

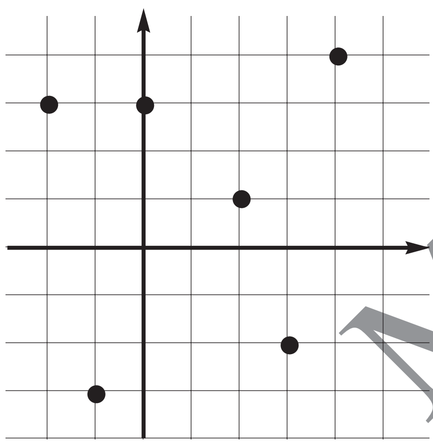
____

8.

x	29	14	19	27
y	17	3	15	14

____

9.



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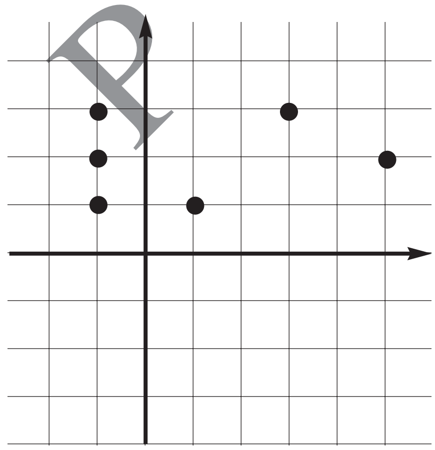

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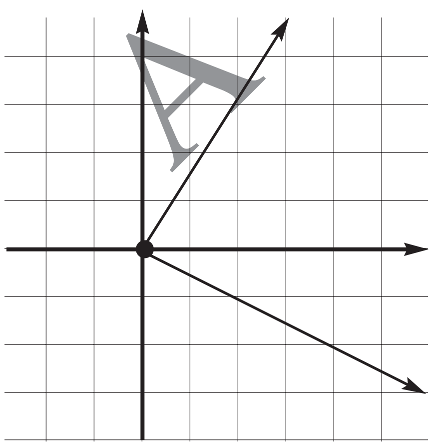

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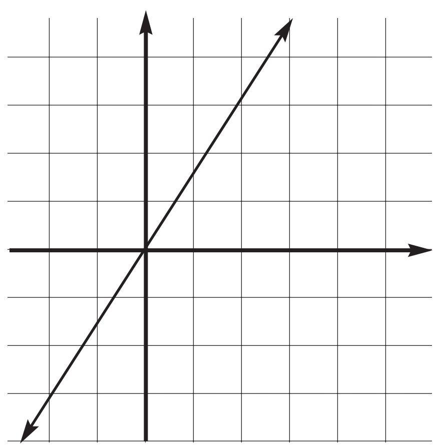


13. $y = 8x + ¼$

14. y is equal to the product of 12 and x.

15. $y = 4$

16. $3y$

Evaluate each function to determine the output.

17. $y = -3x + 4$ (Input is 3.)

18.

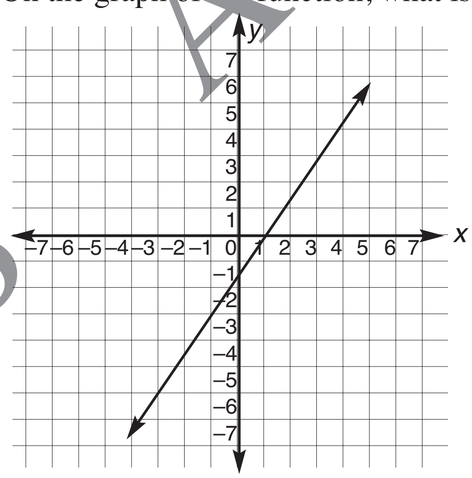
x	y
3	6
6	9
9	12
12	?

How did you find your answer?

19. $y = 2x + 15$ ($x = 3$)

20. y is equal to the quotient of 25 and x. ($x = 5$)

21. On the graph of the function, what is the output when $x = -1$?



Evaluate each function to determine the input.

22. $y = 6x + 29$ (output = 41)

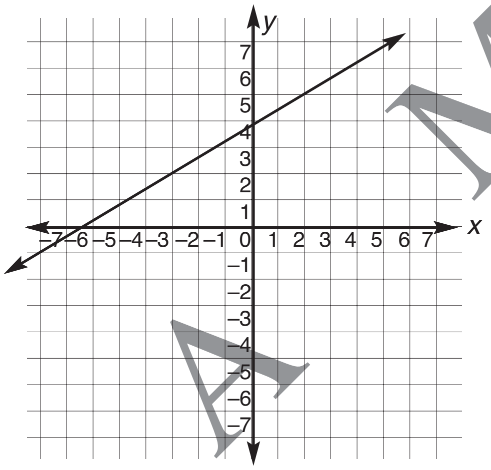
23.

x	y
–12	–9
–2	1
8	11
	21
28	31

How did you find your answer?

24. y is equal to 4 more than the product of x and 16. ($y = 52$)

25. On the graph of the function, what is the output when $x = -3$?



Linear Equations

An equation that is **linear** has a graph that is a straight line.

EXAMPLE

$y = x - 2$

x	$x - 2$	y
–1	(–1) – 2	–3
0	(0) – 2	–2
1	(1) – 2	–1
2	(2) – 2	0
3	(3 – 2)	1

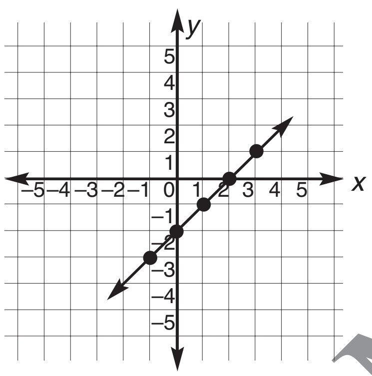
Differences: x column 1, 1, 1, 1; y column 1, 1, 1, 1.

Make a table as shown on the left. Choose any 5 values for x. (Smaller numbers are best.) Then solve for y.

A linear function has a constant rate of change.

$$\frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1}$$

Now, graph using the x, y columns for your ordered pairs.



Connect your points. You have a straight line!

Look at a table representing a function to see if it is linear without drawing the graph.

x	y
–5	4
–3	5
1	7
7	10
15	14

Differences: x column 2, 4, 6, 8; y column 1, 2, 3, 4.

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$$

The rate of change is constant, *so it is linear*.

Nonlinear Equations

An equation that is **nonlinear** has a graph that is not a straight line.

EXAMPLE

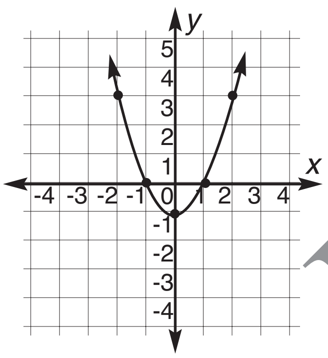
$y = x^2 - 1$

Make a table as shown. Choose any 5 values for x, then solve for y. (Smaller numbers work best.) A nonlinear function does not have a constant rate of change.

	x	$x^2 - 1$	y	
	–2	$(-2)^2 - 1$	3	
1	–1	$(-1)^2 - 1$	0	–3
1	0	$(0)^2 - 1$	–1	–1
1	1	$(1)^2 - 1$	0	1
1	2	$(2)^2 - 1$	3	3

$$\frac{-3}{1} \neq \frac{-1}{1} \neq \frac{1}{1} \neq \frac{3}{1}$$

Draw the graph using the x, y columns for your ordered pairs. Connect the points. You have a curve (parabola)!



Look at a table representing a function to see if it is linear or nonlinear without drawing the graph.

	x	y	
	–1	–1	
3	2	0	1
2	4	3	3
3	7	5	2
4	11	9	4

$$\frac{1}{3} \neq \frac{3}{2} \neq \frac{2}{3} \neq \frac{4}{4}$$

There is not constant rate of change, so *this function is nonlinear.*

Linear functions have equations that can be written in slope-intercept form ($y = mx + b$). Remember, m is the slope and b is the y-intercept. This information determines whether a function is linear or non-linear by using its equation.

EXAMPLES

Does this equation represent a linear function?

$y = 10x - 3$

Yes, because it is written in the form $y = mx + b$. The graph will be a straight line.

Does this equation represent a linear function?

$y = 4x^2 + 1$

No, because it is not written in the form $y = mx + b$. The graph will not be a straight line.

Now, write an equation to represent a linear function.

EXAMPLE

Using this table that represents a linear function, write an equation in slope-intercept form.

x	y
–2	–12
0	–8
2	–4
4	0
6	4

Every time the input value increases by 2, the output value increases by 4. The rate of change is 2.

When $x = 0$, $y = -8$. The y-intercept is –8.

Put the rate of change and y-intercept in the slope-intercept form.

$y = mx + b$

$y = 2x - 8$

PRACTICE

Designate each graph or table as a linear or nonlinear function.

1.

x	y
–4	–11
0	1
4	13
8	25
12	37

2.

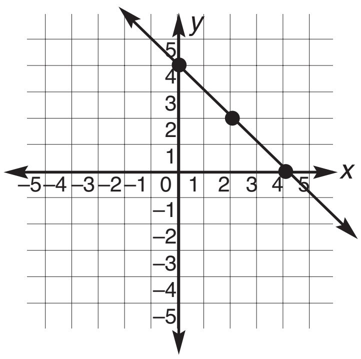
x	y
–3	9
0	0
3	9
6	36
9	81

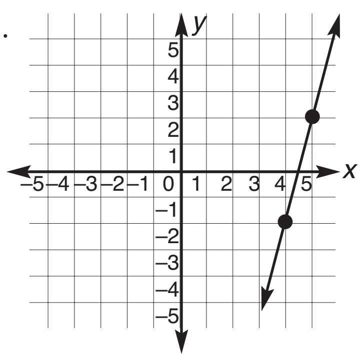
3.

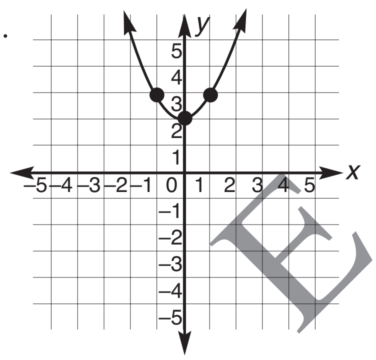
x	y
–1	2
1	2
3	10
5	26
7	50

4.

x	y
–2	–5
0	–1
2	3
4	7
6	11

5. 

6. 

7. 

Determine whether the table represents a linear function. If so, write the equation of that function in the slope-intercept form.

8.

x	*y*
–3	–6
0	0
3	6
6	12
9	18

9.

x	*y*
–2	3
0	5
2	7
4	9
6	11

10.

x	*y*
–3	12
0	3
3	12
6	39
9	84

11. How do you identify whether a function is linear or nonlinear in graph form? In table form? Explain.

Review

1. What is drawn when you graph $y = x^2 + 7$?
   a. square
   b. parabola
   c. straight line
   d. triangle

2. What is drawn when you graph $y = x - 8$?
   a. square
   b. parabola
   c. straight line
   d. triangle

3. Which equation's graph is a curve (parabola)?
   a. $y = x + 3$
   b. $y = 2x - 1$
   c. $y = x^2 + 3$
   d. $y = x + 10$

4. Which equation's graph is a straight line?
   a. $y = x^2 + 3$
   b. $y = 3x^2 - 1$
   c. $y = x - 3$
   d. $y = x^2$

5. Which equation would show a parabola when drawn?
   a. $y = x - \frac{2}{3}$
   b. $y = 2x + 7$
   c. $y = 2x^2$
   d. $y = 3x - 1$

6. If $x = 10$, what is the value of y in $y = 2x^2 - 3$?
   a. 37
   b. 397
   c. 197
   d. 17

7. Which equation would show a straight line when drawn?
   a. $y = x^2 - 9$
   b. $y = x + \frac{1}{2}$
   c. $y = 2x^2$
   d. $y = x^2 + 9$

8. If $x = 3$, what is the value of y in $y = x + 15$?
   a. –18
   b. 5
   c. 12
   d. 18

9. What is the value of y in $y = x^3 - 10$ if $x = 5$?
   a. 115
   b. 5
   c. 125
   d. 25

10. If $x = -3$, what is the value of y in $y = x^2 + 3$?
    a. –12
    b. –9
    c. –3
    d. 12

11. If $x = 14$, what is the value of y in $y = 3x + (-2)$?
    a. –40
    b. 40
    c. –44
    d. 44

12. Which of the following is a function?

a.

x	6	5	5	1
y	2	9	8	0

b.

x	–1	4	–1	0
y	3	8	2	7

c.

x	5	6	3	1
y	7	9	4	0

d.

x	3	2	8	3
y	1	0	9	–7

13. Which table is correct?

a.

x	$x + 15$	y
–1	(–1) +15	16
0	(0) + 15	15
1	(1) + 15	16
2	(2) + 15	17

b.

x	$x^2 - 0$	y
–1	$(-1)^2 - 0$	–1
0	$(0)^2 - 0$	0
1	$(1)^2 - 0$	1
2	$(2)^2 - 0$	4

c.

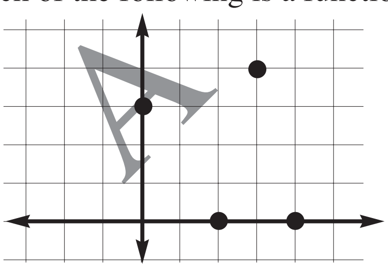
x	$x^3 + 5$	y
–1	$(-1)^3 + 5$	4
0	$(0)^3 + 5$	5
1	$(1)^3 + 5$	6
2	$(2)^3 + 5$	13

d.

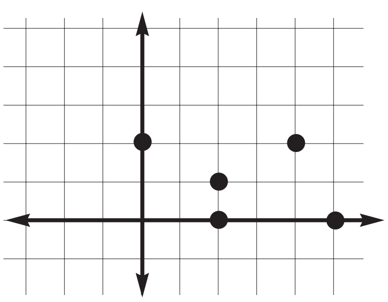
x	$x + 14$	y
–1	(–1) + 14	13
0	(0) + 14	14
1	(1) + 14	13
2	(2) + 14	16

14. Which of the following is a function?

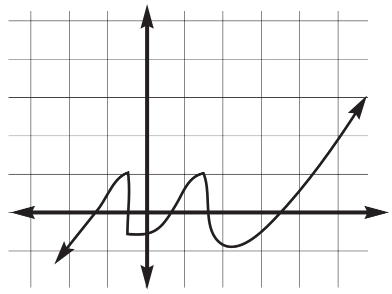
a.



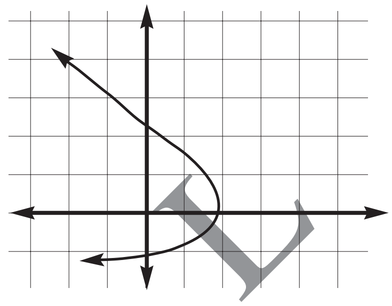
b.



c.



d.



15. In the function $y = 3x + 18$, the output is 30. What is the input?

a. 3
b. 4
c. –4
d. 5

16. Evaluate the following function when the input is –3.
y is equal to the quotient of –15 and *x*, added to 13.

a. 1
b. 12
c. 18
d. –48

17. In the function $y = 9x$, the output is 36. What is the input? Explain how you found your answer.

18. If the following table represents a linear function, write an equation in slope-intercept form to represent the function. Explain how you found your answer.

x	*y*
–4	–10
0	–6
4	–2
8	2
12	6

19. Does this table represent a function? Why or why not?

x	*y*
1	1
3	3
3	–3
4	4
–4	4

20. If the following table represents a linear function, write an equation in slope-intercept form to represent the function. Explain how you were able to identify whether the table represents a linear or nonlinear function.

x	*y*
–10	–29
–5	–14
0	–1
5	14
10	29

PART 2— COMPARING AND APPLYING FUNCTIONS

In order to compare functions, you must look at the rates of change and the *y*-intercepts.

EXAMPLES

Function #1

x	*y*
–2	–4
0	–3
2	–2
4	–1
6	0

Function #2

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

Compare Functions #1 and #2 by their rates of change and their *y*-intercepts.

Find the rate of change and *y*-intercept for each function.

Function #1
When the input value of Function #1 increases by 2, the output value increases by 1. This function is linear, so the output increases by ½ when the input increases by 1. So, rate of change is ½. When x is 0, $y = -3$. So the y-intercept is –3.

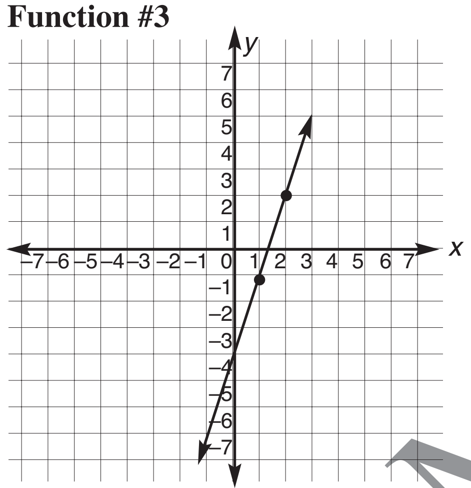
Function #2
Since this function is written in slope-intercept form ($y = mx + b$) where m represents rate of change (slope), and b is the y-intercept, the rate of change for $y = \frac{1}{4}x - 3\frac{1}{3}$ is ¼, and the y-intercept is –3 ⅓.

Now, compare the rates of change and the y-intercepts.

The rate of change for Function #1 is greater than the rate of change for Function #2 because ½ > ¼. The y-intercept for Function #1 is greater than the y-intercept for Function #2 because $-3 > -3\frac{1}{3}$.

Now, compare Function #3 and Function #4.

Function #3



Function #4

The value of y is equal to the product of x and 4 minus 1.

Function #3
Find the rate of change for Function #3 by using the slope formula.

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Choose two points on the graph.

$x_1\, y_1 = (1, -1)$
$x_2\, y_2 = (2, 2)$

$$\text{slope} = \frac{2 - (-1)}{2 - 1} = \frac{3}{1} = 3$$

slope = 3 (rate of change)

The line crosses the y-axis at –4, so the y-intercept is –4.

Function #4
$y = 4x - 1$ is in slope-intercept form.

rate of change = 4

y-intercept = –1

Now, compare the rates of change and the y-intercepts.

The rate of change in Function #3 is less than the rate of change in Function #4 because $3 < 4$. The y-intercept in Function #3 is less than the y-intercept in Function #4 because $-4 < -1$.

PRACTICE

1. Compare the rates of change and the *y*-intercepts in Functions #5 and #6.

Function #5

x	*y*
–3	3
3	–1
6	–3
9	–5
12	–7
15	–9

Function #6

The value of *y* is equal to the sum of *x* and 3.

2. Compare the rates of change and the *y*-intercepts in Functions #7 and #8.

Function #7

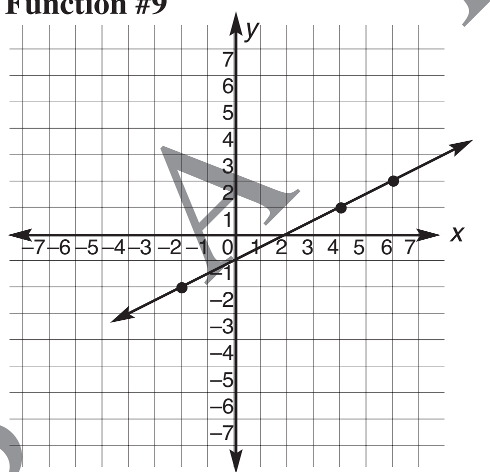
$y = 2x - 3$

Function #8

x	*y*
–2	–1
2	7
4	11
6	15
8	19

3. Compare the rates of change and the *y*-intercepts in Functions #9 and #10. How did you determine the rates of change and the *y*-intercepts for each function?

Function #9



Function #10

x	*y*
–6	3
–3	4
3	6
6	7
9	8

Functions can be written to represent the relationship between two quantities in real-world situations.

EXAMPLES

Mrs. Alexander charges $14.90 for 2 dozen cupcakes, and $52.15 for 7 dozen cupcakes. Write an equation of a function to represent the linear relationship between the number of dozen cupcakes she makes to the total amount of money she earns.

Remember: the function must be written in slope-intercept form ($y = mx + b$), so you must find the rate of change and the y-intercept.

Make ordered pairs from the given information. Find the slope (rate of change).

(2, 14.90) and (7, 52.15)
x_1, y_1 $\quad$ x_2, y_2

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{52.15 - 14.90}{7 - 2} = \frac{37.25}{5} = 7.45$$

The rate of change is $7.45. Mrs. Alexander earns $7.45 for each dozen cupcakes she sells.

Find the y-intercept by using the rate of change and one point.

Point: (2, 14.90)
Rate of change: 7.45

$y = mx + b$
$14.90 = 7.45(2) + b$ $\qquad$ Substitute values.
$14.90 = 14.9 + b$
$0 = b$

The y-intercept is 0.

Now, write the function using the information you determined.

Rate of change: 7.45
y-intercept: 0
$y = mx + b$
$y = 7.45x$

A local car rental company charges its customers according to how many miles the customer drives.

Miles Driven (x)	Total Charges (y)
100	$40.00
150	$50.00
200	$60.00
250	$70.00
300	$80.00

Write an equation of a function to represent the linear relationship represented by this table.

First, you must determine the rate for each mile driven, and then determine the cost of 0 miles.
Make ordered pairs from the given information. Find the slope (rate of change).

(100, 40.00) and (200, 60.00)
x_1 , y_1 $\quad$ x_2 , y_2

$$\text{slope} = \frac{y_2 - y_1}{x_2 , x_1} = \frac{60.00 - 40.00}{200 - 100} = \frac{20.00}{100} = \$0.20$$

The rate of change is \$0.20. The rental car company charges \$0.20 per mile driven.

Find the y-intercept by using the rate of change and one point.

Point: (300, 80.00)
Rate of change: \$0.20

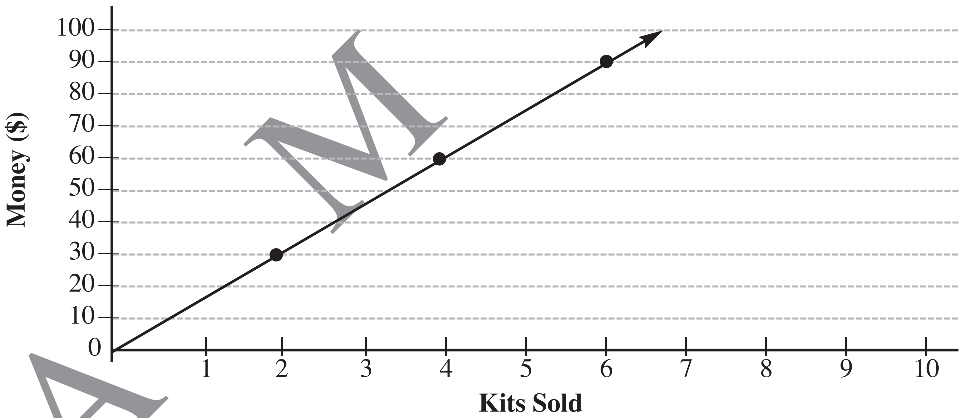
$y = mx + b$
\$80.00 = \$0.20(300) + b Substitute values.
\$80.00 = \$60.00 + b
\$20.00 = b

The y-intercept is \$20.00. The car rental company charges \$20.00 for use of the car when 0 miles are driven.

Now, write the function using the information you just determined.

Rate of change: \$0.20
y-intercept: \$20.00
$y = mx + b$
y = \$0.20x + \$20.00

Mr. Montgomery has a part-time job that he works from his home office. The amount of money he earns is dependent upon how many kits he sells to customers. Find the amount of money he makes per kit sold, and how much money he makes if he sells no kits. Use the graph below that represents the money he makes and the number of kits sold. Write a function that represents this relationship.



First, you must determine the rate of change by choosing two points from the graph. Then, you find the slope.

(2, 30) and (6, 90)
x_1 , y_1 x_2 , y_2

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{90 - 30}{6 - 2} = \frac{60}{4} = 15$$

The rate of change is 15, so Mr. Montgomery earns \$15 per kit sold.

Looking at the graph, the y-intercept is 0. Mr. Montgomery earns \$0 if he doesn't sell a kit.

The function, using the information determined, is $y = 15x$.

PRACTICE

1. The local printing office charges $45 for every 1,500 business cards printed. It charges $120 for 4,000 business cards. Find the rate of change and explain what it means. Find the *y*-intercept and explain what it means. Write the function as an equation.

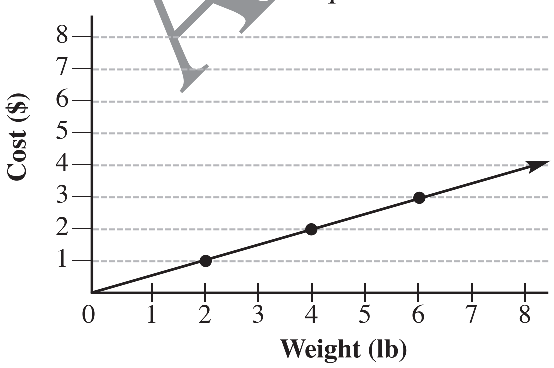
2. Kathy puts the same amount of money in her piggy bank each week.

Week (*x*)	Amount in Bank (*y*)
8	$21
10	$25
12	$29
14	$33

Find the rate of change and explain what it means. Find the *y*-intercept and explain what it means. Write the function as an equation.

3. This graph shows the cost of bananas based on their weight.

Find the rate of change and explain what it means. Find the *y*-intercept and explain what it means. Write the function as an equation.



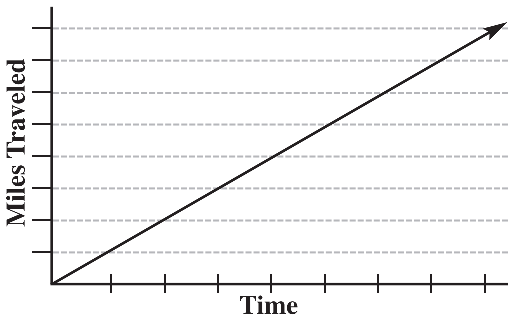
PART 3— DESCRIBING FUNCTIONS QUALITATIVELY

When describing a function **qualitatively**, you describe it without specific values. You are describing the basic relationship between the variables—whether the function is linear or nonlinear.

Remember: the *x*-axis will show the independent variables, and the *y*-axis will show the dependent variables.

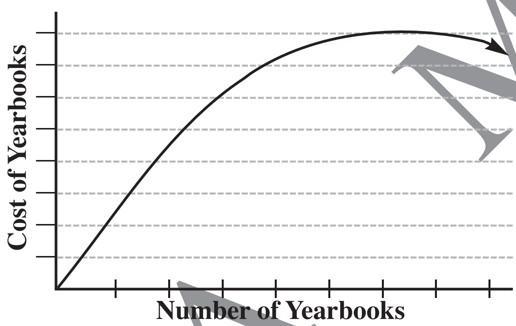
EXAMPLES

A train is traveling at a constant rate of speed. Create a graph to qualitatively describe how many miles the train travels over a specific time.



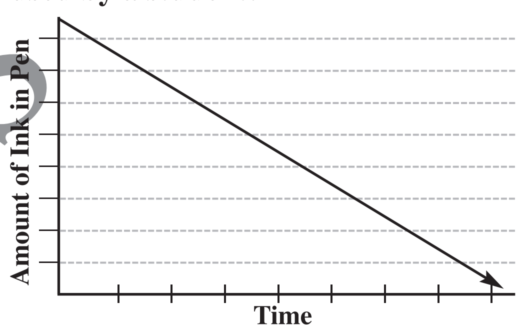
If the train travels *x* amount of time, it goes *y* amount of miles. The amount of miles the train travels increases at a constant rate, so the function is **linear** with a **positive slope**. The *y*-intercept would be 0 because if the train doesn't move, the train travels 0 miles.

A local middle school buys yearbooks from a book dealer. The dealer charges less per yearbook, the more yearbooks are sold. Create a graph to qualitatively describe the cost of yearbooks for the middle school.



The price of yearbooks, *y*, is dependent upon the number of yearbooks sold, *x*. The cost of the yearbooks goes down with every yearbook sold, so the function is **nonlinear**.

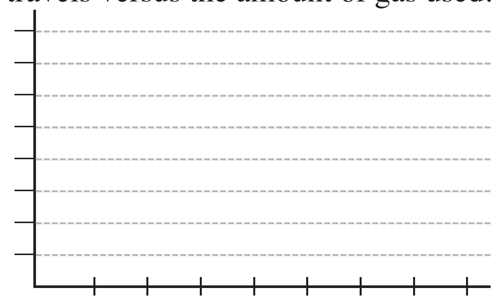
An ink pen has a certain amount of ink inside it. The ink decreases at a constant rate as it is used. Create a graph to qualitatively describe the amount of ink in the ink pen as it is being used by a student.



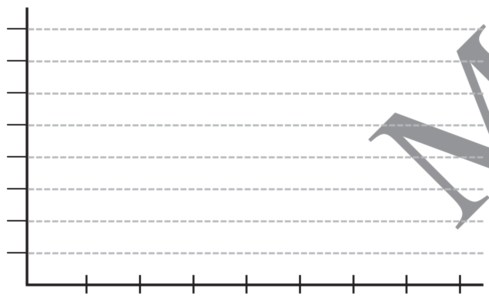
The amount of ink left in the ink pen depends on the amount of time the ink pen has been used. The amount of time the pen has been used is *x*, and the amount of ink left in the pen is *y*. The ink pen starts with a certain amount of ink, so the *y*-intercept would be positive. The function is **linear** because the ink is used at a constant rate, and the amount goes down, so the slope is **negative**.

PRACTICE

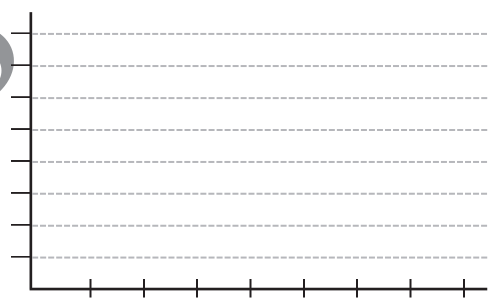
1. Create a graph to qualitatively describe the amount of gas used on a trip from Raleigh to Richmond if the car travels at a constant rate of speed. Represent the miles the family travels versus the amount of gas used.



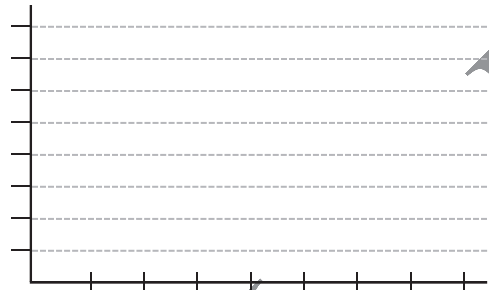
2. Create a graph to qualitatively describe the amount charged monthly for a cell phone if the bill is dependent upon the number of minutes used. Represent the amount charged versus the number of minutes used.



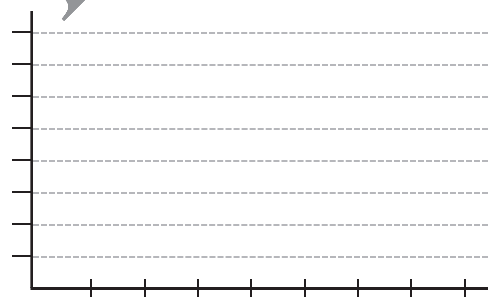
3. A website charges a flat rate to download an unlimited number of music videos per month. Represent the number of videos downloaded versus the cost of the service.



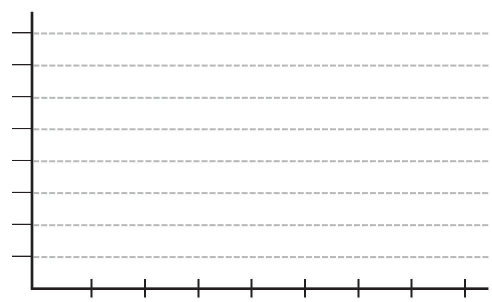
4. The more TVs that an electronic company buys, the cheaper the TVs. Represent the cost of the TV versus the number of TVs bought.



5. Mrs. Powell starts a 401K savings account when she starts a new job. Each month she adds the same amount of money. Represent the time Mrs. Powell has the 401K account versus the amount of money in the 401K account.



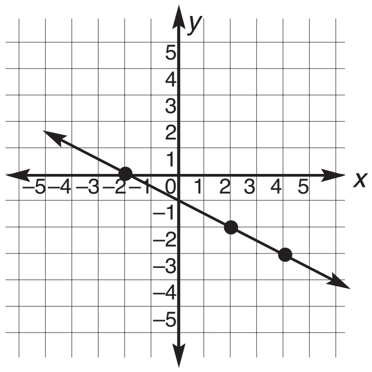
6. The Cowans buy a large bottle of purified water to use to fill their fish tank monthly when it is cleaned. They use the same amount of water for each tank cleaning. Represent the number of times the Cowans clean the tank versus the amount of water used in the tank.



Review

1. Function #5 is represented by: The value of *y* is equal to 2 more than *x*.

   Function #6:



   Which statement compares the properties of Functions #5 and #6?

   a. Function #5 has a greater rate of change and a smaller *y*-intercept than Function #6.
   b. Function #5 has a greater rate of change and a greater *y*-intercept than Function #6.
   c. Function #6 has a greater rate of change and a smaller *y*-intercept than Function #5.
   d. Function #6 has a greater rate of change and a greater *y*-intercept than Function #5.

2. Function #7 is represented by: $y = -3x + 1$.
   Function #8:

x	y
–6	–2
–3	–1
3	1
6	2
9	3

   Which function has the greater rate of change?

3. Which function has the greater *y*-intercept?
   Function #9: The value of y is equal to 5 times the value of *x*.

   Function #10:

x	y
–4	–18
–2	–10
2	6
4	14
6	22

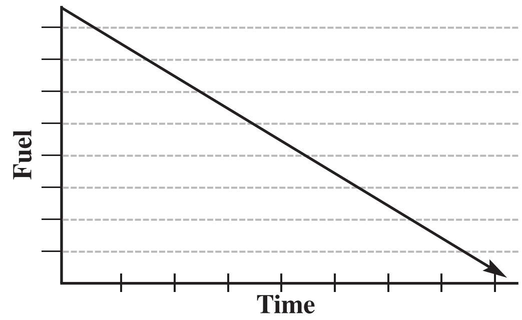
4. An electrical inspector gets paid to show up at a construction site. He is then paid for how many hours he actually works at that site. This table shows what the electrical inspector will be paid:

Hours worked (*x*)	Money Earned (*y*)
3	$145
6	$250
9	$355
12	$460

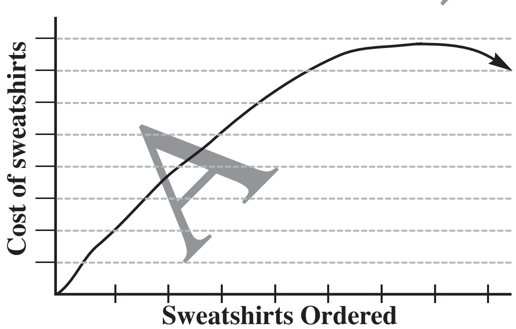
   Which of the following functions represents the electrical inspector's income for one day of work?

   a. $y = 25x + 12$
   b. $y = 29x + 15$
   c. $y = 30x + 35$
   d. $y = 35x + 40$

5. The following graph represents the relationship between the time an airplane flies and the amount of fuel it uses. Describe the relationship between the two quantities.

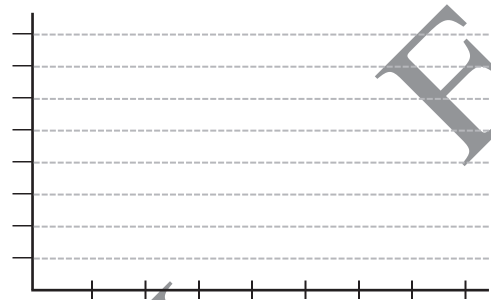


6. Which of the following statements below describes the cost of each sweatshirt for a customer?

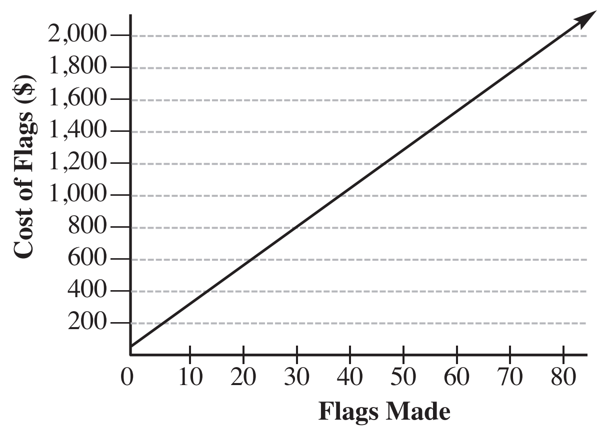


a. The more sweatshirts ordered, the higher the price of each sweatshirt.
b. The less sweatshirts ordered, the lower the price of each sweatshirt.
c. The more sweatshirts ordered, the lower the price of each sweatshirt.
d. The less sweatshirts ordered, the higher the quality of each sweatshirt.

7. A hunter pays a farmer the same amount every month to rent his farm for hunting. Graph the relationship between the number of months and the amount paid per month. Label your graph.



8. A flag company makes custom college flags for its customers. This graph shows the cost of printing the custom flags.



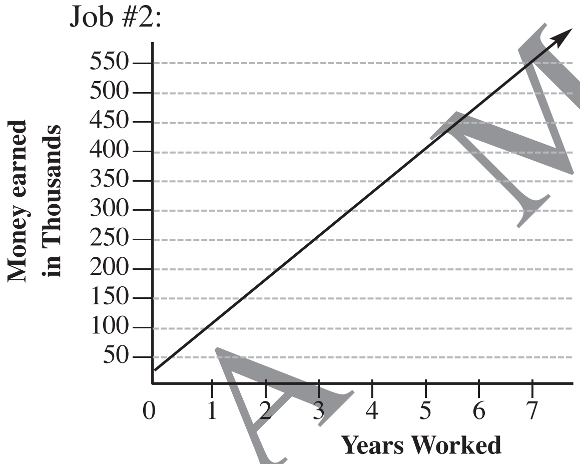
What is the rate of change for this function? Explain what the rate of change means.

What is the y-intercept for this function? Explain what the y-intercept means.

9. When Mr. White works for 7 hours at his job, he earns \$87.50. When he works 12 hours, he earns \$150.00. Create the equation of a function to represent the linear relationship between the number of hours Mr. White works and the total amount of money he earns. Explain how you found your answer.

10. Mrs. Bethany has been offered two nursing jobs. Both jobs offer a signing bonus, and then an annual salary.
Job #1: After 3 years, she will have earned \$260,000. After 5 years, she will have earned \$400,000.

Job #2:



Which job offers the salary with the greater *y*-intercept? Explain what the *y*-intercept means.

Which job offers the salary with the greater rate of change? Explain what the rate of change means.

11. Write a real-world scenario that this graph would represent. Label the graph and give it a title.