

each function value. Show your work on a separate

2

10. $f\left(\frac{5}{8}\right)$ if $f(x) = 4x - \frac{1}{4}$ $2\frac{1}{4}$

Problems Higher Order Thinking

Problem If $f(-3) = -8$, write a function rule and find the function value for a negative, and a positive value of x .
 $f(x) = 2x - 2$; $f(0) = -2$, $f(-4) = -10$, $f(3) = 4$

Problems Write the function rule for each function.

b.

x	f(x)
-5	-9
-1	-5
3	-1
7	3

$f(x) = x - 4$

c.

x	y
-2	-3
1	3
3	7
5	11

$y = 2x + 1$

d.

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

$y = 2x - 1$

Problems If $f(x) = 4x - 3$ and $g(x) = 8x + 2$, find each

b. $g\{f(5)\}$ 138

c. $g\{f\{g(-4)\}\}$ -982

$g(-123)$
 $= 8(-123) + 2$
 $= -984 + 2$

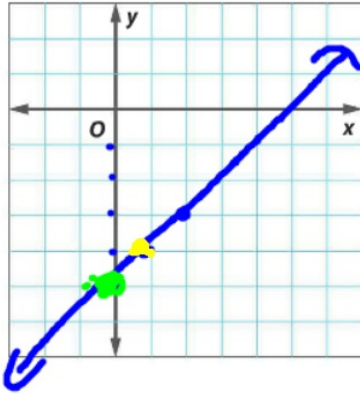
c. $g(-4)$
 $= 8(-4) + 2$
 $= -32 + 2$
 $= -30$

$f(-30)$

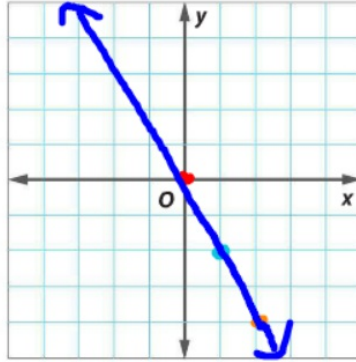
$= 4(-30) - 3$
 $= -120 - 3$
 $= -123$

Got It? Do these problems to find out.

b. $y = x - 5$



c. $y = -2x$



$$y = 1 - 5 = -4$$

$$\begin{array}{l} x = 1 \dots \\ y = -4 \end{array}$$

b.

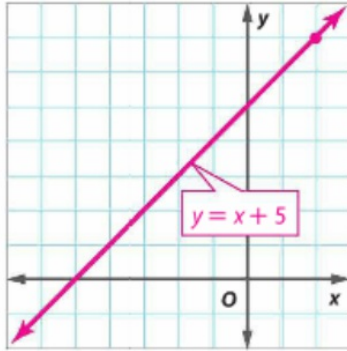
x	y
0	-5
1	-4
2	-3

c.

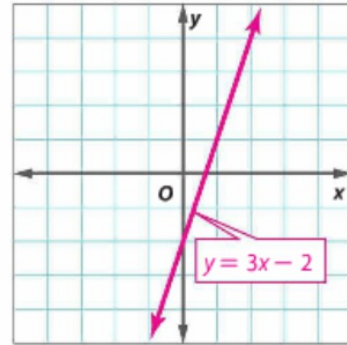
x	y
0	0
1	-2
2	-4

Graph each function. (Example 2)

1. $y = x + 5$



2. $y = 3x - 2$



3. A satellite cable company charges an installation fee of \$50 plus an additional

\$35.95 per month for service. (Examples 1, 3–5)

- a. Write a function to represent the the total cost of any number of months of service. $c = 50 + 35.95m$

3. A satellite cable company charges an installation fee of \$50 plus an additional \$35.95 per month for service. (Examples 1, 3–5)

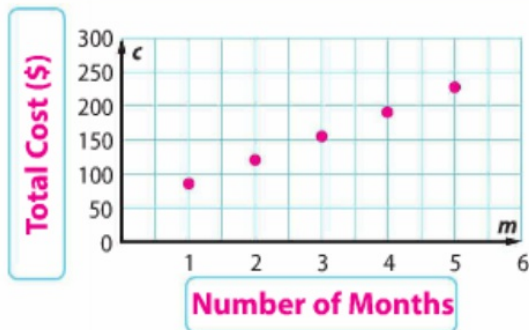
a. Write a function to represent the the total cost of any number of months of service. $c = 50 + 35.95m$

b. Make a function table to find the total cost for 1, 2, 3, 4, or 5 months.

c. Graph the function. Is the function continuous or discrete? Explain.

This situation is discrete because you cannot pay for a partial month of service.

m	$50 + 35.95m$	c
1	$50 + 35.95(1)$	85.95
2	$50 + 35.95(2)$	121.90
3	$50 + 35.95(3)$	157.85
4	$50 + 35.95(4)$	193.80
5	$50 + 35.95(5)$	229.75



d. Interpret the points graphed. **One month costs \$85.95, 2 months cost \$121.90, 3 months cost \$157.85, 4 months cost \$193.80, and 5 months cost \$229.75.**

Rate Yourself!

How well do you understand linear functions? Circle the image that applies.



Clear



Somewhat



Not So

4. **Building on the Essential Question** How can functions be used to solve real-world situations? **Sample answer:**

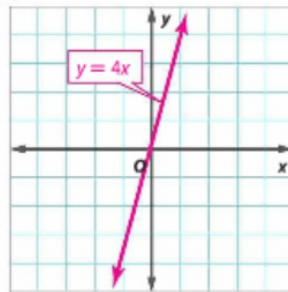
For more help, go to [Lesson 1.1](#) and access a Personal Learning Library.

Functions can be used to model real-world situations in which the data is discrete or continuous.

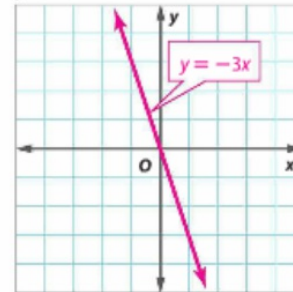
FOLDABLES Time to use

Graph each function. (Example 2)

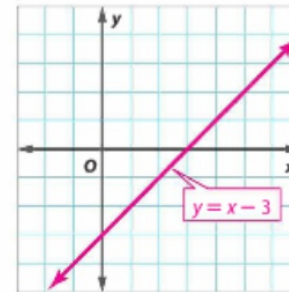
1. $y = 4x$



2. $y = -3x$



3. $y = x - 3$



4. **Financial Literacy** Manuel is saving money for college. He already has \$250. He plans to save another \$50 per month. (Examples 1, 3–5)

a. Write a function to represent his savings for any number of months. $s = 250 + 50m$

b. Make a function table to find his total savings for 2, 4, 6, 8 and 10 months.

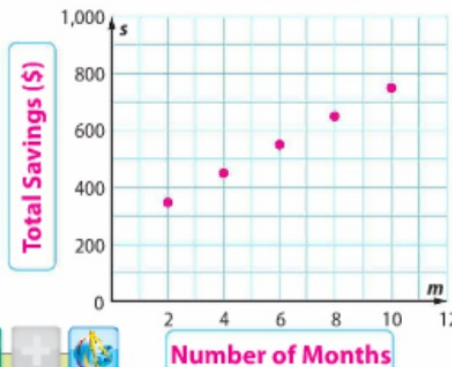
c. Graph the function. Is the function continuous or discrete? Explain. **discrete; You cannot find**

Manuel's total savings for part of a month.

d. Interpret the points graphed. **Manuel saved a total of \$350 in 2 months, \$450 in 4 months, \$550 in 6 months, \$650 in 8 months, and \$750 in 10 months.**

m	$250 + 50m$	s
2	$250 + 50(2)$	350
4	$250 + 50(4)$	450
6	$250 + 50(6)$	550
8	$250 + 50(8)$	650
10	$250 + 50(10)$	750

Manuel's Savings



5. **Copy and Solve** The table shows the cost to rent different items.

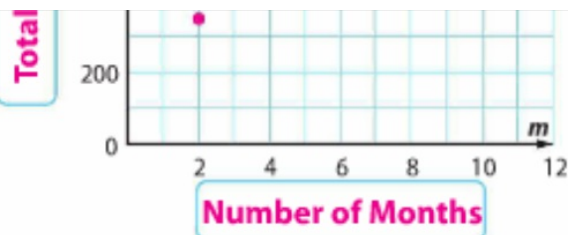
Item	Deposit (\$)	Cost per Hour (\$)
Mountain bike	15	4.25

a. Write a function to represent each situation.



5. **Copy and Solve** The table shows the cost to rent different items.

Item	Deposit (\$)	Cost per Hour (\$)
Mountain bike	15	4.25
Scooter	25	2.50



- a. Write a function to represent each situation.

bike: $c = 15 + 4.25h$; scooter: $c = 25 + 2.5h$

- b. On a separate piece of paper, make a function table to find the total cost to rent each item for 2, 3, 4, or 5 hours. **See Answer Appendix.**
- c. On a separate piece of grid paper, graph the functions on the same coordinate plane. Are the functions continuous or discrete? Explain. **See Answer Appendix for**

graph. Both situations are discrete because you cannot rent either piece of equipment for a partial hour.

- d. Will the mountain bike or the scooter cost more to rent for 8 hours?

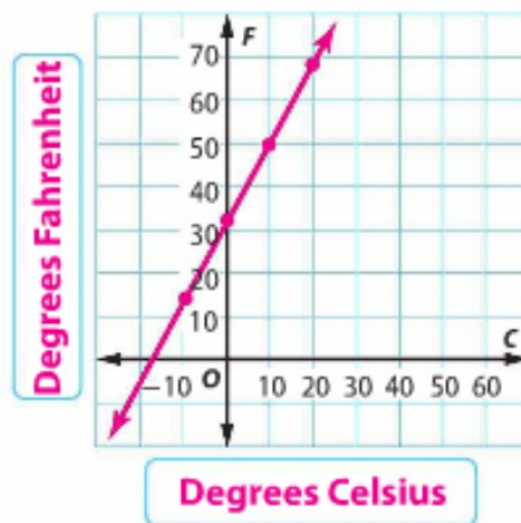
mountain bike

- e. How much is the cost to rent the mountain bike for 8 hours? **\$49**



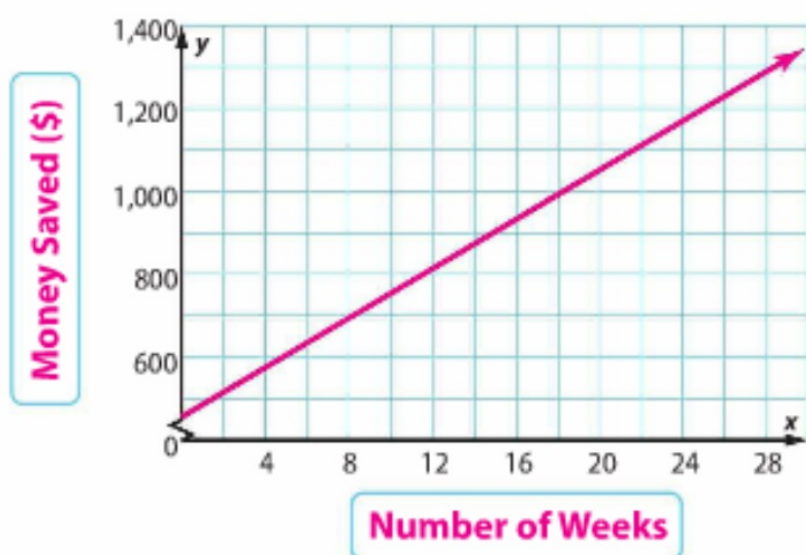
6. **CCSS Model with Mathematics** The formula $F = 1.8C + 32$ compares temperatures in degrees Celsius C to temperatures in degrees Fahrenheit F . Find four ordered pairs (C, F) that are solutions of the equation. Then graph the function.

Sample answer: $(0, 32)$, $(-10, 14)$, $(10, 50)$, $(20, 68)$



- 7 **Home** Drake is saving money to buy a new computer for \$1,200. He already has \$450 and plans to save \$30 a week. The function $y = 30x + 450$ represents the amount Drake has saved after x weeks. Graph the function to determine the number of weeks it will take Drake to save enough money to buy the computer.

25 weeks





H.O.T. Problems Higher Order Thinking

8. **CCSS Identify Structure** Explain why a linear function that is continuous has an infinite number of solutions. Then determine which of the following representations shows all the solutions of the function: a table, a graph, or an equation. Explain. **Sample answer: Since the function is continuous, an infinite number of values can be substituted for the domain. A table shows a finite number of solutions. An equation or a graph represent all the solutions of a function.**

9. **CCSS Persevere with Problems** Name the coordinates of four points that satisfy the linear function shown. Then give the function rule.
Sample answer: $(-2, -4), (0, -2), (2, 0), (4, 2); y = x - 2$

10. **CCSS Model with Mathematics** Write a set of four ordered pairs that represents a linear function. Then give the function rule.
Sample answer: $(1, 6), (2, 11), (3, 16), (4, 21); y = 5x + 1$

