Warm Up

For each function, find the value of y for $x = 0$, $x = 4$, and $x = -5$.

1. $y = 6x - 3$ $-3, 21, -33$

2. $y = 3.8x - 12$ $-12, 3.2, -31$

3. $y = 1.6x + 5.9$ $5.9, 12.3, -2.1$

Module 10-2

Essential ?

How can you use equations, tables, and graphs to represent relationships between two variables?

Standard

MCC8.F.4: Construct a function to model a linear relationship between two quantities.

video tutor

MCC8.F.4

1 EXAMPLE Generating Different Representations of Data

Lisa and Leon work after school at their uncle's store. The table shows the hours Lisa worked *x* and the hours Leon worked *y* each week for a month.

Lisa, *x*	3	4	6	8
Leon, *y*	5	6	8	10

A Write an equation from the data in the table.

Compare each output value with its corresponding input value.

Lisa, *x*	3	4	6	8	← input values
Leon, *y*	5	6	8	10	← output values

$5 - 3 =$ ☐ $\quad 6 -$ ☐ $=$ ☐ $\quad$ ☐ $-$ ☐ $=$ ☐ $\quad$ ☐ $-$ ☐ $=$ ☐

For each hour Lisa worked, Leon worked _____ more hours.

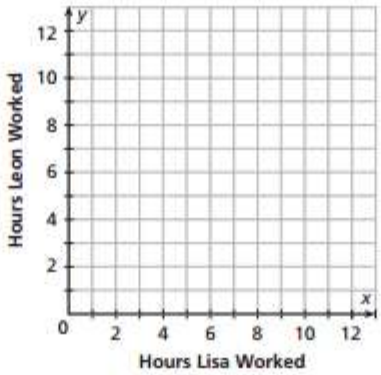
The equation is Leon = Lisa + ☐.

$y =$ ☐ $+$ ☐

B Make a graph of the data.

Write the input and output values as ordered pairs.

x	*y*	(*x*, *y*)
3	5	(3, 5)
4	6	(4, ☐)
6	8	(☐, ☐)
8	10	(☐, ☐)



Then plot the ordered pairs and connect the points with a line.

TRY THIS!

1a. Write an equation from the data in the table. Then write the input and output values as ordered pairs.

_____

x	0	1	2	3
y	0	3	6	9
(*x*, *y*)				

unit06/mod10/lesson02/exploration_core_lesson.pdf - Google Chrome

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REFLECT

1b. How can you use the graph to predict the number of hours Leon will work when Lisa works 10 hours?

_____

Additional Example 1: Using Equations to Generate Different Representations of Data

The height *h* of an airplane *s* seconds from take-off is $h = 12s$. Make a table and sketch a graph of the equation.

Equation
$h = 12s$

An equation shows how the variables are related.

Helpful Hint

The number of seconds *s* is the input value. The depth *d* is the output value.

Additional Example 1 Continued

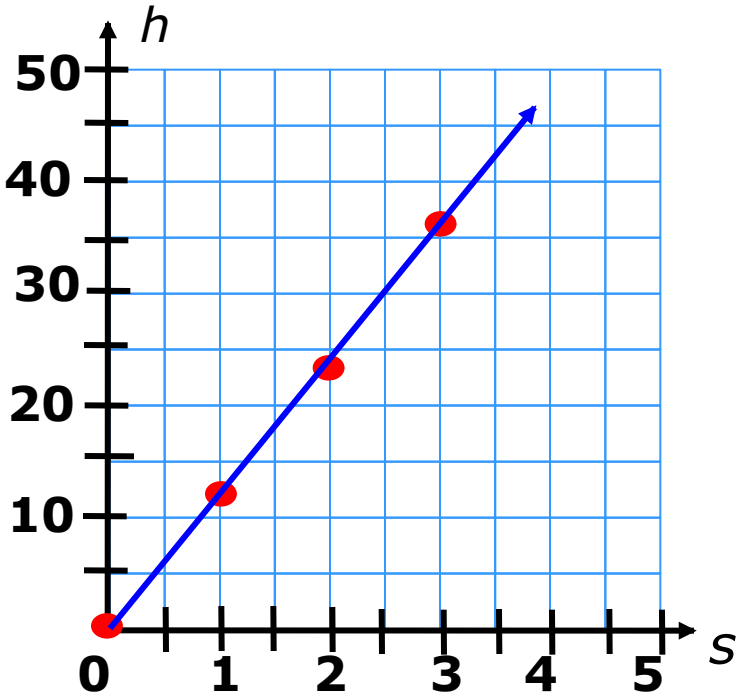
Table

s	*h*
0	0
1	12
2	24
3	36

A table identifies values that make the function true.

Additional Example 1 Continued

Graph

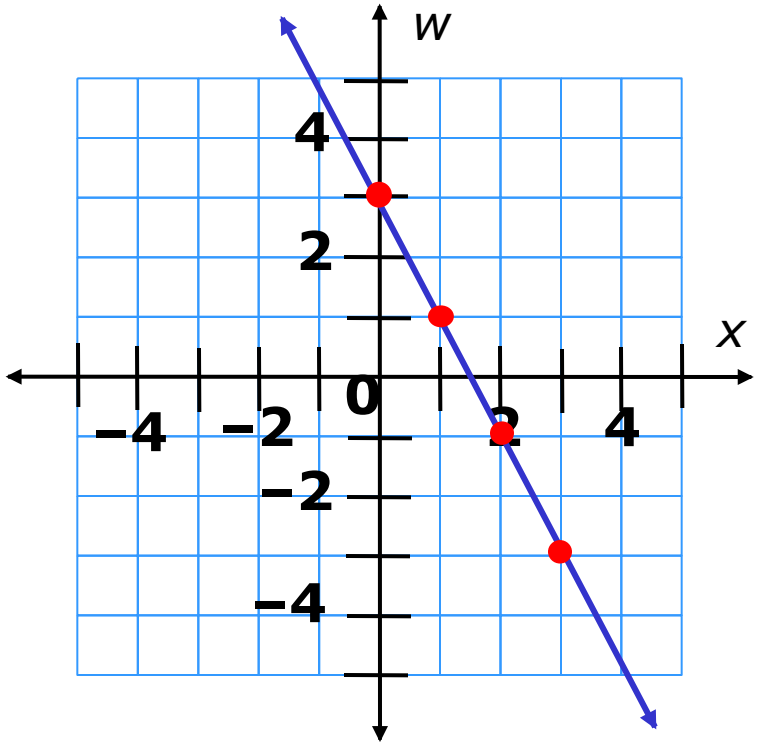


A graph is a visual image of the values in the table. In this case, the graph is continuous, so draw a line through the points.

Lesson Quiz: Part I

1. Make a table and sketch the graph of $w = -2x + 3$.

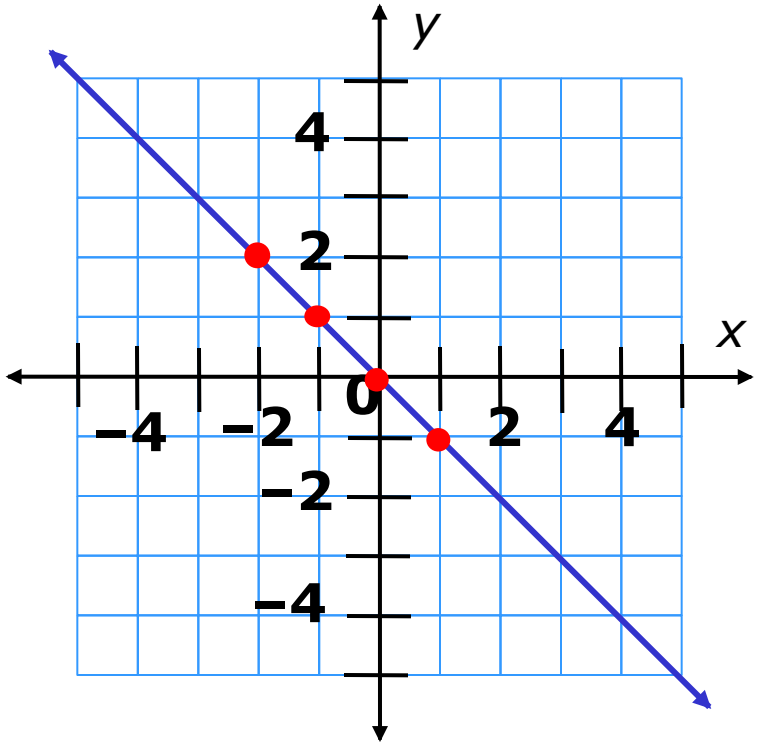
x	w
0	3
1	1
2	−1
3	−3



Lesson Quiz: Part II

2. Use the table to sketch a graph and write an equation. $y = -x$

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

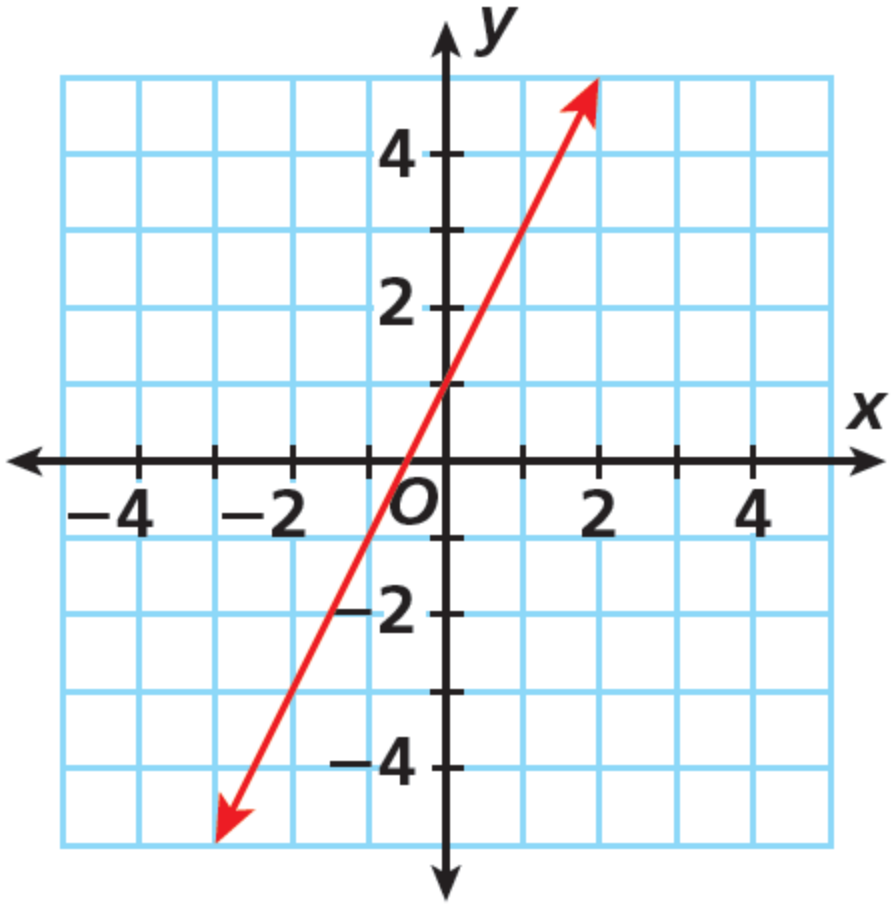


Lesson Quiz: Part III

3. Use the graph to make a table and to write an equation.

$y = 2x + 1$

x	y
0	1
1	3
2	5
3	7

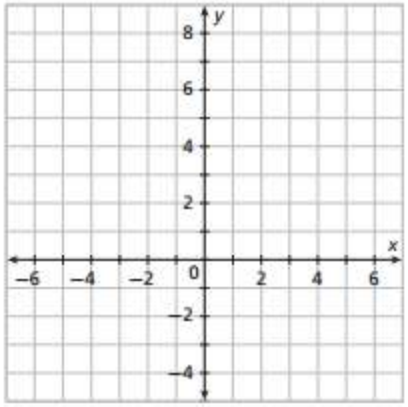


PRACTICE

Complete each table to write an equation. Use the same grid to graph each equation.

1.

x	0	1	3	5
y	4	5	7	9
(x, y)				

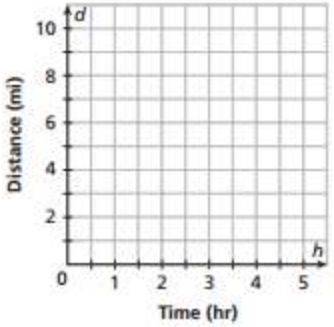


2.

x	0	−1	−2	−3
y	0	2	4	6
(x, y)				

3. Lupe is walking in a walkathon. The distance she walks is represented by the equation $d = 1.5h$, where h is the number of hours she walks and 1.5 is how many miles she walks in an hour. Make a table and sketch a graph of the data.

h	0	2	4	6
d				
(h, d)				



4. **Conjecture** Why did you not graph the equation $d = 1.5h$ in Quadrant IV?

5. Over 5 days, the temperatures in Chicago, in °F, were 0, −2, −3, −1, and 2. On those same days, the temperatures in Detroit were three degrees warmer. Write an equation and sketch a graph of the data.