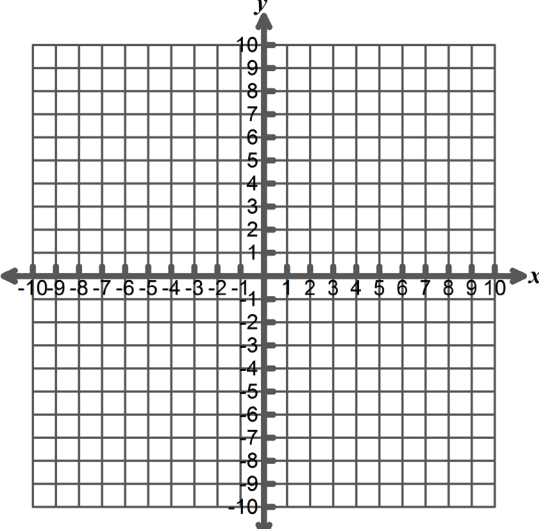


Multiple Representations

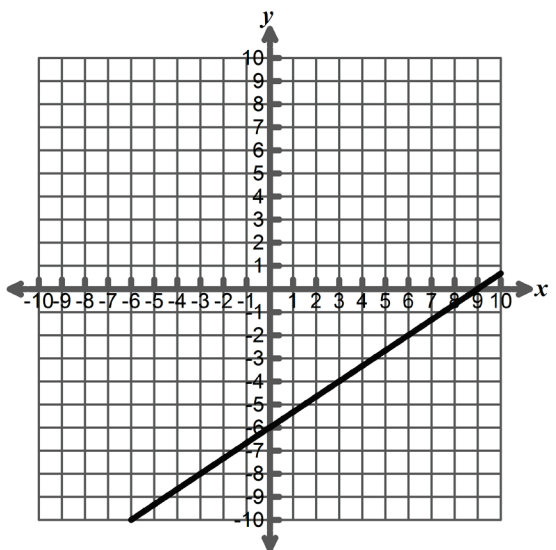
Use the information given to complete the other representations of the linear function. Then answer the questions at the bottom of the page.

Linear Function 1

<p>Equation</p> <p style="text-align: center;">$3x + y = 4$</p> <p>Write the equation in slope-intercept form.</p>	<p>Table</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 50px;">x</th> <th style="width: 50px;">y</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	x	y										
x	y												
<p>Graph</p> <p>slope = _____ y-intercept = _____</p> 	<p>Verbal</p> <p>The graph of the function contains the point _____ and when the value of x increases by 1 unit, the value of y decreases by _____ units.</p>												

	Circle the representation you used to answer this question.			
Is the slope of the line positive or negative?	Equation	Table	Graph	Verbal
When the x-value increases by 2, what happens to the y-value?	Equation	Table	Graph	Verbal
What is the value of x when y is -5?	Equation	Table	Graph	Verbal

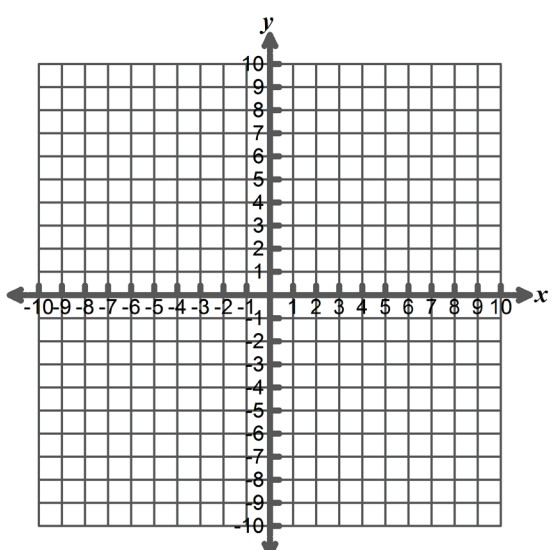
Linear Function 2

<p>Equation</p>	<p>Table</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #cccccc;"> <th style="padding: 5px;">x</th> <th style="padding: 5px;">y</th> </tr> </thead> <tbody> <tr><td style="height: 20px;"> </td><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td><td style="height: 20px;"> </td></tr> <tr><td style="height: 20px;"> </td><td style="height: 20px;"> </td></tr> </tbody> </table>	x	y										
x	y												
<p>Graph</p> <p style="margin-left: 40px;">slope = _____ y-intercept = _____</p> <div style="text-align: center;">  </div>	<p>Verbal</p> <p>The graph of the function contains the point _____ and when the value of x increases by _____ units, the value of y increases by _____ units.</p>												

Circle the representation you used to answer this question.

What is the value of the x -intercept?	Equation Table Graph Verbal
What is the standard form of the equation?	Equation Table Graph Verbal
What is the value of y when x is 60?	Equation Table Graph Verbal

Linear Function 3

<p>Equation</p> 	<p>Table</p> <table border="1" style="margin: 20px auto; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #cccccc;"> <th style="padding: 5px;">x</th> <th style="padding: 5px;">y</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">-9</td><td style="padding: 5px;">14</td></tr> <tr><td style="padding: 5px;">-6</td><td style="padding: 5px;">10</td></tr> <tr><td style="padding: 5px;">-3</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td></tr> <tr><td style="padding: 5px;">3</td><td style="padding: 5px;">-2</td></tr> <tr><td style="padding: 5px;">6</td><td style="padding: 5px;">-6</td></tr> </tbody> </table>	x	y	-9	14	-6	10	-3		0	2	3	-2	6	-6
x	y														
-9	14														
-6	10														
-3															
0	2														
3	-2														
6	-6														
<p>Graph</p> <p style="margin-left: 40px;">slope = _____ y-intercept = _____</p> <div style="text-align: center; margin: 20px 0;">  </div>	<p>Verbal</p> <p>The graph of the function contains the point _____ and when the value of x increases by _____ units, the value of y _____ by _____ units.</p>														

Circle the representation you used to answer this question.

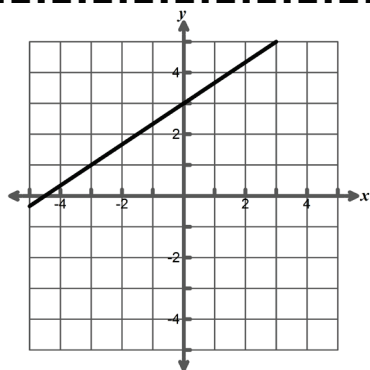
What is the value of y when x is -120 ?	Equation	Table	Graph	Verbal
What is the value of x when y is 10 ?	Equation	Table	Graph	Verbal

Meet Your Match Cards

Cut along the dotted lines and distribute one card to each student. Eight different sets of four cards are provided.

Card Set A

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

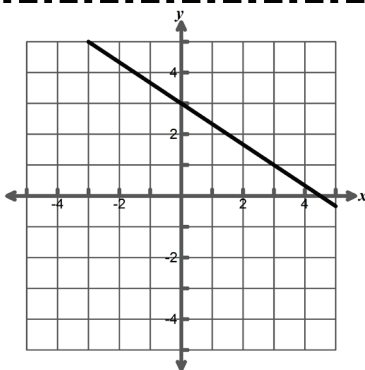


$$y = \frac{2}{3}x + 3$$

The graph of the function is a line that passes through the point $(0, 3)$ with a slope of $\frac{2}{3}$.

Card Set B

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

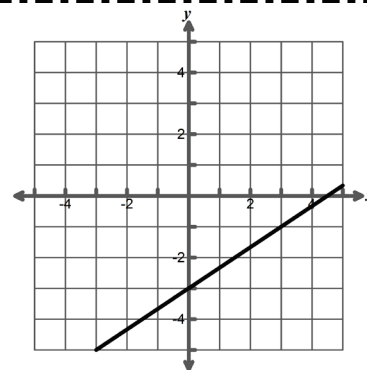


$$y = -\frac{2}{3}x + 3$$

The graph of the function contains the points $(-3, 5)$, $(0, 3)$, and $(6, -1)$.

Card Set C

x	y
-21	-17
-15	-13
-3	-5
3	-1
9	3

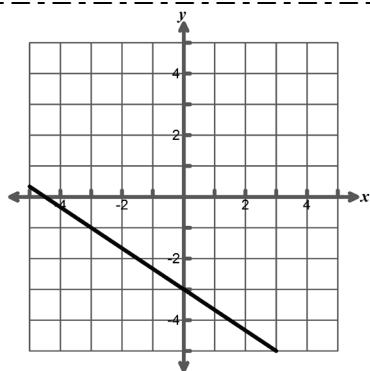


$$y = \frac{2}{3}x - 3$$

The graph of the function contains the point $(0, -3)$ and when the value of x increases by 3 units, the value of y increases by 2 units.

Card Set D

x	y
-12	5
-6	1
3	-5
6	-7
12	-11

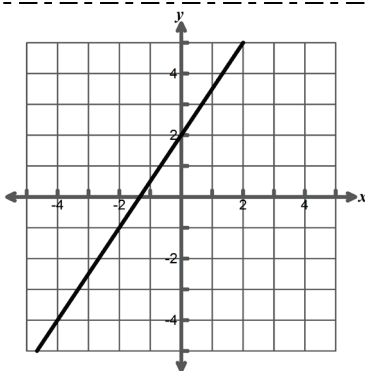


$$y = -\frac{2}{3}x - 3$$

The graph of the function contains the point $(0, -3)$ and when the value of x increases by 3 units, the value of y decreases by 2 units.

Card Set E

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

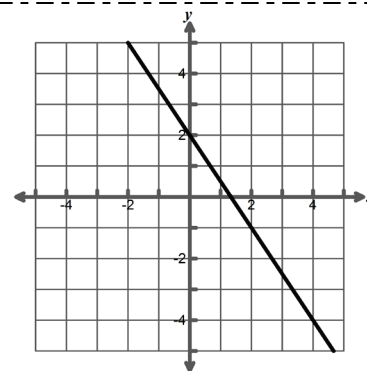


$$y = \frac{3}{2}x + 2$$

The graph of the function is a line that passes through the point $(0, 2)$ with a slope of $\frac{3}{2}$.

Card Set F

x	y
-4	8
-2	5
1	0.5
4	-4
8	-10

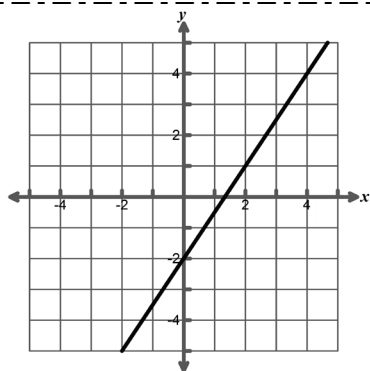


$$y = -\frac{3}{2}x + 2$$

The graph of the function contains the points $(-1, 3.5)$, $(0, 2)$, and $(3, -2.5)$.

Card Set G

x	y
-10	-17
-6	-11
-2	-5
2	1
6	7

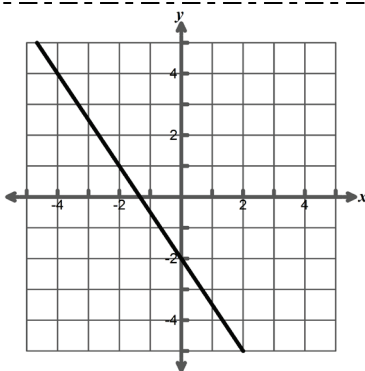


$$y = \frac{3}{2}x - 2$$

The graph of the function contains the point (0, -2) and when the value of x increases by 2 units, the value of y increases by 3 units.

Card Set H

x	y
-12	16
-6	7
-2	1
2	-5
4	-8

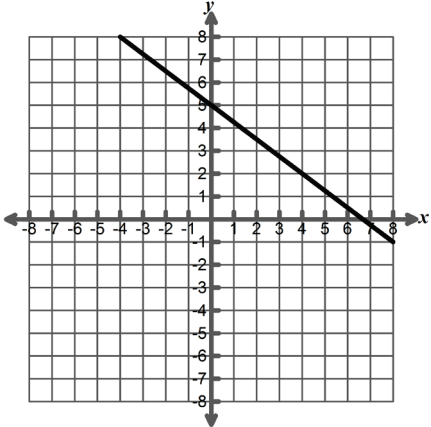


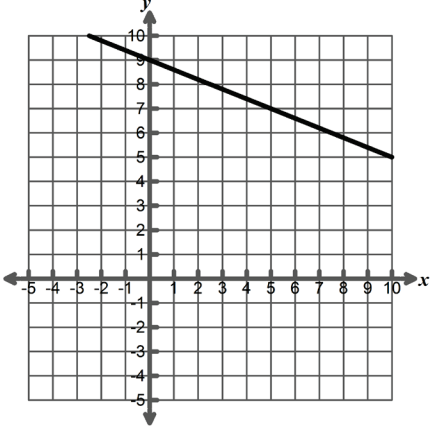
$$y = -\frac{3}{2}x - 2$$

The graph of the function contains the point (0, -2) and when the value of x increases by 2 units, the value of y decreases by 3 units.

Each Way

Use the given representation of the linear function to determine the requested information.

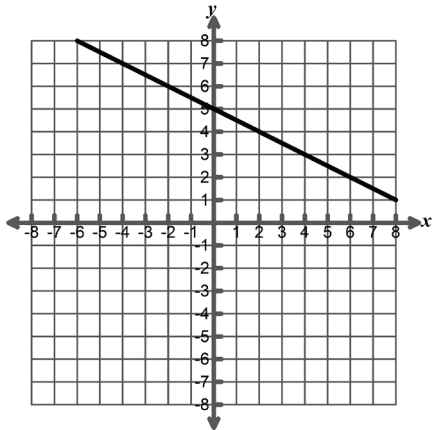
Given	Determine . . .	Answer
<p>1. The linear function</p> $y = \frac{5}{4}x - 3$	<p>where the given function intersects the linear function graphed below</p> 	

Given	Determine . . .	Answer
<p>2. The graph of the linear function</p> 	<p>the x-coordinate for the point (_____, 243).</p>	

Given	Determine . . .	Answer
<p>3. The linear function</p> $y = \frac{5}{3}x - 4$	<p>the range values that correspond with the following domain: $\{-5, -3, -1, 1, 3\}$.</p>	

Given	Determine . . .	Answer										
<p>4. The linear function represented by the table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>735</td> </tr> <tr> <td>35</td> <td>1035</td> </tr> <tr> <td>50</td> <td>1485</td> </tr> <tr> <td>75</td> <td>2235</td> </tr> </tbody> </table>	x	y	25	735	35	1035	50	1485	75	2235	<p>the y-intercept of the given function.</p>	
x	y											
25	735											
35	1035											
50	1485											
75	2235											

Given	Determine . . .	Answer
<p>5. The linear function that passes through the point $(-3, 1.5)$ and when the value of x increases by one unit, the value of y decreases by 3 units.</p>	<p>if the line $-9x + 3y = 15$ is parallel to the given line.</p>	

Given	Determine . . .	Answer
<p>6. The linear function $x + 2y = 5$</p>	<p>a description of the error made when graphing the given line.</p> 	

Name: _____

Reps Notes

Table

-
-
-
-

Graph

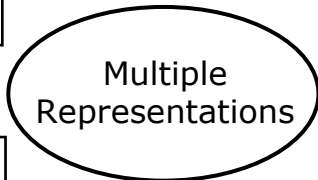
-
-
-
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Equation

-
-
-
-

Verbal

-
-
-
-



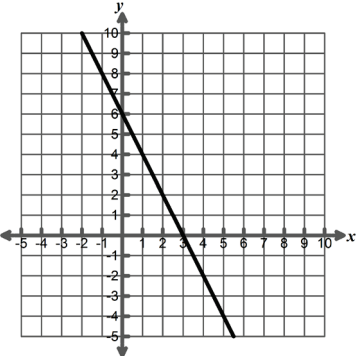
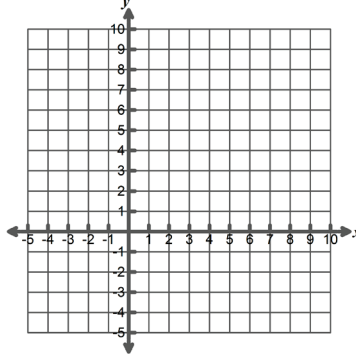
Discussion Questions

1. What information could easily be found using this representation?
2. What information would need to be given to make this representation easy to create?
3. When would this representation not be the best choice?
4. When would this representation be the best choice?

Name: _____

Changes

The first row of each table contains the original function. Examine the four representations of the original function, and then complete the representations in the second row by applying the change indicated. Finally, write a statement comparing the original representation and the new representation.

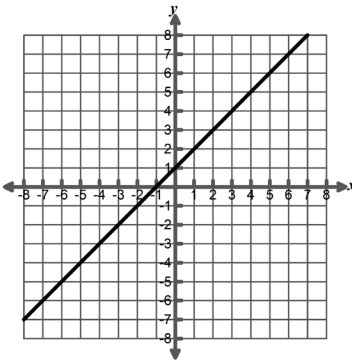
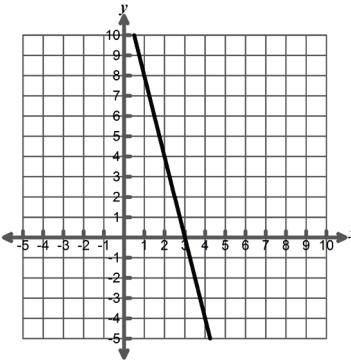
	Table	Graph	Verbal	Equation										
Original Function A	<table border="1" style="margin: auto;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td>6</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>3</td><td>0</td></tr> <tr><td>6</td><td>-6</td></tr> </tbody> </table>	x	y	0	6	2	2	3	0	6	-6		<p>The line has a y-intercept of (0, 6) and when the value of x increases by one unit, the value of y decreases by 2 units.</p>	$y = -2x + 6$
x	y													
0	6													
2	2													
3	0													
6	-6													
The new representations are . . .														
New Function	<p>All of the y-values are multiplied by 2.</p> <table border="1" style="margin: auto;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>0</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>6</td><td></td></tr> </tbody> </table>	x	y	0		2		3		6				
x	y													
0														
2														
3														
6														
Compare the new representation to the original														
Comparison														

	Graph	Table	Verbal	Equation										
Original Function B		<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>-5</td> </tr> <tr> <td>0</td> <td>-2</td> </tr> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>4</td> </tr> </tbody> </table>	x	y	-1	-5	0	-2	1	1	2	4	<p>The line has a y-intercept of (0, -2) and when the value of x increases by one unit, the value of y increases by 3 units.</p>	$y = 3x - 2$
x	y													
-1	-5													
0	-2													
1	1													
2	4													
The new representations are . . .														
New Function	<p>The line is shifted up 3 units.</p>	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td></td> </tr> <tr> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> </tbody> </table>	x	y	-1		0		1		2			
x	y													
-1														
0														
1														
2														
Compare the new representation to the original														
Comparison														

	Verbal	Table	Graph	Equation										
Original Function C	The line has a y -intercept of $(0, 4)$ and when the value of x increases by one unit, the value of y increases by 1 unit.	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>3</td> </tr> <tr> <td>0</td> <td>4</td> </tr> <tr> <td>1</td> <td>5</td> </tr> <tr> <td>2</td> <td>6</td> </tr> </tbody> </table>	x	y	-1	3	0	4	1	5	2	6		$y = x + 4$
x	y													
-1	3													
0	4													
1	5													
2	6													
The new representations are . . .														
New Function	<p>The y-intercept is decreased by 3 units.</p> <p>New description: The line has a y-intercept of $(0, 1)$ and when the value of x increases by one unit, the value of y increases by 1 unit.</p>	<table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td></td> </tr> <tr> <td>0</td> <td></td> </tr> <tr> <td>1</td> <td></td> </tr> <tr> <td>2</td> <td></td> </tr> </tbody> </table>	x	y	-1		0		1		2			
x	y													
-1														
0														
1														
2														
Compare the new representation to the original														
Comparison														

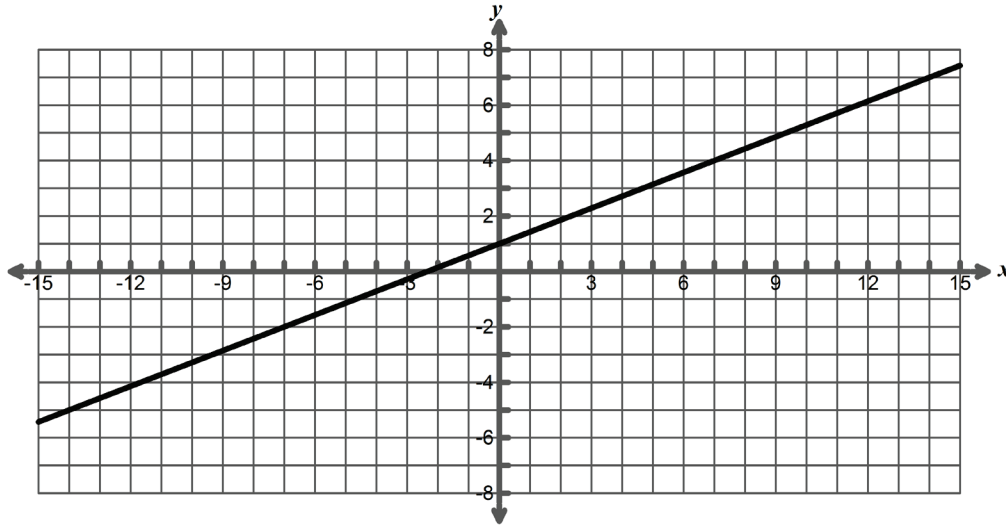
Changes Cards*

Cut along the dotted lines.

$y = x + 1$	$y = 3x + 1$	$y = -4x + 12$
The y -values in the new table are twice the y -values in the original. The x -values did not change.	The new graph is steeper but still has the same x -intercept.	Both the slope and the y -intercept have been doubled in the new description.
The new graph is the same steepness, but the y -intercept is moved up three units	The line has a y -intercept of $(0,1)$ and when the value of x increases by one unit, the value of y increases by 3 units.	The new graph is the same steepness, but the y -intercept is moved down three units.
The y -values in the new table are three greater than the y -values in the original. The x -values did not change.	The y -intercept in the new function has increased by three, but the rate of change is the same.	The slope remained the same and the y -intercept increased by three in the new function.
The line has a y -intercept of $(0,12)$ and when the value of x increases by one unit, the value of y decreases by 4 units.	The slope remained the same and the y -intercept decreased by three in the new function.	Both the slope and the y -intercept have been doubled in the new function.
The y -values in the new table are three less than the y -values in the original. The x -values did not change.	The y -intercept in the new function has decreased by three, but the rate of change is the same.	
		

Evaluate: Representations of Linear Functions

1. Which equation best represents the line graphed below?



- A** $3x - 7y = -7$
- B** $3x + 7y = 7$
- C** $7x - 3y = -7$
- D** $7x + 3y = 7$
2. Which of the following is not a correct description of the graph of the function $y = -\frac{2}{3}x + 6$?
- A** The graph of the function contains the points $(-3, 8)$, $(3, 4)$, and $(6, 2)$.
- B** The graph of the function is a line that passes through $(0, 6)$ with a slope of $-\frac{2}{3}$.
- C** On the graph of the function when the x -value increases by 3 units the y value decreases by 2 units.
- D** The graph of the function contains the points $(-6, -2)$, $(3, -8)$, and $(9, -12)$.

3. Which table identifies points on the line defined by the equation $2y - 6x = 2$?

A

x	y
-5	-14
-3	-8
1	5
4	10
8	25

B

x	y
-7	-20
-4	-11
3	10
5	16
9	28

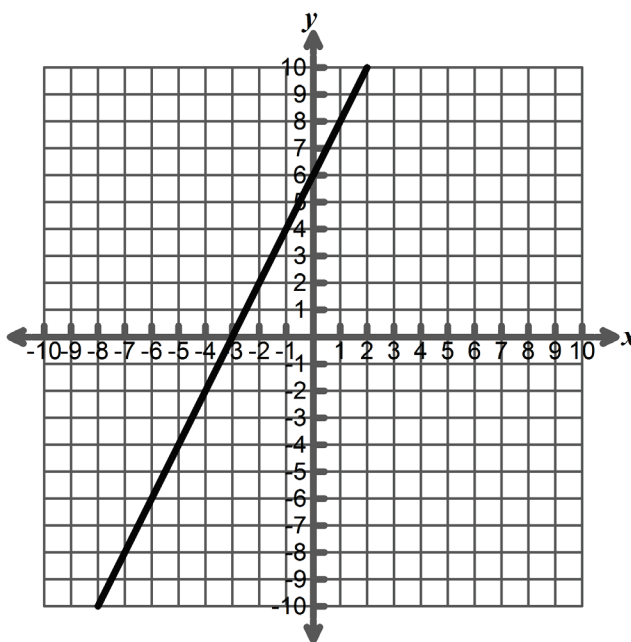
C

x	y
-6	-17
-2	-5
2	6
6	16
8	25

D

x	y
-4	-11
-1	-3
2	10
7	25
9	28

4. Which table best describes points on the line graphed below?



A

x	y
-7	-8
-5	-4
-2	2
1	8
2	10

B

x	y
-8	-10
-6	-3
-4	-2
-1	7
1	8

C

x	y
-7	-8
-4	-1
-1	5
0	6
1	8

D

x	y
-8	-10
-5	-4
-2	4
1	9
2	10