



**THIRD SPACE  
LEARNING**

# Linear Graphs Worksheet

Algebra

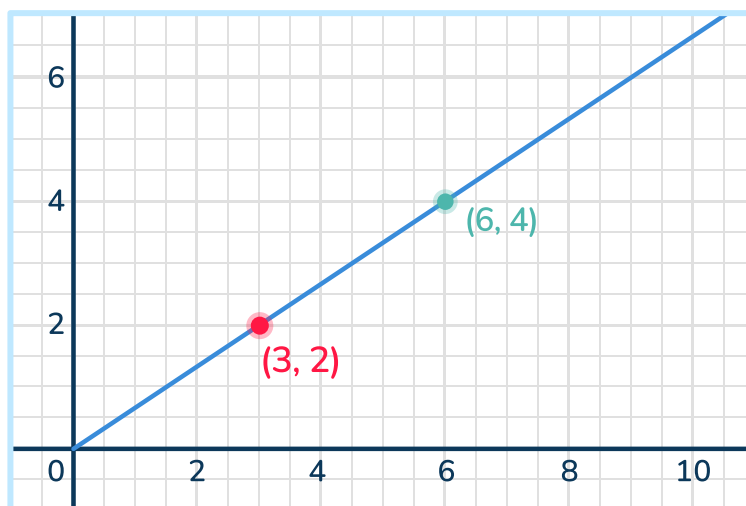
Grades 6 to 8

## Skill Questions

Name: .....

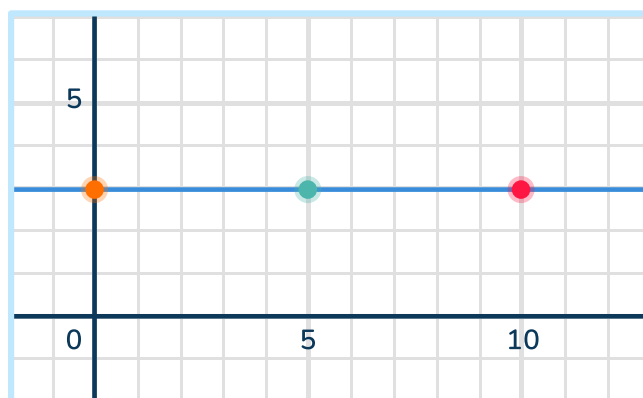
Date: .....

- 1 The graph below represents a proportional relationship. What is the unit rate?



Answer

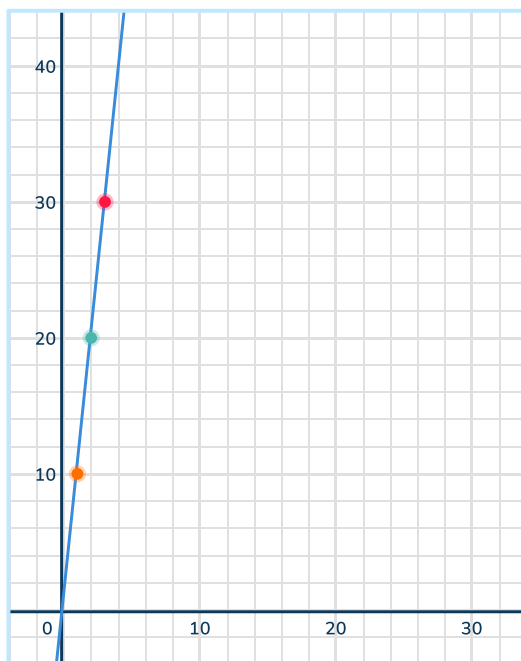
- 2 Does the graph below show a proportional relationship? Explain.



Answer

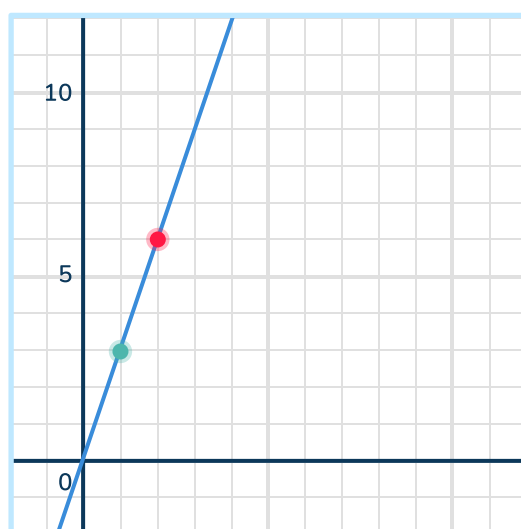
## Linear Graphs Worksheet | Grades 6 to 8

- 3 A garden hose fills a swimming pool at a rate of 10 gallons of water per minute, represented by the graph below. What do the points (2, 20) and (3, 30) represent?



Answer

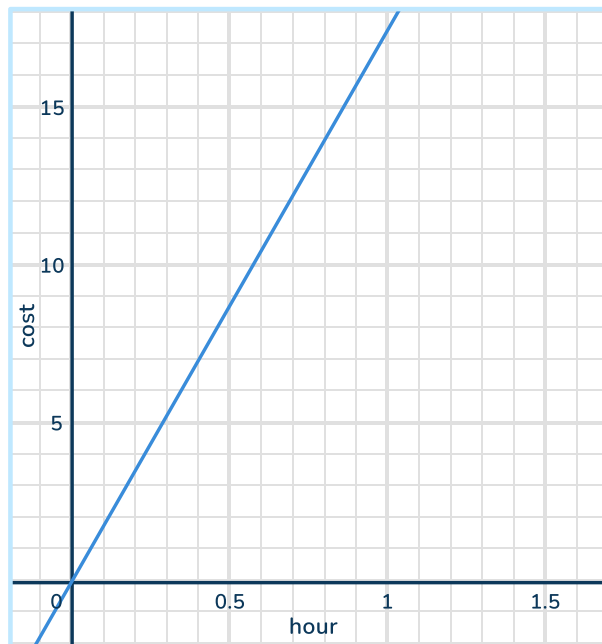
- 4 The graph represents a proportional relationship. What is the equation that represents this relationship?



Answer

## Linear Graphs Worksheet | Grades 6 to 8

- 5 The equation,  $y = 25x$ , is what Autoshop A charges customers for labor per hour. The graph below represents a proportional relationship and the cost of labor per hour for Autoshop B. Who charges more per hour?



Answer

- 6 Does the table below represent a proportional relationship?

$x$	0	2	4	6
$y$	0	1	2	3

Answer

- 7 Does the table below represent a proportional relationship?

$x$	0	1	2	3
$y$	2	3	4	5

Answer

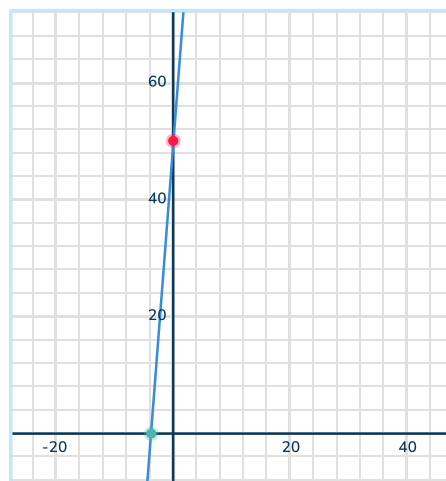
## Linear Graphs Worksheet | Grades 6 to 8

- 8 Determine the constant of variation from the table below.

$x$	0	3	6
$y$	0	1	2

Answer

- 9 Sarah earns \$10 per hour working at a grocery store. She starts with \$50 in her pocket. The graph below represents this situation. What does the  $y$ -intercept of the graph represent and what does the slope represent?



Answer

- 10 A shipping company charges \$20 plus \$2 per pound for shipping packages. The graph below represents this situation. What does the  $y$ -intercept and slope of the graph represent?



Answer

## Applied Questions

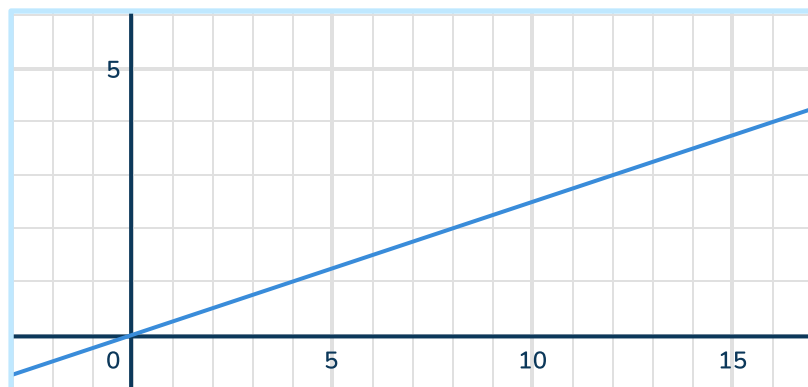
**11** The graph below represents direct variation.

a) Use the graph to find the constant of variation.

*Answer*

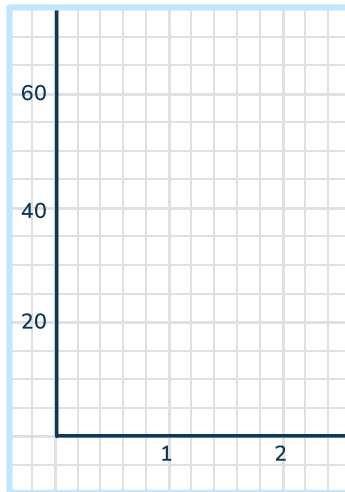
b) Write the equation of direct variation.

*Answer*



**12** A train travels at a constant speed of 60 miles per hour.

a) Create a graph to represent the distance traveled by the train over time.



b) Write an equation representing the line.

*Answer*

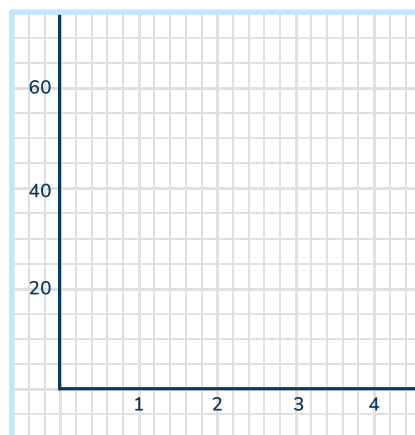
c) If the train has been traveling for 3 hours, how far has it traveled?

*Answer*

---

**13** A company sells t-shirts for \$15 each.

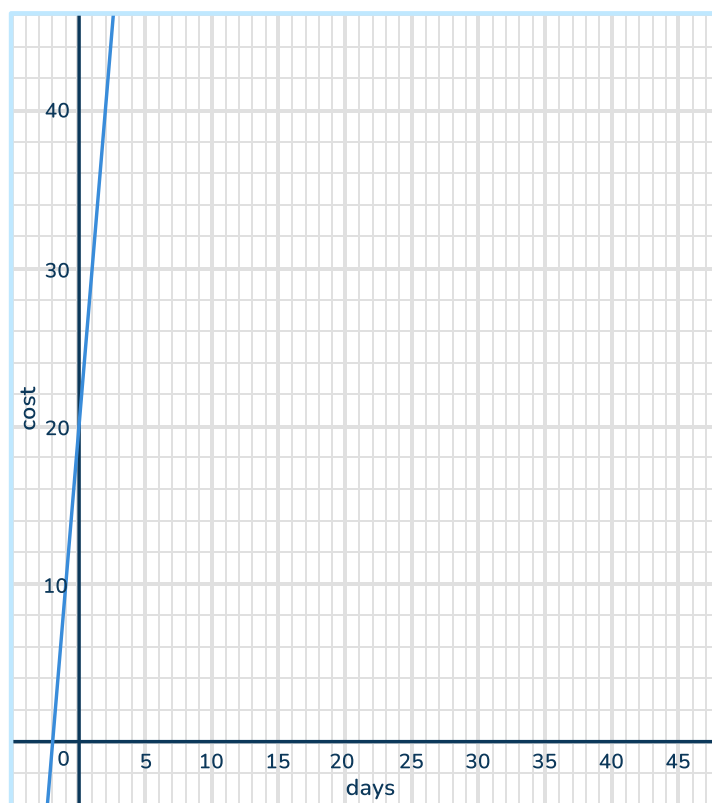
a) Create a graph to represent the revenue earned by the company based on the number of t-shirts sold.



b) Use the graph to find out how the amount for 4 t-shirts.

*Answer*

14 The graph below represents what a car rental charges.



a) What is the initial fee the company charges?

Answer

b) What is the rate that the company charges per day?

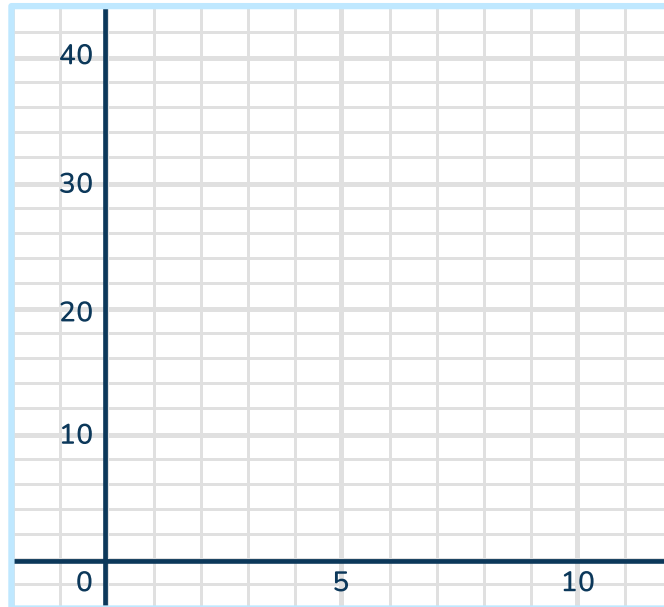
Answer

c) Write the equation that represents the situation.

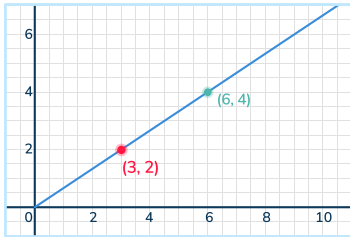
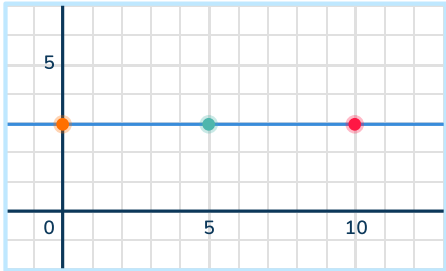
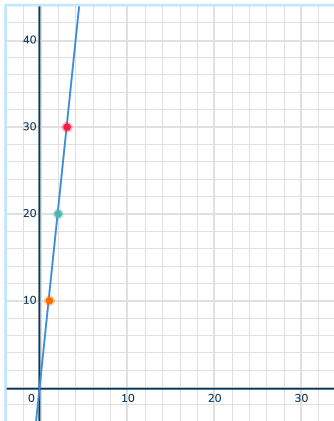
Answer

**15** Create your own linear graph that represents the following situation.

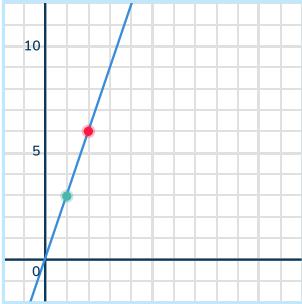
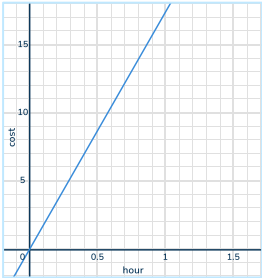
Cara has \$12 saved and takes a waitressing job that pays \$8 an hour.



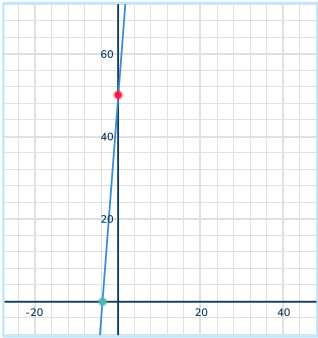
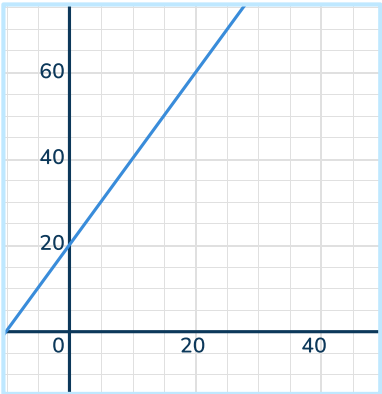
# Answers

Question number	Question	Answers	Standard
1	<p>The graph below represents a proportional relationship. What is the unit rate?</p> 	<p>Comparing <math>y</math> to <math>x</math>, <math>4</math>  <math>\frac{2}{3} = \frac{4}{6}</math>                      The unit rate is <math>\frac{2}{3}</math></p>	<p>6.EE.C.9 7.RP.A.2.b</p>
2	<p>Does the graph below show a proportional relationship? Explain.</p> 	<p>Comparing the points (0, 3), (5, 3), (10,3) as ratios,  <math>\frac{y}{x}, \frac{3}{0} \neq \frac{3}{5} \neq \frac{3}{10}</math> since the ratio between the points is not equal (proportional) the graph does not represent a proportional relationship.</p>	<p>7.RP.A.2.b</p>
3	<p>A garden hose fills a swimming pool at a rate of 10 gallons of water per minute, represented by the graph below. What do the points (2, 20) and (3, 30) represent?</p> 	<p>The point (2,20) means that after 2 minutes there is 20 gallons of water in the pool. The point (3,30) means that after 3 minutes there is 30 gallons of water in the pool.</p>	<p>7.RP.A.2.d</p>

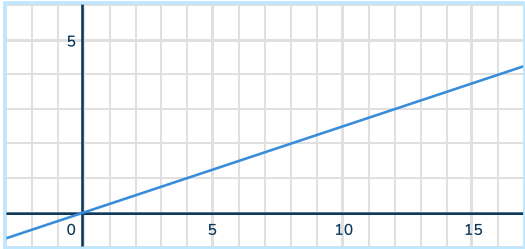
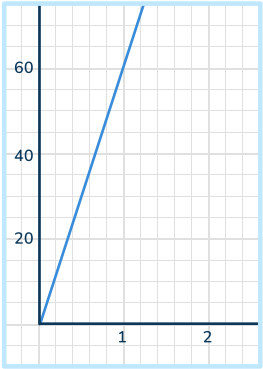
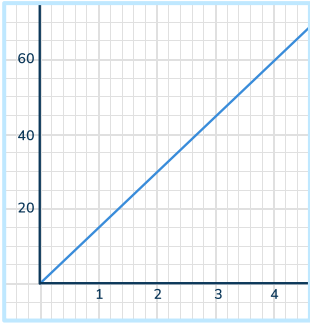
# Linear Graphs Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard										
4	<p>The graph represents a proportional relationship. What is the equation that represents this relationship?</p> 	$y = 3x$	6.EE.C.9 7.RP.A.2d										
5	<p>The equation, <math>y = 25x</math>, is what Autoshop A charges customers for labor per hour. The graph below represents a proportional relationship and the cost of labor per hour for Autoshop B. Who charges more per hour?</p> 	Autoshop A charges more because the constant of proportionality is 25. The constant of proportionality for Autoshop B is 18 meaning that it costs \$18 an hour.	7.RP.A.2d										
6	<p>Does the table below represent a proportional relationship?</p> <table border="1" data-bbox="392 1559 815 1688"> <tr> <td><math>x</math></td> <td>0</td> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td><math>y</math></td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	$x$	0	2	4	6	$y$	0	1	2	3	Yes, it represents a proportional relationship because the points form a line that goes through the origin.	7.RP.A.2d
$x$	0	2	4	6									
$y$	0	1	2	3									
7	<p>Does the table below represent a proportional relationship?</p> <table border="1" data-bbox="392 1859 815 1989"> <tr> <td><math>x</math></td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><math>y</math></td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	$x$	0	1	2	3	$y$	2	3	4	5	No the relationship is not proportional. When graphed, the points form a line, but it does not contain the origin so it cannot be a proportional relationship.	7.RP.A.2d
$x$	0	1	2	3									
$y$	2	3	4	5									

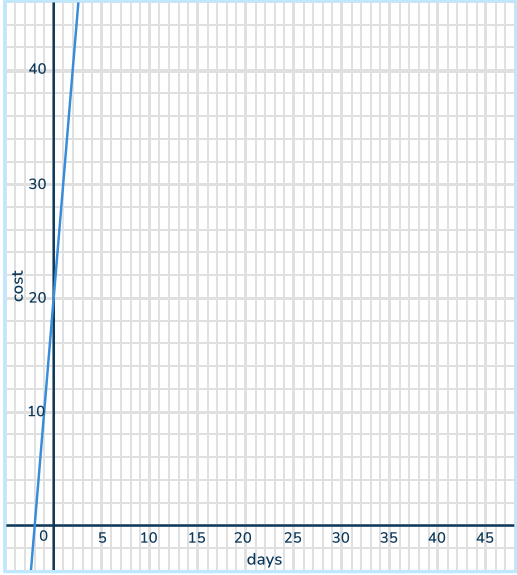
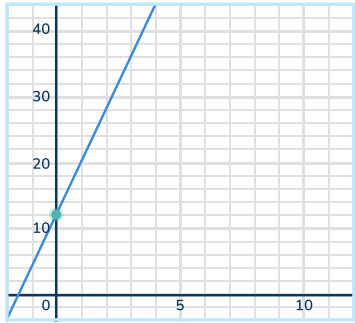
# Linear Graphs Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard								
8	<p>Determine the constant of variation from the table below.</p> <table border="1" data-bbox="389 474 820 609"> <tr> <td><math>x</math></td> <td>0</td> <td>3</td> <td>6</td> </tr> <tr> <td><math>y</math></td> <td>0</td> <td>1</td> <td>2</td> </tr> </table>	$x$	0	3	6	$y$	0	1	2	<p>The constant of variation is <math>\frac{1}{3}</math>.</p>	7.RP.A.2d
$x$	0	3	6								
$y$	0	1	2								
9	<p>Sarah earns \$10 per hour working at a grocery store. She starts with \$50 in her pocket. The graph below represents this situation. What does the <math>y</math>-intercept of the graph represent and what does the slope represent?</p> 	<p>The graph is a straight line with a <math>y</math>-intercept of \$50 and a slope of \$10. The <math>y</math>-intercept represents the initial amount of money Sarah has before she starts working. The slope represents the constant rate of pay she receives which is \$10 per hour.</p>	8.EE.B.5								
10	<p>A shipping company charges \$20 plus \$2 per pound for shipping packages. The graph below represents this situation. What does the <math>y</math>-intercept and slope of the graph represent?</p> 	<p>The <math>y</math>-intercept represents the flat fee of \$20 and the slope represents the rate of \$2 per pound for each package.</p>	8.EE.B.5								

# Linear Graphs Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
11	<p>The graph below represents direct variation.</p> <p>a) Use the graph to find the constant of variation.</p> <p>b) Write the equation of direct variation.</p> 	<p>a) Constant of variation <math>= \frac{1}{4}</math></p> <p>b) <math>y = \frac{1}{4}x</math></p>	7.RP.A.2d
12	<p>A train travels at a constant speed of 60 miles per hour.</p> <p>a) Create a graph to represent the distance traveled by the train over time.</p> <p>b) Write an equation representing the line.</p> <p>c) If the train has been traveling for 3 hours, how far has it traveled?</p>	<p>a) </p> <p>b) <math>y = 60x</math></p> <p>c) 180 miles</p>	6.EE.C.9 7.RP.A.2d
13	<p>A company sells t-shirts for \$15 each.</p> <p>a) Create a graph to represent the revenue earned by the company based on the number of t-shirts sold.</p> <p>b) Use the graph to find out how the amount for 4 t-shirts.</p>	<p>a) </p> <p>b) \$60</p>	6.EE.C.9 7.RP.A.2d

# Linear Graphs Worksheet | Grades 6 to 8 | Answers

Question number	Question	Answers	Standard
14	<p>The graph below represents what a car rental charges.</p>  <p>a) What is the initial fee the company charges?            b) What is the rate that the company charges per day?            c) Write the equation that represents the situation.</p>	<p>a) \$20 which represents the <math>y</math>-intercept            b) The rate the company charges per day is \$10 which is the slope.            c) <math>y = 10x + 20</math></p>	8.EE.B.5
15	<p>Create your own linear graph that represents the following situation.</p> <p>Cara has \$12 saved and takes a waitressing job that pays \$8 an hour.</p>		Standard included

## Do you have a group of students who need a boost in math?

Each student could receive a personalized lesson every week from our specialist one-on-one math tutors.

- ✓ Differentiated instruction for each student
- ✓ Aligned to your state's standard
- ✓ Scaffolded learning to close gaps

## Speak to us

 [thirdspacelearning.com/us/](https://thirdspacelearning.com/us/)

 +1 929-298-4593

 [hello@thirdspacelearning.com](mailto:hello@thirdspacelearning.com)



**THIRD SPACE  
LEARNING**