Homework

Unit 3 · Lesson 8: Proportional Relationships: Create Graphs

Name: _____

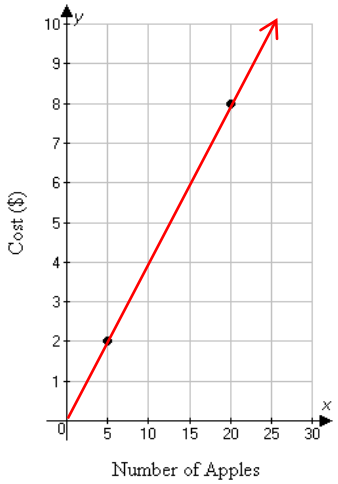
Date: _____

Objective: *I will graph data to determine proportional relationships.*

Vocabulary

Proportional Relationship: a relationship between two equal ratios

Apples	Cost ($)
5	2
20	8



*The graph of a proportional relationship is a line that passes through the origin (0,0).

Ordered Pair: a pair of numbers used to locate a point on a coordinate plane; also, called the **coordinates**

(4, 3)
(*x*, *y*)
(horizontal, vertical)

Steps:

1. Convert data to ordered pairs.
2. Draw a coordinate plane.
3. Plot ordered pairs on the coordinate plane.
4. Draw a line connecting the points.
5. If the line goes through the origin (0,0), the relationship is proportional.

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Example # 1

Directions: Use a graph to answer the following.

Convert the entries in the table to ordered pairs, plot the coordinates on the coordinate plane, and determine which points lie on a straight line with the origin.

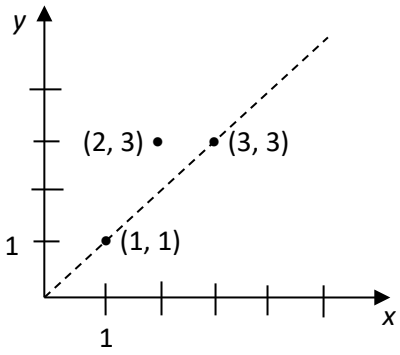
x	*y*
1	1
2	3
3	3

Solution:

- Add a third column to the table to identify the given coordinate points.

x	*y*	(*x*, *y*)
1	1	(1, 1)
2	3	(2, 3)
3	3	(3, 3)

- Plot the given coordinates. Using a straight line to connect the points that have a proportional relationship.



- The points (1, 1) and (3, 3) lie on the straight line with the origin.

Example # 2

The table below gives the dimensions of two rectangular prisms. Are the prisms in proportion? How does it help to create a graph?

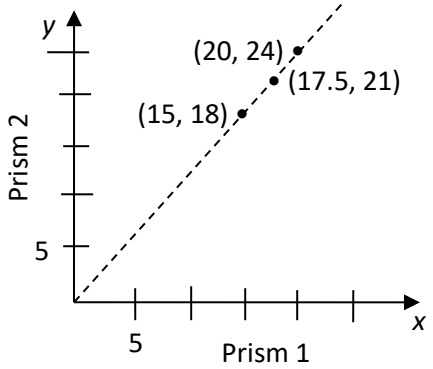
	Prism 1	Prism 2
Length	20 cm	24 cm
Width	15 cm	18 cm
Height	17.5 cm	21 cm

Solution:

- Add a third column to the table to identify the given coordinate points.

	Prism 1 *x*	Prism 2 *y*	(*x*, *y*)
Length	20 cm	24 cm	(20, 24)
Width	15 cm	18 cm	(15, 18)
Height	17.5 cm	21 cm	(17.5, 21)

- Plot the given coordinates. Using a straight line connect the points that have a proportional relationship.



- Yes, the prisms are in proportion.
- A graph helps you see that a straight line can be drawn through all three points and the origin.

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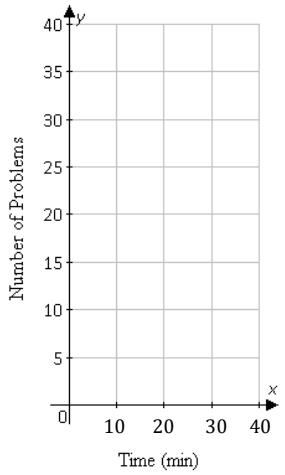
Directions: Graph to answer the following.

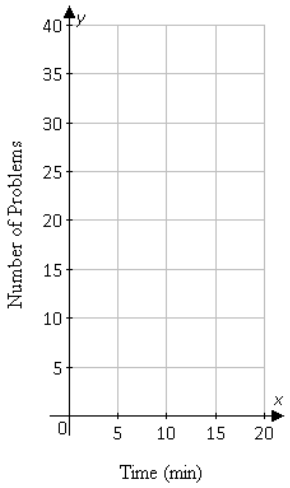
1. Is the number of math problems Jon can complete in proportion to the amount of time he works?

Time	# of Problems	(*x*, *y*)
30 min	10	
20 min	15	
15 min	7	



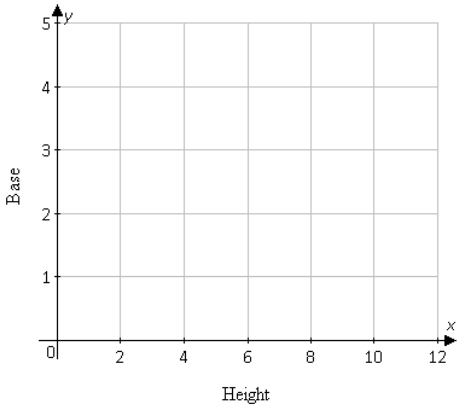
2. Is the number of math problems Ron can complete in proportion to the amount of time he works?

Time	#of Problems	(*x*, *y*)
20 min	10	
30 min	15	
14 min	7	



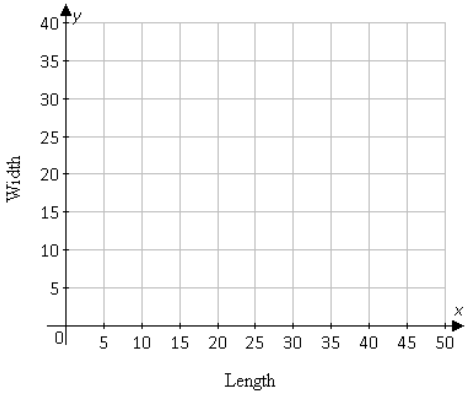
3. Which triangles, if any, are in proportion to each other?

	Height	Base	(*x*, *y*)
Triangle A	6	3	
Triangle B	10	4	
Triangle C	2.5	1	



4. Which rectangles, if any, are in proportion to each other?

	Length	Width	(*x*, *y*)
Rectangle A	20	15	
Rectangle B	48	36	
Rectangle C	21	18	



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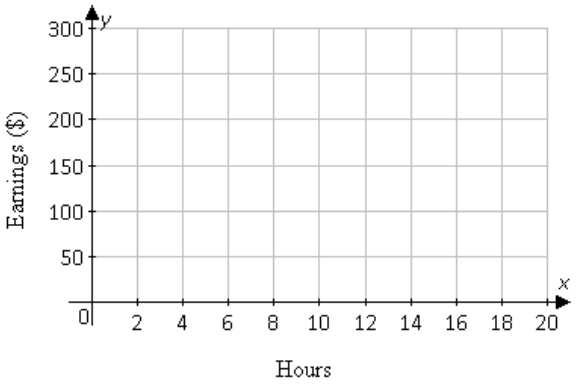
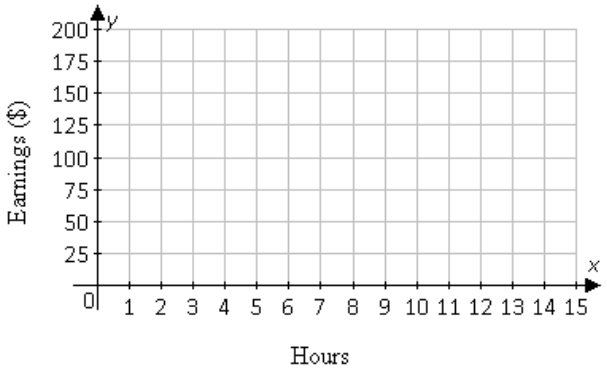
5. Is the amount of money earned proportional to the number of hours worked?

	Hours	Earnings	(*x*, *y*)
Fred	10	$150	
Ted	12	$252	
Ned	15	$150	



6. Is the amount of money earned proportional to the number of hours worked?

	Hours	Earnings	(*x*, *y*)
Lillie	10	$120	
Millie	7	$84	
Tillie	14	$168	



Explain the steps you used to solve problem number _____.

_____

_____

_____

_____

_____