Identifying Proportional & Non-Proportional Relationships in Graphs

Two quantities are _____ to each other by _____

On a coordinate plane and observing whether the graph is a _____

_____ through the _____.

Opening Exercise

Isaiah sold candy bars to help raise money for his scouting troop. The table shows the amount of candy he sold to the money he received.

Is the amount of candy bars sold proportional to the money Isaiah received? How do you know?

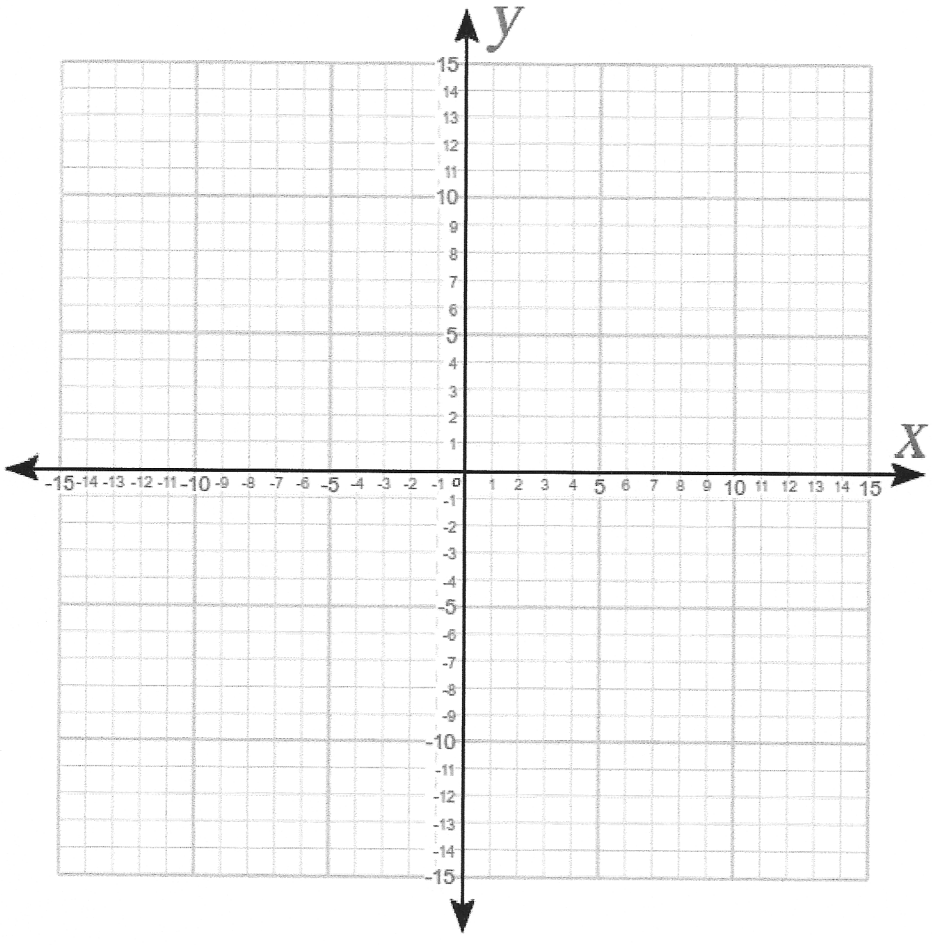
The two quantities are not proportional to each other because a constant describing the proportion does not exist.

x Candy Bars Sold	y Money Received ($)
2	3
4	5
8	9
12	12

1) Create a ratio table that contains two sets of quantities that are proportional to each other using the first ratio on the original table.

x	y
2	3
4	
8	
12	

Express the ratios from this table as ordered pairs. _____



1) Where is the origin? _____

2) What should we label the x axis and the y axis? _____

3) Could the axis be switched (the other way around)? _____

_____

4) Plot the ratio pairs on the graph.

5) What observation can you make about the arrangement of points? _____

_____

6) Would all proportional relationships pass through the origin? _____

7) What can you infer about graphs of two quantities that are proportional to each other? _____

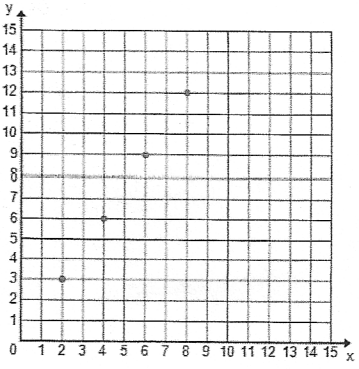
Example 1 Is this a proportional relationship? Why or why not?

_____

_____

Example 1: From a Table to Graph

x	y
2	3
4	6
6	9
8	12



Important Note:

Characteristics of graphs of proportional relationships:

1. *Points lie in a straight line.*
2. *Line goes through the origin.*

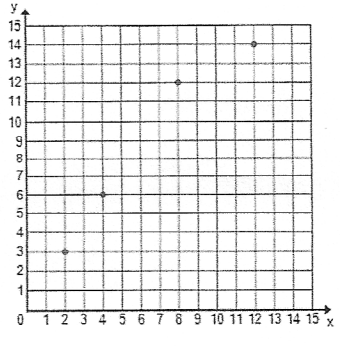
Example 2 Is this a proportional relationship? Why or why not?

_____

_____

Example 2

x	y
2	3
4	6
8	12
12	14



What can you predict about the graph of this ratio table?_____

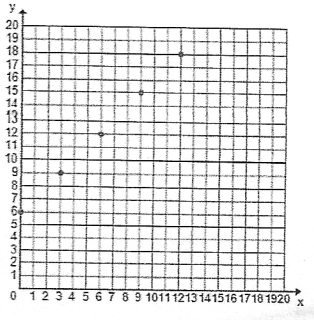
Example 3 Is this a proportional relationship? Why or Why not?

_____

_____

Example 3

x	y
0	6
3	9
6	12
9	15
12	18



Similarities with Example 1:

The points of both graphs fall in a line.

Differences from Example 1:

The points of Graph 1 fall in a line that pass through the origin. The points of Graph 3 fall in a line that do not pass through the origin.

What can you predict about the graph of this ratio table? _____

How are the graphs of the data in Example 1 and 3 similar? How are they different?

_____

_____

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Lesson Summary:

When two proportional quantities are graphed on a coordinate plane, the points lie on a straight line that passes through the origin.