Homework

Unit 3 · Lesson 6: Proportional Relationships: Tables

Name: _____

Date: _____

Objective: *I will test for equivalent ratios to determine proportional relationships.*

Vocabulary

Equivalent Ratios: ratios, in fraction form, that are equivalent
Ratios 5:2 and 10:4 are equivalent
because $\frac{5}{2}=\frac{10}{4}$.

Proportional Relationship: is a relationship between two equal ratios

Apples are sold in bags of 5 for $2. To buy 20 apples, what would be the cost (C)?

$$\frac{5 \text{ apples}}{2 \text{ dollars}}=\frac{20 \text{ apples}}{C(\text{cost})}$$

Multiply the numerator and denominator by 4.
Cost = $8

Apples	Cost ($)
5	2
0	8

Steps:

Testing for Equivalent Ratios:

1. Identify the form of the ratio.
2. Convert ratio pairs in the table to fractions (*use the first quantity as the denominator*).
3. Determine if the fractions are equivalent.
4. If equivalent, there is a proportional relationship.

Example # 1

Directions: Use equivalent fractions to answer the following.

Determine whether any of the ratios below are proportional. What would happen if the second ratio were $\frac{7}{3}$?

$$\frac{28}{12}, \frac{5}{3} \text{ and } \frac{14}{6}$$

Solution:

- Simplify all fractions to see if any of them are equivalent.
- $\frac{28}{12}=\frac{7}{3}, \frac{5}{3}=\frac{5}{3}$, and $\frac{14}{6}=\frac{7}{3}$
- The fractions $\frac{28}{12}$ and $\frac{14}{6}$ are equivalent since they both simplify to $\frac{7}{3}$.
- If the second ratio were $\frac{7}{3}$, then all three ratios would be proportional.

Example # 2

The table below gives the dimensions of two rectangular prisms. Are the prisms in proportion? What if Prism 2 were 20 cm long?

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

Solution:

- Simplify all fractions to see if equivalent.

Length: $\frac{\text{Prism 2}}{\text{Prism 1}}=\frac{24}{20}=\frac{6}{5}$

Width: $\frac{\text{Prism 2}}{\text{Prism 1}}=\frac{18}{15}=\frac{6}{5}$

Height: $\frac{\text{Prism 2}}{\text{Prism 1}}=\frac{21}{17.5}=\frac{210}{175}=\frac{6}{5}$

- Since all ratios are equivalent fractions, the prisms are in proportion.
- If Prism 2 were 20 cm long, then all the prisms would not be in proportion.

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Directions: Use equivalent fractions to answer the following.

1. Determine whether the ratios below are proportional. What would happen if the second ratio were $\frac{15}{45}$?

$$\frac{10}{30}, \frac{15}{20}, \text{ and } \frac{7}{15}$$

2. Determine whether the ratios below are proportional. What would happen if the first ratio were $\frac{45}{90}$?

$$\frac{10}{20}, \frac{15}{30}, \text{ and } \frac{7}{14}$$

3. The table shows the height and base lengths of several right triangles. Which triangles, if any, are in proportion? What if Triangle A had a height of 7.5?

	Height	Base
Triangle A	6	3
Triangle B	10	4
Triangle C	2.5	1

4. The table shows the lengths and widths of several rectangles. Which of the rectangles, if any, are in proportion? What if Rectangle C had a length of 24?

	Length	Width
Rectangle A	20	15
Rectangle B	48	36
Rectangle C	21	18

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Directions: Create equivalent fractions to answer the following.

5. The table shows the amount of money several people earned for working a certain number of hours. Is there a proportional relationship between the amount of money they earned and the number of hours they worked? What if Fred earned $210 and Ned earned $315?

	Hours	Earnings
Fred	10	$150
Ted	12	$252
Ned	15	$150

6. The table shows the amount of money several people earned for working a certain number of hours. Is there a proportional relationship between the amount of money they earned and the number of hours they worked? How many hours are worked to earn $108?

	Hours	Earnings
Lillie	10	$120
Millie	7	$84
Tillie	14	$168

Explain the steps you used to solve problem number _____.

_____

_____

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Notes