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CK-12 FlexBook

Test

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CONCEPT

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Identifying Proportional Relationships in Tables

Learning Objectives

- Understand the concept of a proportional relationship.
- Recognize proportional relationships between quantities in a table.
- Understand the concept of the rate of change.
- Decide whether two quantities are in a proportional relationship by testing for equivalent ratios in a table.
- Calculate rate of change given a table.
- Identify the constant of proportionality (unit rate) in a table.

Coffee House Spending

Your math teacher has a serious coffee habit. Every morning she goes to her favorite coffee house and buys a latte for \$3.75. Here is a table to represent how much money she spends in a week:

TABLE 1.1:

Money	\$3.75	\$7.50			
Days	1	2	3	4	5

- Determine the total for days 3, 4 and 5 and create a ratio of money to days.
- Use the sliders to adjust the numerator to be the money amounts and the denominator to represent the days.



MEDIA

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MEDIA

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The table in this interactive is an example of a **proportional relationship**. All the ratios you set up were equal. These are also known as **equivalent ratios**. If your break this down into its key components, you will see that:

- A **proportion** is an equation that sets equivalent ratios equal to each other. All of these rates create a proportion because they are in a proportional relationship.

- \$3.75 is the **rate of change**. It describes how fast the output (the total cost) increases each day.
 - The rate of change is always **constant** (or same) for any proportional relationship.
-

Painting the House

Max is painting his house. He needs to cover 3,200 square feet of wall space. Based on the table below, how many gallons of paint does Max need to buy?

TABLE 1.2:

gallons	1	2	3	4	5
square feet	400	800	1,200	1,600	2,000

Use the sliders to change the proportions and determine how many gallons of paint are needed.



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The rate of change of a proportional relationship is also called the **constant of proportionality** because for every rate, the proportion of $\frac{\text{dependent value}}{\text{independent value}}$ is constant. This constant of proportionality is commonly labeled k . The independent value, usually labeled x , is often in the first column of a table. The dependent value, which is usually labeled y , is commonly the second column of a table. Therefore, you can say:

$$\frac{\text{dependent value}}{\text{independent value}} = \frac{y}{x} = k$$

Is it Proportional?

Determine if the following tables represent proportional relationships. If so, find the constant of proportionality and the equation.

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Remember this!

- Tables can be used to determine whether or not data is proportional.
- Proportional relationships have a constant rate of change or constant of proportionality, called k .
- You can use k to find other values within the proportional relationship.

