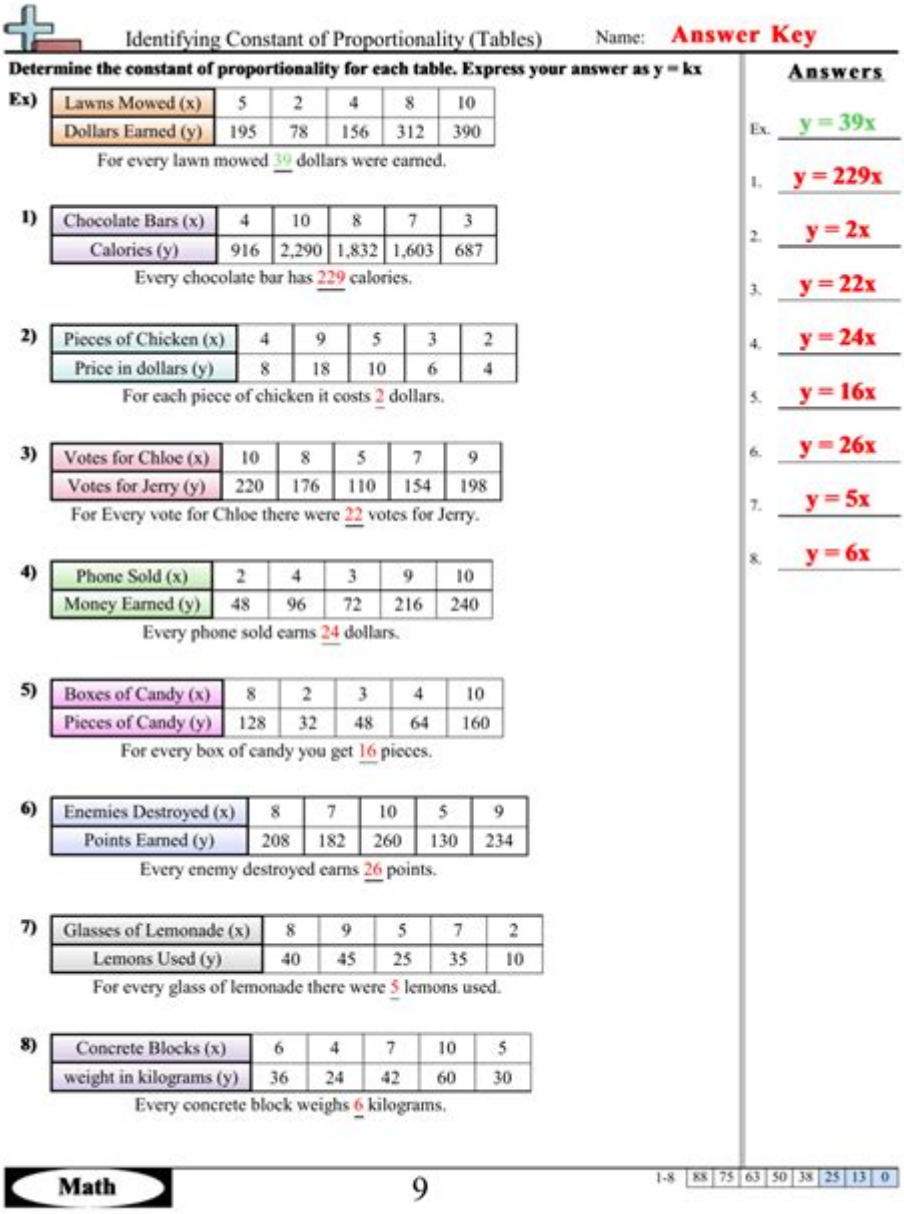
# Constant Of Proportionality Table Answer Key



Identifying Constant of Proportionality (Tables) Name: **Answer Key**

**Determine the constant of proportionality for each table. Express your answer as y = kx**

**Ex)**

| Lawns Mowed (x) | 5 | 2 | 4 | 8 | 10 |
|---|---|---|---|---|---|
| Dollars Earned (y) | 195 | 78 | 156 | 312 | 390 |

For every lawn mowed 39 dollars were earned.

**1)**

| Chocolate Bars (x) | 4 | 10 | 8 | 7 | 3 |
|---|---|---|---|---|---|
| Calories (y) | 916 | 2,290 | 1,832 | 1,603 | 687 |

Every chocolate bar has 229 calories.

**2)**

| Pieces of Chicken (x) | 4 | 9 | 5 | 3 | 2 |
|---|---|---|---|---|---|
| Price in dollars (y) | 8 | 18 | 10 | 6 | 4 |

For each piece of chicken it costs 2 dollars.

**3)**

| Votes for Chloe (x) | 10 | 8 | 5 | 7 | 9 |
|---|---|---|---|---|---|
| Votes for Jerry (y) | 220 | 176 | 110 | 154 | 198 |

For Every vote for Chloe there were 22 votes for Jerry.

**4)**

| Phone Sold (x) | 2 | 4 | 3 | 9 | 10 |
|---|---|---|---|---|---|
| Money Earned (y) | 48 | 96 | 72 | 216 | 240 |

Every phone sold earns 24 dollars.

**5)**

| Boxes of Candy (x) | 8 | 2 | 3 | 4 | 10 |
|---|---|---|---|---|---|
| Pieces of Candy (y) | 128 | 32 | 48 | 64 | 160 |

For every box of candy you get 16 pieces.

**6)**

| Enemies Destroyed (x) | 8 | 7 | 10 | 5 | 9 |
|---|---|---|---|---|---|
| Points Earned (y) | 208 | 182 | 260 | 130 | 234 |

Every enemy destroyed earns 26 points.

**7)**

| Glasses of Lemonade (x) | 8 | 9 | 5 | 7 | 2 |
|---|---|---|---|---|---|
| Lemons Used (y) | 40 | 45 | 25 | 35 | 10 |

For every glass of lemonade there were 5 lemons used.

**8)**

| Concrete Blocks (x) | 6 | 4 | 7 | 10 | 5 |
|---|---|---|---|---|---|
| weight in kilograms (y) | 36 | 24 | 42 | 60 | 30 |

Every concrete block weighs 6 kilograms.

**Answers**

Ex. y = 39x
1. y = 229x
2. y = 2x
3. y = 22x
4. y = 24x
5. y = 16x
6. y = 26x
7. y = 5x
8. y = 6x

Math 9

| 1-8 | 88 | 75 | 63 | 50 | 38 | 25 | 13 | 0 |
|---|---|---|---|---|---|---|---|---|

Constant of proportionality table answer key is a vital concept in understanding relationships between variables in mathematics. This constant serves as a multiplier that defines how one variable changes in relation to another. In many practical applications, particularly in algebra and geometry, recognizing how to identify and use the constant of proportionality can enhance problem-solving skills. In this article, we will explore what the constant of proportionality is, how to create and interpret a proportionality table, and provide an answer key for common scenarios involving proportional relationships.

# Understanding the Constant of Proportionality

## Definition

The constant of proportionality refers to the constant value that relates two proportional quantities. When two quantities, $x$ and $y$, are proportional, there exists a constant $k$ such that:

$$y = kx$$

In this relationship:
- $y$ is the dependent variable.
- $x$ is the independent variable.
- $k$ is the constant of proportionality.

This equation indicates that as $x$ changes, $y$ changes at a constant rate determined by $k$.

## Identifying the Constant of Proportionality

To find the constant of proportionality, you can rearrange the equation:

$$k = \frac{y}{x}$$

This means that if you have pairs of $(x, y)$ values, you can calculate $k$ by dividing $y$ by $x$.

## Examples

1. Example 1: If $y = 10$ when $x = 2$:
$$
k = \frac{10}{2} = 5
$$
Here, the constant of proportionality is 5.

2. Example 2: If $y = 15$ when $x = 3$:
$$
k = \frac{15}{3} = 5
$$
Again, the constant of proportionality remains 5.

These examples illustrate that different sets of $(x, y)$ values can yield the same constant of proportionality, which confirms the proportional relationship.

# Creating a Constant of Proportionality Table

## Step-by-Step Guide

To construct a constant of proportionality table, follow these steps:

1. Identify the Variables: Decide which two quantities you will analyze (e.g., distance and time).
2. Collect Data: Gather pairs of values for these variables.
3. Calculate the Constant: Use the formula $k = \frac{y}{x}$ for each pair.
4. Construct the Table: Organize your data into a table format.

## Sample Table Format

Here’s an example of how a constant of proportionality table might look:

| $x$ | $y$ | Constant $k = \frac{y}{x}$ |
|---|---|---|
| 2 | 10 | 5 |
| 3 | 15 | 5 |
| 4 | 20 | 5 |
| 5 | 25 | 5 |

In this table, you can see that all pairs of $(x, y)$ maintain a consistent constant of proportionality $k = 5$.

## Interpreting the Table

To interpret the table, observe the following:

- Consistency: If the constant $k$ remains the same across different pairs, the quantities are proportional.
- Graphing: You can plot the points on a graph to visualize the linear relationship. A straight line through the origin signifies proportionality.

# Applications of the Constant of Proportionality

## Real-World Scenarios

The concept of constant of proportionality is widely applicable in various fields:

1. Physics: Understanding speed, where speed is the constant of proportionality between distance and time.
2. Economics: Analyzing cost per item; if $y$ represents total cost and $x$ the number of items, $k$ would be the price per item.
3. Cooking: Scaling recipes; if a recipe requires $x$ cups of flour for $y$ servings, the constant of proportionality will help adjust the recipe for different serving sizes.

## Mathematical Problems

Consider the following problems to apply the concept of constant of proportionality:

1. Problem 1: If the distance traveled by a car is directly proportional to the time driven, and a car travels 150 miles in 3 hours, what is the constant of proportionality?
- Solution: $k = \frac{150}{3} = 50$ miles per hour.

2. Problem 2: If a recipe requires 2 cups of sugar to make 5 cookies, how much sugar is needed to make 20 cookies?
- Solution:
- Find $k$: $k = \frac{2}{5}$.
- For 20 cookies: $y = k \cdot 20 = \frac{2}{5} \cdot 20 = 8$ cups of sugar.

# Answer Key for Constant of Proportionality Problems

Here’s an answer key for the problems discussed:

1. Distance and Time Problem: $k = 50$ miles per hour.
2. Sugar and Cookies Problem: 8 cups of sugar needed for 20 cookies.

## Additional Practice Problems

Here are some additional problems to solidify your understanding:

1. If a car travels 240 miles in 4 hours, what is the constant of proportionality?
2. A recipe calls for 3 cups of flour to make 12 muffins. How much flour is needed to make 30 muffins?

3. If a phone plan charges $30 for 2 GB of data, what is the cost per GB?

# Conclusion

The constant of proportionality table answer key serves as an essential tool in mathematics, allowing students and professionals to identify and apply proportional relationships effectively. By understanding how to create and interpret proportionality tables, one can easily navigate various mathematical scenarios, enhancing problem-solving skills and real-world applications. Whether in physics, economics, or everyday cooking, the constant of proportionality plays a significant role in understanding the relationship between quantities. With practice and familiarity, mastering these concepts will become an invaluable asset in any mathematical endeavor.

# Frequently Asked Questions

## What is the constant of proportionality in a table?

The constant of proportionality is the ratio between two proportional quantities, often represented as 'k' in the equation y = kx, where y and x are the quantities.

## How can you identify the constant of proportionality from a table?

You can identify the constant of proportionality by dividing the values of one quantity by the corresponding values of the other quantity in the table. If the ratio is constant, that value is the constant of proportionality.

## What does a constant of proportionality table look like?

A constant of proportionality table typically lists pairs of values for two variables, showing consistent ratios. For example, it may have columns for 'x' and 'y' with values that demonstrate a linear relationship.

## Can the constant of proportionality change in a table?

No, if the relationship is truly proportional, the constant of proportionality remains the same throughout the table. If it changes, the relationship is no longer proportional.

## How do you calculate the constant of proportionality from a given data set in a table?

To calculate the constant of proportionality, select any pair of corresponding values (x, y) from the table, then divide y by x (k = y/x). This should yield the same result for all pairs if the relationship is proportional.

## What are some real-life examples of constant of proportionality?

Real-life examples include speed (distance over time), price per item in a store, and the relationship between the number of workers and the amount of work completed, where each scenario maintains a constant ratio.



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