Proportional Relationship Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is a proportional relationship?

undefined. A) A relationship where the sum of two quantities is constant.

undefined. B) A relationship where the difference between two quantities is constant.

undefined. C) A relationship where the ratio of two quantities is constant. ✓

undefined. D) A relationship where the product of two quantities is constant.

A proportional relationship is defined by a constant ratio between two quantities.

Which of the following are characteristics of a proportional relationship? (Select all that apply)

undefined. A) The graph is a straight line. ✓

undefined. B) The graph passes through the origin. ✓

undefined. C) The equation can be written as y = kx. ✓

undefined. D) The ratio of y to x changes.

Characteristics include a straight line graph, passing through the origin, and the equation y = kx.

Explain what the constant of proportionality represents in a proportional relationship.

The constant of proportionality represents the factor by which one quantity is multiplied to obtain the other.

List two real-world examples where proportional relationships are used.

1. Example 1

Speed and distance.

2. Example 2

Recipe ingredient ratios.

Examples may include speed and distance, or recipes involving ingredient ratios.

Part 2: Understanding and Interpretation

If a table shows a proportional relationship between x and y, what should be true about the ratio y/x?

undefined. A) It should be increasing.
undefined. B) It should be decreasing.
undefined. C) It should be constant. ✓
undefined. D) It should be zero.

The ratio y/x should remain constant for all values of x and y.

Which of the following equations represent a proportional relationship? (Select all that apply)

undefined. A) y = 3x + 2
undefined. B) y = 5x ✓
undefined. C) y = x/4 ✓
undefined. D) y = 7

Equations that represent proportional relationships are of the form y = kx.

Describe how you would identify a proportional relationship from a graph.

A proportional relationship can be identified by a straight line that passes through the origin.

Part 3: Application and Analysis

If a car travels at a constant speed and covers 150 miles in 3 hours, what is the constant of proportionality between distance and time?

undefined. A) 50 miles per hour ✓
undefined. B) 150 miles per hour
undefined. C) 3 miles per hour

undefined. D) 450 miles per hour

The constant of proportionality is the speed, calculated as distance divided by time.

You are given a recipe that requires 2 cups of flour for every 3 cups of sugar. Which of the following are true if you want to maintain the proportional relationship? (Select all that apply)

undefined. A) Use 4 cups of flour for 6 cups of sugar. ✓

undefined. B) Use 3 cups of flour for 5 cups of sugar.

undefined. C) Use 6 cups of flour for 9 cups of sugar. ✓

undefined. D) Use 1 cup of flour for 1.5 cups of sugar. ✓

To maintain the proportional relationship, the ratio of flour to sugar must remain consistent.

Given the equation y = 2.5x, calculate the value of y when x = 8.

To find y, substitute x = 8 into the equation and solve for y.

Part 4: Evaluation and Creation

Which graph represents a proportional relationship?

undefined. A) A curve that passes through the origin.

undefined. B) A straight line that does not pass through the origin.

undefined. C) A straight line that passes through the origin. ✓

undefined. D) A parabola that passes through the origin.

A proportional relationship is represented by a straight line that passes through the origin.

Analyze the following scenarios and identify which involve proportional relationships. (Select all that apply)

undefined. A) The cost of apples at $2 per apple. ✓

undefined. B) The height of a plant growing at a constant rate over time. ✓

undefined. C) The temperature change throughout the day.

undefined. D) The distance traveled by a car moving at a constant speed. ✓

Scenarios involving constant ratios or rates indicate proportional relationships.

Explain why the equation y = 4x + 1 does not represent a proportional relationship.

The equation y = 4x + 1 includes a constant term, which means it does not pass through the origin.

If a proportional relationship is represented by the equation y = 3x, what happens to y when x is doubled?

undefined. A) y remains the same.
undefined. B) y is halved.
undefined. C) y is doubled. ✓
undefined. D) y is tripled.

When x is doubled, y also doubles, maintaining the proportional relationship.

Evaluate the following statements and select those that are true about proportional relationships. (Select all that apply)

undefined. A) They always have a positive slope. ✓
undefined. B) They can be represented by a linear equation. ✓
undefined. C) They always pass through the origin. ✓
undefined. D) They can have a constant of proportionality of zero.

True statements about proportional relationships include their linear nature and passing through the origin.

Create a real-world problem that involves a proportional relationship and solve it, explaining your reasoning.

A real-world problem could involve scenarios like cooking, budgeting, or speed calculations.