Proportional Relationship Worksheet

Proportional Relationship Worksheet

Disclaimer: *The proportional relationship worksheet was generated with the help of StudyBlaze AI. Please be aware that AI can make mistakes. Please consult your teacher if you're unsure about your solution or think there might have been a mistake. Or reach out directly to the StudyBlaze team at max@studyblaze.io.*

Part 1: Building a Foundation

What is a proportional relationship?

Hint: Think about the relationship between two quantities.

- ◯ A) A relationship where the sum of two quantities is constant.
- ◯ B) A relationship where the difference between two quantities is constant.
- ◯ C) A relationship where the ratio of two quantities is constant.
- ◯ D) A relationship where the product of two quantities is constant.

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

Hint: Consider the properties of the graph and equation.

- ☐ A) The graph is a straight line.
- ☐ B) The graph passes through the origin.
- ☐ C) The equation can be written as y = kx.
- ☐ D) The ratio of y to x changes.

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

Hint: Think about how the two quantities relate to each other.

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

Hint: Consider everyday situations involving ratios.

1. Example 1

2. Example 2

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?

Hint: Think about the nature of proportional relationships.

- ◯ A) It should be increasing.
- ◯ B) It should be decreasing.
- ◯ C) It should be constant.
- ◯ D) It should be zero.

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

Hint: Consider the form of the equations.

- ☐ A) y = 3x + 2
- ☐ B) y = 5x
- ☐ C) y = x/4
- ☐ D) y = 7

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

Hint: Think about the characteristics of the graph.

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?

Hint: Think about the formula for speed.

- ◯ A) 50 miles per hour
- ◯ B) 150 miles per hour
- ◯ C) 3 miles per hour
- ◯ D) 450 miles per hour

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)

Hint: Consider the ratios of flour to sugar.

- ☐ A) Use 4 cups of flour for 6 cups of sugar.
- ☐ B) Use 3 cups of flour for 5 cups of sugar.
- ☐ C) Use 6 cups of flour for 9 cups of sugar.
- ☐ D) Use 1 cup of flour for 1.5 cups of sugar.

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

Hint: Substitute x into the equation.

Part 4: Evaluation and Creation

Which graph represents a proportional relationship?

Hint: Consider the characteristics of proportional graphs.

- ◯ A) A curve that passes through the origin.
- ◯ B) A straight line that does not pass through the origin.

- ◯ C) A straight line that passes through the origin.
- ◯ D) A parabola that passes through the origin.

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

Hint: Think about the nature of the relationships described.

- ☐ A) The cost of apples at $2 per apple.
- ☐ B) The height of a plant growing at a constant rate over time.
- ☐ C) The temperature change throughout the day.
- ☐ D) The distance traveled by a car moving at a constant speed.

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

Hint: Consider the form of the equation.

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

Hint: Think about the relationship defined by the equation.

- ◯ A) y remains the same.
- ◯ B) y is halved.
- ◯ C) y is doubled.
- ◯ D) y is tripled.

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

Hint: Consider the properties of proportional relationships.

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

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

Hint: Think about everyday situations that can be modeled proportionally.