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Constant Of Proportionality Worksheet Questions and Answers PDF

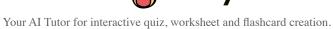Constant Of Proportionality Worksheet Questions And Answers PDF

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Part 1: Building a Foundation

What is the constant of proportionality in the equation y = 5x?

Hint: Identify the coefficient of x in the equation.

○ A) 1
○ **B) 5 ✓**
○ C) x
○ D) y

> The constant of proportionality is the coefficient of x, which is 5.

Which of the following statements are true about directly proportional relationships?

Hint: Consider the characteristics of the graph and the ratio.

☐ **A) The graph is a straight line through the origin. ✓**
☐ **B) The ratio y/x is constant. ✓**
☐ C) The line can have any slope.
☐ D) The graph can be a curve.

> The true statements are that the graph is a straight line through the origin and the ratio y/x is constant.

Explain in your own words what it means for two variables to be directly proportional.

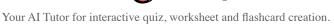*Hint: Think about how one variable changes in relation to the other.*

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> **Directly proportional means that as one variable increases, the other variable increases at a constant rate.**

Identify the constant of proportionality and the dependent variable in the equation y = 3x.

Hint: Look for the coefficient of x and the variable that depends on x.

1. Constant of Proportionality:

> 3

2. Dependent Variable:

> y

> The constant of proportionality is 3, and the dependent variable is y.

Part 2: Comprehension and Application

If the constant of proportionality is 7, what is the equation that represents the relationship between y and x?

Hint: Use the constant to form the equation.

○ **A) y = 7x ✓**
○ B) y = x + 7
○ C) y = x/7
○ D) y = 7 + x

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> The equation is $y = 7x$, which shows the direct proportionality.

Which of the following graphs could represent a directly proportional relationship?

Hint: Look for characteristics of the graph that indicate direct proportionality.

☐ **A) A line passing through (0,0) with a positive slope. ✓**
☐ **B) A line passing through (0,0) with a negative slope. ✓**
☐ C) A horizontal line.
☐ D) A vertical line.

> The graphs that pass through the origin with a slope represent directly proportional relationships.

A recipe requires 3 cups of flour for every 2 cups of sugar. Write an equation representing the relationship between flour (f) and sugar (s).

Hint: Think about how to express the relationship mathematically.

> **The equation can be expressed as $f = (3/2)s$ or $f = 1.5s$.**

If a car travels 60 miles in 1 hour, what is the constant of proportionality between distance and time?

Hint: Consider the relationship between distance and time.

○ A) 30
○ **B) 60 ✓**
○ C) 1
○ D) 120

> The constant of proportionality is the speed, which is 60 miles per hour.

Part 3: Analysis, Evaluation, and Creation

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If the graph of a relationship between x and y is a straight line through the origin with a slope of 2, what is the constant of proportionality?

Hint: The slope of the line represents the constant of proportionality.

◯ A) 0
◯ B) 1
◯ **C) 2 ✔**
◯ D) 3

❘ The constant of proportionality is the slope of the line, which is 2.

Which of the following scenarios can be modeled by a directly proportional relationship?

Hint: Think about relationships that maintain a constant ratio.

☐ **A) The cost of apples is $2 per apple. ✔**
☐ B) The temperature in Celsius and Fahrenheit.
☐ **C) The number of pages read and time spent reading at a constant speed. ✔**
☐ D) The height of a plant over time with varying growth rates.

❘ The scenarios that can be modeled by directly proportional relationships are those where one quantity increases at a constant rate relative to another.

Analyze the table below and determine if the relationship between x and y is directly proportional. Justify your answer.

Hint: Look for a constant ratio between x and y values.

❘ **The relationship is directly proportional because the ratio of y to x is constant (y/x = 3).**

Which statement best evaluates the relationship between the variables in the equation y = 10x?

Hint: Consider the definition of direct proportionality.

◯ A) y is inversely proportional to x.

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○ **B) y is directly proportional to x with a constant of proportionality of 10. ✓**
○ C) y is independent of x.
○ D) y is directly proportional to x with a constant of proportionality of 1.

❘ The correct statement is that y is directly proportional to x with a constant of proportionality of 10.

Create a scenario where the constant of proportionality is 5. Which of the following could be correct?

Hint: Think about situations that involve a constant rate.

☐ **A) A taxi charges $5 per mile. ✓**
☐ **B) A factory produces 5 widgets per hour. ✓**
☐ **C) A book costs $5 each. ✓**
☐ **D) A train travels 5 miles per hour. ✓**

❘ All options represent scenarios where the constant of proportionality is 5.

Design a real-world problem involving a directly proportional relationship. Provide the equation and explain how you would solve it.

Hint: Think about a situation where two quantities are related by a constant ratio.

❘ **An example could be calculating the cost of gas based on the number of gallons purchased, represented by the equation cost = price per gallon * gallons.**

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