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Direct Variation Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the equation form of a direct variation?

undefined. A) $y = mx + b$

undefined. B) $y = kx$ ✓

undefined. C) $y = x^2 + k$

undefined. D) $y = k/x$

The correct equation form of direct variation is $y = kx$.

Which of the following are characteristics of a direct variation?

undefined. A) The graph is a straight line through the origin. ✓

undefined. B) The ratio y/x is constant. ✓

undefined. C) The graph is a parabola.

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

Characteristics of direct variation include a straight line through the origin and a constant ratio of y to x.

Explain what the constant of variation k represents in the equation y = kx.

The constant of variation k represents the rate at which y changes with respect to x.

List two real-world examples where direct variation might be observed.

1. Example 1
Distance traveled over time at constant speed.

2. Example 2
Cost of apples based on the number of apples bought.

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Examples include distance and time at constant speed, or cost and quantity of items.

Part 2: Comprehension and Application

If y varies directly with x and y = 10 when x = 2, what is the constant of variation k?

undefined. A) 5 ✓

undefined. B) 10

undefined. C) 2

undefined. D) 20

To find k, divide y by x, which gives k = 5.

Which of the following equations represent a direct variation?

undefined. A) y = 3x + 1

undefined. B) y = -4x ✓

undefined. C) y = 1/2x ✓

undefined. D) y = x^2

The equations that represent direct variation are those that can be simplified to y = kx.

Describe how you would determine if a set of data points represents a direct variation.

To determine if data points represent direct variation, check if the ratio y/x is constant for all points.

A car travels at a constant speed. If the distance d varies directly with time t, and the car travels 150 miles in 3 hours, how far will it travel in 5 hours?

undefined. A) 200 miles

undefined. B) 250 miles ✓

undefined. C) 300 miles

undefined. D) 350 miles

The car will travel 250 miles in 5 hours.

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Given the direct variation equation y = 7x, which of the following points lie on the graph of this equation?

undefined. A) (1, 7) ✓

undefined. B) (2, 14) ✓

undefined. C) (3, 20)

undefined. D) (4, 28) ✓

The points (1, 7), (2, 14), and (4, 28) lie on the graph of the equation.

A recipe calls for 4 cups of flour to make 8 servings. How many cups of flour are needed to make 20 servings, assuming direct variation?

You would need 10 cups of flour to make 20 servings.

Part 3: Analysis, Evaluation, and Creation

If the equation y = 5x represents a direct variation, what happens to y when x is doubled?

undefined. A) y is halved

undefined. B) y remains the same

undefined. C) y is doubled ✓

undefined. D) y is quadrupled

When x is doubled, y is also doubled.

Analyze the following scenarios and identify which ones involve direct variation:

undefined. A) The number of pages read and the time spent reading at a constant speed. ✓

undefined. B) The height of a plant and the amount of sunlight it receives.

undefined. C) The cost of apples and the number of apples bought at a fixed price per apple. ✓

undefined. D) The area of a square and the length of its side. ✓

Scenarios A, C, and D involve direct variation.

Explain why the graph of a direct variation must pass through the origin.

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The graph passes through the origin because when x = 0, y must also equal 0 in direct variation.

Which of the following statements is true about the constant of variation k in the equation y = kx?

undefined. A) k can be zero.

undefined. B) k determines the slope of the line. ✓

undefined. C) k is always negative.

undefined. D) k has no effect on the graph.

The correct statement is that k determines the slope of the line.

Evaluate the following equations and determine which ones could represent a direct variation with a positive constant of variation:

undefined. A) y = 0.5x ✓

undefined. B) y = -3x

undefined. C) y = 4x ✓

undefined. D) y = x - 2

The equations A and C represent direct variation with a positive constant.

Create a real-world problem involving direct variation and solve it. Provide the context, the equation, and the solution.

An example could be calculating the cost of gas based on the number of gallons purchased.

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