

Direct Variation Worksheet

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Part 1: Building a Foundation

What is the equation form of a direct variation?

Hint: Think about the basic equation that defines direct variation.

- A) $y = mx + b$
- B) $y = kx$
- C) $y = x^2 + k$
- D) $y = k/x$

Which of the following are characteristics of a direct variation?

Hint: Consider the properties that define direct variation.

- A) The graph is a straight line through the origin.
- B) The ratio y/x is constant.
- C) The graph is a parabola.
- D) The equation can be written as $y = kx$.

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

Hint: Think about how k affects the relationship between y and x .

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

Hint: Consider situations where one quantity directly affects another.

1. Example 1

2. Example 2

Part 2: Comprehension and Application

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

Hint: Use the formula $y = kx$ to find k .

- A) 5
- B) 10
- C) 2
- D) 20

Which of the following equations represent a direct variation?

Hint: Look for equations that can be expressed in the form $y = kx$.

- A) $y = 3x + 1$
- B) $y = -4x$
- C) $y = 1/2x$
- D) $y = x^2$

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

Hint: Consider the relationship between the x and y values.

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?

Hint: Use the direct variation relationship to find the answer.

- A) 200 miles
- B) 250 miles
- C) 300 miles
- D) 350 miles

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

Hint: Substitute the x values into the equation to find the corresponding y values.

- A) (1, 7)
- B) (2, 14)
- C) (3, 20)
- D) (4, 28)

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?

Hint: Set up a proportion based on the servings and flour.

Part 3: Analysis, Evaluation, and Creation

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

Hint: Consider how direct variation affects the relationship between x and y .

- A) y is halved
- B) y remains the same
- C) y is doubled

- D) y is quadrupled

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

Hint: Look for relationships where one variable directly affects another.

- A) The number of pages read and the time spent reading at a constant speed.
- B) The height of a plant and the amount of sunlight it receives.
- C) The cost of apples and the number of apples bought at a fixed price per apple.
- D) The area of a square and the length of its side.

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

Hint: Consider the definition of direct variation.

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

Hint: Think about the properties of k in relation to the graph.

- A) k can be zero.
- B) k determines the slope of the line.
- C) k is always negative.
- D) k has no effect on the graph.

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

Hint: Look for equations that can be expressed in the form $y = kx$ with $k > 0$.

- A) $y = 0.5x$
- B) $y = -3x$
- C) $y = 4x$
- D) $y = x - 2$

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

Hint: Think of a situation where one quantity varies directly with another.