Slope From A Graph Worksheet

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Part 1: Foundational Knowledge

What is the formula for calculating the slope of a line between two points \((x_1, y_1)\) and \((x_2, y_2)\)?

Hint: Consider the change in y over the change in x.

- ◯ A) \(m = \frac{x_2 - x_1}{y_2 - y_1}\)
- ◯ B) \(m = \frac{y_2 - y_1}{x_2 - x_1}\)
- ◯ C) \(m = x_2 + x_1 + y_2 + y_1\)
- ◯ D) \(m = y_2 \times y_1 - x_2 \times x_1\)

Which of the following statements about slope are true?

Hint: Think about the direction of the line.

- ☐ A) A positive slope means the line rises from left to right.
- ☐ B) A negative slope means the line falls from left to right.
- ☐ C) A zero slope means the line is vertical.
- ☐ D) An undefined slope means the line is horizontal.

Define what is meant by an "undefined slope" and provide an example of when this occurs on a graph.

Hint: Consider the orientation of the line.

List the four types of slopes and provide a brief description of each.

Hint: Think about the direction and steepness of the lines.

1. Positive Slope

2. Negative Slope

3. Zero Slope

4. Undefined Slope

If a line passes through the points (2, 3) and (5, 9), what is the slope of the line?

Hint: Use the slope formula to calculate.

- ◯ A) 2
- ◯ B) 3
- ◯ C) 6
- ◯ D) 1

Part 2: Understanding and Interpretation

Explain how you would determine the slope of a line by looking at a graph. What steps would you take?

Hint: Consider the points you would identify on the graph.

Given a graph with points (1, 2) and (4, 8), calculate the slope and describe the type of line (increasing, decreasing, horizontal, or vertical).

Hint: Use the slope formula to find the answer.

1. Slope Calculation

2. Type of Line

Which type of line has a slope of zero?

Hint: Think about the orientation of the line.

- ◯ A) Vertical
- ◯ B) Horizontal
- ◯ C) Increasing
- ◯ D) Decreasing

Part 3: Applying Knowledge and Analyzing Relationships

A car travels from a point (0, 0) to a point (4, 10) on a graph representing distance over time. Calculate the slope and explain what this slope represents in terms of speed.

Hint: Consider the change in distance over the change in time.

In which of the following scenarios would you expect to find a positive slope?

Hint: Think about the direction of movement.

- ☐ A) A car slowing down.
- ☐ B) A plane ascending.

- [ ] C) A ball rolling down a hill.
- [ ] D) A person walking backwards.

If the slope of a line representing a company's profit over time is negative, what does this indicate?

Hint: Consider the implications of decreasing profit.

- ◯ A) The company is making more profit over time.
- ◯ B) The company's profit is decreasing over time.
- ◯ C) The company's profit remains constant.
- ◯ D) The company is breaking even.

Analyze a graph where a line passes through points (3, 7) and (6, 7). What is the slope, and what does this tell you about the relationship between the variables?

Hint: Consider the coordinates of the points.

Which of the following best describes the relationship between two variables if the slope of their line is zero?

Hint: Think about how the variables change in relation to each other.

- [ ] A) The variables are directly proportional.
- [ ] B) There is no relationship between the variables.
- [ ] C) The variables are inversely proportional.
- [ ] D) The variables are constant with respect to each other.

Part 4: Synthesis and Reflection

Evaluate the impact of a steep positive slope on a business's sales graph. What might this indicate about the business's performance?

Hint: Consider the implications of increasing sales.

Which of the following scenarios could lead to an undefined slope?

Hint: Think about the orientation of the line.

- [ ] A) A car moving at a constant speed.
- [ ] B) A rocket launching vertically.
- [ ] C) A train stopping at a station.
- [ ] D) A river flowing downstream.

Create a real-world scenario where understanding the slope of a line is crucial. Describe the scenario and explain how slope plays a role in decision-making.

Hint: Think about situations involving change over time.

Propose two different real-world situations where the slope is positive and negative, respectively, and explain the implications of each.

Hint: Consider various contexts where slope applies.

1. Positive Slope Situation

2. Negative Slope Situation