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Identifying Functions Worksheet

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Part 1: Building a Foundation

What is the definition of a function?

Hint: Think about the relationship between inputs and outputs.

○ A) A relation where each input is related to multiple outputs
○ B) A relation where each input is related to exactly one output
○ C) A relation with no outputs
○ D) A relation with multiple inputs and outputs

Which of the following are characteristics of a function?

Hint: Consider the properties that define a function.

☐ A) Each input has exactly one output
☐ B) The graph passes the Vertical Line Test
☐ C) Each output has exactly one input
☐ D) The graph can be crossed by a vertical line more than once

Explain the Vertical Line Test and how it is used to determine if a graph represents a function.

Hint: Think about how vertical lines interact with the graph.

List the types of functions mentioned in the key concepts.

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Hint: Think about the different categories of functions.

1. What are linear functions?

2. What are quadratic functions?

3. What are polynomial functions?

Part 2: Comprehension and Application

What is the domain of a function?

Hint: Consider what values can be input into a function.

○ A) The set of all possible outputs
○ B) The set of all possible inputs
○ C) The set of all possible variables
○ D) The set of all possible constants

Which of the following are true about linear functions?

Hint: Think about the characteristics of linear functions.

☐ A) They form a straight line on a graph
☐ B) They have the form y = mx + b
☐ C) They form a V-shaped curve
☐ D) They represent exponential growth

Describe the difference between the domain and range of a function with an example.

Hint: Think about inputs versus outputs.

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[   ]

Given the function f(x) = 2x + 3, what is f(4)?

Hint: Substitute 4 into the function.

○ A) 11
○ B) 8
○ C) 10
○ D) 9

Identify which of the following graphs represent a function.

Hint: Consider the Vertical Line Test for each graph.

☐ A) A graph of a straight line
☐ B) A graph of a circle
☐ C) A graph of a parabola
☐ D) A graph of a V-shaped curve

Given the quadratic function y = x^2 - 4x + 4, find the vertex of the parabola.

Hint: Use the vertex formula or complete the square.

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Part 3: Analysis, Evaluation, and Creation

If a function f(x) has an inverse, what must be true about its graph?

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Hint: Consider the properties of functions with inverses.

◯ A) It must be a straight line
◯ B) It must pass the Horizontal Line Test
◯ C) It must be a parabola
◯ D) It must have no intercepts

Analyze the function y = |x|. Which of the following are true?

Hint: Think about the shape and properties of the graph.

☐ A) It is a linear function
☐ B) It forms a V-shaped graph
☐ C) It has a vertex at the origin
☐ D) It is not a function

Compare and contrast linear and quadratic functions in terms of their graphs and equations.

Hint: Think about the shapes and forms of their equations.

Which of the following statements is true about inverse functions?

Hint: Consider the relationship between a function and its inverse.

◯ A) They do not exist for linear functions
◯ B) They reverse the operation of the original function
◯ C) They have the same graph as the original function
◯ D) They are always quadratic

Evaluate the following scenarios and determine which can be represented by a function.

Hint: Think about the relationships between the variables.

☐ A) The relationship between temperature and time of day
☐ B) The relationship between a person's age and height
☐ C) The relationship between distance and time for a constant speed

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☐ D) The relationship between a book's title and its author

Create a real-world scenario where a quadratic function could be used to model the situation. Explain why a quadratic function is appropriate.

Hint: Think about situations involving area or projectile motion.

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