

Identifying Functions Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the definition of a function?

undefined. A) A relation where each input is related to multiple outputs

undefined. B) A relation where each input is related to exactly one output ✓

undefined. C) A relation with no outputs

undefined. D) A relation with multiple inputs and outputs

A function is defined as a relation where each input is related to exactly one output.

Which of the following are characteristics of a function?

undefined. A) Each input has exactly one output ✓

undefined. B) The graph passes the Vertical Line Test ✓

undefined. C) Each output has exactly one input

undefined. D) The graph can be crossed by a vertical line more than once

Characteristics of a function include that each input has exactly one output and the graph passes the Vertical Line Test.

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

The Vertical Line Test states that if a vertical line intersects a graph at more than one point, then the graph does not represent a function.

List the types of functions mentioned in the key concepts.

1. What are linear functions?

Functions that create a straight line when graphed.

2. What are quadratic functions?

Functions that create a parabolic shape when graphed.

3. What are polynomial functions?

Functions that involve terms with variables raised to whole number powers.

Types of functions may include linear, quadratic, polynomial, rational, and exponential functions.

Part 2: Comprehension and Application

What is the domain of a function?

undefined. A) The set of all possible outputs

undefined. **B) The set of all possible inputs ✓**

undefined. C) The set of all possible variables

undefined. D) The set of all possible constants

The domain of a function is the set of all possible inputs.

Which of the following are true about linear functions?

undefined. **A) They form a straight line on a graph ✓**

undefined. **B) They have the form $y = mx + b$ ✓**

undefined. C) They form a V-shaped curve

undefined. D) They represent exponential growth

Linear functions form a straight line on a graph and have the form $y = mx + b$.

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

The domain refers to the set of possible inputs, while the range refers to the set of possible outputs. For example, in the function $f(x) = x^2$, the domain is all real numbers, and the range is all non-negative real numbers.

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

undefined. **A) 11 ✓**

undefined. B) 8

undefined. C) 10

undefined. D) 9

To find $f(4)$, substitute 4 into the function to get $f(4) = 2(4) + 3 = 11$.

Identify which of the following graphs represent a function.

undefined. **A) A graph of a straight line ✓**

undefined. B) A graph of a circle

undefined. **C) A graph of a parabola ✓**

undefined. **D) A graph of a V-shaped curve ✓**

A graph represents a function if it passes the Vertical Line Test. The straight line, parabola, and V-shaped curve represent functions, while the circle does not.

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

The vertex of the parabola $y = x^2 - 4x + 4$ is at the point (2, 0).

Part 3: Analysis, Evaluation, and Creation

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

undefined. A) It must be a straight line

undefined. **B) It must pass the Horizontal Line Test ✓**

undefined. C) It must be a parabola

undefined. D) It must have no intercepts

If a function has an inverse, its graph must pass the Horizontal Line Test.

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

undefined. A) It is a linear function

undefined. **B) It forms a V-shaped graph ✓**

undefined. **C) It has a vertex at the origin ✓**

undefined. D) It is not a function

The function $y = |x|$ forms a V-shaped graph and has a vertex at the origin.

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

Linear functions have straight-line graphs and are represented by equations of the form $y = mx + b$, while quadratic functions have parabolic graphs and are represented by equations of the form $y = ax^2 + bx + c$.

Which of the following statements is true about inverse functions?

undefined. A) They do not exist for linear functions

undefined. B) They reverse the operation of the original function ✓

undefined. C) They have the same graph as the original function

undefined. D) They are always quadratic

Inverse functions reverse the operation of the original function.

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

undefined. A) The relationship between temperature and time of day ✓

undefined. B) The relationship between a person's age and height ✓

undefined. C) The relationship between distance and time for a constant speed ✓

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

The relationships that can be represented by a function include the relationship between temperature and time of day, a person's age and height, and distance and time for a constant speed.

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

A quadratic function could model the height of a ball thrown into the air over time, as the height will increase to a maximum point and then decrease, forming a parabola.