# Evaluating Functions Worksheet Questions and Answers PDF

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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 has multiple outputs
- ◯ **B) A relation where each input has exactly one output ✓**
- ◯ C) A relation with no outputs
- ◯ D) A relation with no inputs

> A function is defined as a relation where each input has exactly one output.

### What is the definition of a function?

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> A function is a relation where each input has exactly one output.

**Which of the following are forms in which functions can be represented?**

*Hint: Consider different ways to express functions.*

- [ ] **A) Equations ✓**
- [ ] **B) Tables ✓**
- [ ] **C) Graphs ✓**
- [ ] **D) Narratives ✓**

> Functions can be represented in various forms including equations, tables, and graphs.

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- [ ] **D) Narratives ✓**

> Functions can be represented in various forms including equations, tables, and graphs.

**Explain what is meant by function notation and provide an example.**

*Hint: Think about how functions are expressed using symbols.*

**Function notation is a way to represent functions using symbols, typically f(x), where f indicates the function and x is the input variable.**

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**Function notation is a way to represent functions using symbols, such as f(x).**

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## Part 2: Comprehension and Application

**What does f(3) represent in the function f(x) = 2x + 5?**

*Hint: Consider what happens when you substitute x with 3.*

- ◯ A) The input value
- ◯ **B) The output when x = 3 ✓**
- ◯ C) The slope of the function
- ◯ D) The y-intercept of the function

f(3) represents the output of the function when the input x is 3.

**What does f(3) represent in the function f(x) = 2x + 5?**

*Hint: Think about the role of the input in the function.*

- ◯ A) The input value
- ◯ **B) The output when x = 3 ✓**
- ◯ C) The slope of the function
- ◯ D) The y-intercept of the function

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f(3) represents the output of the function when the input is 3.

**Which statements are true about the domain of a function?**

*Hint: Think about the set of possible input values.*

- ☐ **A) It includes all possible input values ✓**
- ☐ B) It is always a finite set
- ☐ **C) It can be restricted by the function's equation ✓**
- ☐ D) It determines the range

> The domain of a function includes all possible input values and can be restricted by the function's equation.

**Which statements are true about the domain of a function?**

*Hint: Consider the possible input values for a function.*

- [x] **A) It includes all possible input values ✓**
- [ ] B) It is always a finite set
- [x] **C) It can be restricted by the function's equation ✓**
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> The domain includes all possible input values and can be restricted by the function's equation.

**Describe how the graph of a linear function differs from that of a quadratic function.**

*Hint: Consider the shape and characteristics of each graph.*

> **A linear function's graph is a straight line, while a quadratic function's graph is a parabola that opens upwards or downwards.**

**Describe how the graph of a linear function differs from that of a quadratic function.**

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**If f(x) = x^2 - 4x + 4, what is f(2)?**

*Hint: Substitute x with 2 and simplify.*

- ◯ **A) 0 ✓**
- ◯ B) 4
- ◯ C) 8
- ◯ D) 12

f(2) evaluates to 0 when you substitute 2 into the function.

**If f(x) = x^2 - 4x + 4, what is f(2)?**

*Hint: Substitute x with 2 in the function.*

- ◯ **A) 0 ✓**
- ◯ B) 4
- ◯ C) 8

◯ D) 12

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◯ C) 8
◯ D) 12

f(2) evaluates to 0 when you substitute and simplify the expression.

**Given the function g(x) = 3x - 7, which of the following are true?**

*Hint: Calculate g for different values of x.*

☐ **A) g(0) = -7 ✓**
☐ **B) g(1) = -4 ✓**
☐ C) g(2) = -1
☐ **D) g(3) = 2 ✓**

The true statements about g(x) can be verified by substituting the values into the function.

**Given the function g(x) = 3x - 7, which of the following are true?**

*Hint: Evaluate g(x) for different values of x.*

☐ **A) g(0) = -7 ✓**
☐ **B) g(1) = -4 ✓**
☐ **C) g(2) = -1 ✓**
☐ **D) g(3) = 2 ✓**

The true statements about g(x) can be verified by substituting values.

**Given the function g(x) = 3x - 7, which of the following are true?**

*Hint: Evaluate g(x) at different values.*

☐ **A) g(0) = -7 ✓**
☐ **B) g(1) = -4 ✓**

- [ ] C) g(2) = -1
- [ ] **D) g(3) = 2 ✓**

Evaluate g(x) at specific points to determine the truth of the statements.

**Evaluate the function h(x) = 5x - 9 for x = -1 and x = 3. Show your work.**

*Hint: Substitute the values into the function and simplify.*

**To evaluate h(-1) and h(3), substitute -1 and 3 into the function and calculate the results.**

**Evaluate the function h(x) = 5x - 9 for x = -1 and x = 3. Show your work.**

*Hint: Substitute the values into the function and simplify.*

**Evaluate h(-1) and h(3) to find the outputs.**

**Evaluate the function h(x) = 5x - 9 for x = -1 and x = 3. Show your work.**

*Hint: Substitute the values into the function and simplify.*

**Evaluate h(-1) and h(3) by substituting and simplifying.**

## Part 3: Analysis, Evaluation, and Creation

**Which of the following functions is one-to-one and has an inverse?**

*Hint: Consider the properties of each function.*

- ◯ A) f(x) = x^2
- ◯ **B) f(x) = 2x + 3 ✓**
- ◯ C) f(x) = x^3 - x
- ◯ D) f(x) = |x|

The function f(x) = 2x + 3 is one-to-one and has an inverse.

**Which of the following functions is one-to-one and has an inverse?**

*Hint: Consider the properties of functions that allow for an inverse.*

- ◯ A) f(x) = x^2
- ◯ **B) f(x) = 2x + 3 ✓**
- ◯ C) f(x) = x^3 - x
- ◯ D) f(x) = |x|

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- ◯ **B) f(x) = 2x + 3 ✓**
- ◯ C) f(x) = x^3 - x

◯ D) f(x) = |x|

A one-to-one function has a unique output for each input, allowing for an inverse.

**Analyze the function f(x) = x^2 - 4x + 4. Which statements are true?**

*Hint: Consider the characteristics of the quadratic function.*

- ☐ **A) It is a quadratic function ✓**
- ☐ **B) It has a vertex at (2, 0) ✓**
- ☐ **C) It opens upwards ✓**
- ☐ D) It has no real roots

The function is a quadratic function with a vertex at (2, 0) and opens upwards.

**Analyze the function f(x) = x^2 - 4x + 4. Which statements are true?**

*Hint: Consider the characteristics of the quadratic function.*

- ☐ **A) It is a quadratic function ✓**
- ☐ **B) It has a vertex at (2, 0) ✓**
- ☐ **C) It opens upwards ✓**
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The function is quadratic, has a vertex at (2, 0), opens upwards, and has no real roots.

**Analyze the function f(x) = x^2 - 4x + 4. Which statements are true?**

*Hint: Consider the characteristics of the quadratic function.*

- ☐ **A) It is a quadratic function ✓**
- ☐ **B) It has a vertex at (2, 0) ✓**
- ☐ **C) It opens upwards ✓**
- ☐ D) It has no real roots

The function is quadratic, has a vertex, opens upwards, and has no real roots.

**Break down the steps to find the inverse of the function f(x) = 2x + 5.**

*Hint: Think about how to switch the roles of x and y.*

**To find the inverse, replace f(x) with y, switch x and y, and solve for y.**

**Break down the steps to find the inverse of the function f(x) = 2x + 5.**

*Hint: Consider the algebraic manipulations needed to find the inverse.*

**To find the inverse, swap x and y and solve for y.**

**Break down the steps to find the inverse of the function f(x) = 2x + 5.**

*Hint: Think about how to switch the roles of x and y.*

**To find the inverse, switch x and y, then solve for y.**

**Which of the following statements best evaluates the relationship between a function and its inverse?**

*Hint: Consider how functions and their inverses interact.*

◯ A) A function and its inverse are always identical

- ◯ **B) A function and its inverse reflect over the line y = x ✓**
- ◯ C) A function and its inverse have the same domain
- ◯ D) A function and its inverse have the same range

A function and its inverse reflect over the line y = x.

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- ◯ D) A function and its inverse have the same range

A function and its inverse reflect over the line y = x.

**Which of the following statements best evaluates the relationship between a function and its inverse?**

*Hint: Consider how functions and their inverses relate to each other.*

- ◯ A) A function and its inverse are always identical
- ◯ **B) A function and its inverse reflect over the line y = x ✓**
- ◯ C) A function and its inverse have the same domain
- ◯ D) A function and its inverse have the same range

A function and its inverse reflect over the line y = x.

**Evaluate the composite function (f∘g)(x) where f(x) = x + 2 and g(x) = 3x. Which statements are true?**

*Hint: Consider how to combine the two functions.*

- ☐ **A) (f∘g)(x) = 3x + 2 ✓**
- ☐ B) (f∘g)(x) = 3x + 6
- ☐ C) (f∘g)(x) = 3(x + 2)
- ☐ D) (f∘g)(x) = 3x + 5

The composite function (f∘g)(x) results in a new function based on the outputs of g(x) fed into f(x).

**Evaluate the composite function (f∘g)(x) where f(x) = x + 2 and g(x) = 3x. Which statements are true?**

*Hint: Consider how to combine the two functions.*

- [x] **A) (f∘g)(x) = 3x + 2 ✓**
- [ ] B) (f∘g)(x) = 3x + 6
- [ ] C) (f∘g)(x) = 3(x + 2)
- [ ] D) (f∘g)(x) = 3x + 5

> (f∘g)(x) = 3x + 2 is the correct evaluation of the composite function.

**Evaluate the composite function (f∘g)(x) where f(x) = x + 2 and g(x) = 3x. Which statements are true?**

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- [ ] A) (f∘g)(x) = 3x + 2
- [x] **B) (f∘g)(x) = 3x + 6 ✓**
- [ ] C) (f∘g)(x) = 3(x + 2)
- [ ] D) (f∘g)(x) = 3x + 5

> The composite function combines the outputs of f and g.

**Create a real-world scenario where a composite function might be used, and explain how you would set up the functions involved.**

*Hint: Think about situations where one function depends on another.*

> **A real-world scenario could involve calculating total costs where one function determines the price per item and another determines the quantity.**

**Create a real-world scenario where a composite function might be used, and explain how you would set up the functions involved.**

*Hint: Think about situations where two processes are combined.*

**A real-world scenario could involve calculating total costs based on unit price and quantity.**

**Create a real-world scenario where a composite function might be used, and explain how you would set up the functions involved.**

*Hint: Think about situations where two processes are combined.*

**A composite function can model scenarios like distance and time, where one function depends on another.**