

# Domain And Range Of A Function Worksheet Answer Key PDF

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## Part 1: Building a Foundation

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### What is the domain of a function?

undefined. A) The set of all possible output values

**undefined. B) The set of all possible input values ✓**

undefined. C) The set of all positive values

undefined. D) The set of all negative values

The domain of a function is the set of all possible input values.

### Which of the following describes the range of a function?

undefined. A) The set of all possible input values

**undefined. B) The set of all possible output values ✓**

undefined. C) The set of all x-values

undefined. D) The set of all y-values

The range of a function is the set of all possible output values.

### Which of the following functions have a domain of all real numbers? (Select all that apply)

**undefined. A) Linear functions ✓**

**undefined. B) Quadratic functions ✓**

undefined. C) Rational functions

undefined. D) Radical functions

Linear and quadratic functions have a domain of all real numbers.

**Explain in your own words the difference between the domain and range of a function.**

The domain refers to input values, while the range refers to output values.

List two types of functions and describe their typical domain and range.

1. Type of function 1

**Linear function: Domain is all real numbers, range is all real numbers.**

2. Type of function 2

**Quadratic function: Domain is all real numbers, range is non-negative real numbers.**

Linear functions typically have a domain and range of all real numbers, while quadratic functions have a domain of all real numbers and a range of non-negative real numbers.

## Part 2: Understanding and Interpretation

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What is the range of the function  $f(x) = x^2$ ?

undefined. A) All real numbers

undefined. B) All positive real numbers

**undefined. C) All non-negative real numbers ✓**

undefined. D) All negative real numbers

The range of  $f(x) = x^2$  is all non-negative real numbers.

Which of the following statements are true about the domain of the function  $f(x) = 1/(x-2)$ ? (Select all that apply)

undefined. A) The domain includes  $x = 2$

**undefined. B) The domain excludes  $x = 2$  ✓**

**undefined. C) The domain is all real numbers except  $x = 2$  ✓**

undefined. D) The domain is all real numbers

The domain excludes  $x = 2$  and is all real numbers except  $x = 2$ .

Describe how you would determine the domain of a radical function such as  $f(x) = \sqrt{x-3}$ .

To determine the domain, set the expression under the radical greater than or equal to zero and solve for  $x$ .

### Part 3: Application and Analysis

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Given the function  $f(x) = 3x + 5$ , what is the range if the domain is restricted to  $x \geq 0$ ?

undefined. A)  $y \geq 5$  ✓

undefined. B)  $y \leq 5$

undefined. C)  $y \geq 0$

undefined. D)  $y \leq 0$

The range is  $y \geq 5$  when the domain is restricted to  $x \geq 0$ .

If a quadratic function opens downwards and has a vertex at  $(2, 3)$ , which of the following are true about its range? (Select all that apply)

undefined. A) The range is  $y \leq 3$  ✓

undefined. B) The range is  $y \geq 3$

undefined. C) The range is all real numbers

undefined. D) The range is limited by the vertex ✓

The range is  $y \leq 3$  since the vertex is the maximum point.

Consider a real-world scenario where a function models the height of a ball thrown into the air. Explain how you would determine the domain and range of this function.

The domain would be the time interval during which the ball is in the air, and the range would be the height values from the ground to the maximum height.

### Part 4: Evaluation and Creation

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Analyze the function  $f(x) = 1/(x^2 - 4)$ . What values must be excluded from the domain?

undefined. A)  $x = 2$  and  $x = -2$  ✓

undefined. B)  $x = 0$

undefined. C)  $x = 4$

undefined. D)  $x = -4$

The values  $x = 2$  and  $x = -2$  must be excluded from the domain.

**For the function  $f(x) = \sqrt{x + 1}$ , which of the following statements are true? (Select all that apply)**

undefined. **A) The domain is  $x \geq -1$  ✓**

undefined. **B) The range is  $y \geq 0$  ✓**

undefined. C) The domain is all real numbers

undefined. D) The range is all real numbers

The domain is  $x \geq -1$  and the range is  $y \geq 0$ .

**Given the function  $f(x) = x^2 - 4x + 3$ , factor it and determine the domain and range by analyzing its graph.**

**The function factors to  $(x-1)(x-3)$  and has a domain of all real numbers and a range of non-negative real numbers.**

**Evaluate the following statement: "The domain of a function is always the same as its range." Is this statement true or false?**

undefined. A) True

undefined. **B) False ✓**

undefined. C) Sometimes true

undefined. D) Always true

The statement is false; the domain and range are generally different.

**Which of the following scenarios would require you to restrict the domain of a function? (Select all that apply)**

undefined. **A) A function modeling the number of people in a room ✓**

undefined. B) A function representing the temperature over time

undefined. C) A function calculating the speed of a car

undefined. **D) A function determining the area of a square ✓**

Scenarios like modeling the number of people in a room or the area of a square would require domain restrictions.

**Create a real-world problem that involves determining the domain and range of a function. Provide a brief explanation of how you would solve it.**

**An example could be modeling the distance a car travels over time, where the domain is time and the range is distance.**