

# Domain And Range Of A Function Worksheet

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### Part 1: Building a Foundation

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#### What is the domain of a function?

*Hint: Think about what values you can input into a function.*

- A) The set of all possible output values
- B) The set of all possible input values
- C) The set of all positive values
- D) The set of all negative values

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

*Hint: Consider what values come out of a function.*

- A) The set of all possible input values
- B) The set of all possible output values
- C) The set of all x-values
- D) The set of all y-values

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

*Hint: Think about the types of functions and their restrictions.*

- A) Linear functions
- B) Quadratic functions
- C) Rational functions
- D) Radical functions

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

*Hint: Consider what each term refers to in relation to a function.*

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

*Hint: Think about common functions you have encountered.*

1. Type of function 1

2. Type of function 2

## Part 2: Understanding and Interpretation

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

*Hint: Consider the output values of the function as  $x$  varies.*

- A) All real numbers
- B) All positive real numbers
- C) All non-negative real numbers
- D) All 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)**

*Hint: Think about values that would make the function undefined.*

- A) The domain includes  $x = 2$
- B) The domain excludes  $x = 2$
- C) The domain is all real numbers except  $x = 2$
- D) The domain is all real numbers

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

Hint: Consider the values that make the expression under the radical non-negative.

### 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  $x \geq 0$ ?

Hint: Consider how the function behaves with the given restriction.

- A)  $y \geq 5$
- B)  $y \leq 5$
- C)  $y \geq 0$
- D)  $y \leq 0$

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)

Hint: Consider the implications of the vertex on the range.

- A) The range is  $y \leq 3$
- B) The range is  $y \geq 3$
- C) The range is all real numbers
- D) The range is limited by the vertex

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.

Hint: Think about the physical constraints of the scenario.

## 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?**

*Hint: Consider the values that make the denominator zero.*

- A)  $x = 2$  and  $x = -2$
- B)  $x = 0$
- C)  $x = 4$
- D)  $x = -4$

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

*Hint: Think about the values that make the expression under the radical non-negative.*

- A) The domain is  $x \geq -1$
- B) The range is  $y \geq 0$
- C) The domain is all real numbers
- D) The range is all real numbers

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

*Hint: Consider how to factor the quadratic and what the graph looks like.*

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

*Hint: Consider the definitions of domain and range.*

- A) True
- B) False
- C) Sometimes true
- D) Always true

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

*Hint: Think about real-world situations where certain inputs are not possible.*

- A) A function modeling the number of people in a room
- B) A function representing the temperature over time
- C) A function calculating the speed of a car
- D) A function determining the area of a square

**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.**

*Hint: Think about a situation where you can model something with a function.*