

# Domain and Range

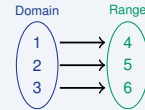
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 18

### Quick Review and Helpful Hints

The *domain* is the set of all input ( $x$ ) values; the *range* is the set of all output ( $y$ ) values. For a list of ordered pairs, collect the  $x$ -values for the domain and the  $y$ -values for the range (drop repeats, list in order).

▶ **Example:** Find the domain and range of  $\{(1, 4), (2, 5), (3, 6)\}$ .

**Work:** Domain is the  $x$ -values  $\{1, 2, 3\}$ . Range is the  $y$ -values  $\{4, 5, 6\}$ .  
 ★ **Answer:**  $D = \{1, 2, 3\}$ ,  $R = \{4, 5, 6\}$



$$D = \{1, 2, 3\}, R = \{4, 5, 6\}.$$

### Practice Problems

Find the domain or range as directed.

- |  |  |
|--|--|
| <p>1. Domain of <math>\{(1, 2), (3, 4), (5, 6)\}</math> _____</p> <p>2. Range of <math>\{(1, 2), (3, 4), (5, 6)\}</math> _____</p> <p>3. Domain of <math>\{(0, 1), (2, 3), (4, 5)\}</math> _____</p> <p>4. Range of <math>\{(0, 1), (2, 3), (4, 5)\}</math> _____</p> <p>5. Domain of <math>\{(-1, 2), (0, 2), (1, 2)\}</math> _____</p> <p>6. Range of <math>\{(-1, 2), (0, 2), (1, 2)\}</math> _____</p> <p>7. Domain of <math>\{(5, 10), (6, 20)\}</math> _____</p> | <p>8. Range of <math>\{(5, 10), (6, 20)\}</math> _____</p> <p>9. Domain of <math>\{(7, 1), (8, 2), (9, 3)\}</math> _____</p> <p>10. Range of <math>\{(7, 1), (8, 2), (9, 3)\}</math> _____</p> <p>11. Domain of <math>\{(-3, 0), (-2, 1), (-1, 2)\}</math> _____</p> <p>12. Range of <math>\{(-3, 0), (-2, 1), (-1, 2)\}</math> _____</p> <p>13. Range of <math>y = x + 2</math> for <math>x \in \{0, 1, 2\}</math> _____</p> <p>14. Range of <math>y = 2x</math> for <math>x \in \{1, 2, 3\}</math> _____</p> |
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### Word Problems

15. A function pairs the days {Mon, Tue, Wed} with temperatures. What is the domain? \_\_\_\_\_
16. The points  $(1, 10), (2, 20), (3, 30)$  show sales. What is the range? \_\_\_\_\_
17. For  $y = 3x$  with  $x \in \{0, 1, 2\}$ , list the range. \_\_\_\_\_
18. A tutoring table lists ordered pairs  $\{(4, 4), (5, 5), (6, 6)\}$  for practice day and score. What is the domain of the relation? \_\_\_\_\_



## Answer Keys

1.  $\{1, 3, 5\}$

2.  $\{2, 4, 6\}$

3.  $\{0, 2, 4\}$

4.  $\{1, 3, 5\}$

5.  $\{-1, 0, 1\}$

6.  $\{2\}$

7.  $\{5, 6\}$

8.  $\{10, 20\}$

9.  $\{7, 8, 9\}$

10.  $\{1, 2, 3\}$

11.  $\{-3, -2, -1\}$

12.  $\{0, 1, 2\}$

13.  $\{2, 3, 4\}$

14.  $\{2, 4, 6\}$

15.  $\{\text{Mon, Tue, Wed}\}$

16.  $\{10, 20, 30\}$

17.  $\{0, 3, 6\}$

18.  $\{4, 5, 6\}$

### Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Collect the  $x$ -values:  $\{1, 3, 5\}$ . So the final answer is  $\{1, 3, 5\}$ .

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Collect the  $y$ -values:  $\{2, 4, 6\}$ . So the final answer is  $\{2, 4, 6\}$ .

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{0, 2, 4\}$ . So the final answer is  $\{0, 2, 4\}$ .

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $y$ -values are  $\{1, 3, 5\}$ . So the final answer is  $\{1, 3, 5\}$ .

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{-1, 0, 1\}$ . So the final answer is  $\{-1, 0, 1\}$ .

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is All outputs are 2, so the range is  $\{2\}$ . So the final answer is  $\{2\}$ .

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{5, 6\}$ . So the final answer is  $\{5, 6\}$ .

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $y$ -values are  $\{10, 20\}$ . So the final answer is  $\{10, 20\}$ .

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{7, 8, 9\}$ . So the final answer is  $\{7, 8, 9\}$ .

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $y$ -values are  $\{1, 2, 3\}$ . So the final answer is  $\{1, 2, 3\}$ .

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{-3, -2, -1\}$ . So the final answer is  $\{-3, -2, -1\}$ .

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $y$ -values are  $\{0, 1, 2\}$ . So the final answer is  $\{0, 1, 2\}$ .

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $0 + 2, 1 + 2, 2 + 2 = \{2, 3, 4\}$ . So the final answer is  $\{2, 3, 4\}$ .

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $2(1), 2(2), 2(3) = \{2, 4, 6\}$ . So the final answer is  $\{2, 4, 6\}$ .

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The domain is the set of inputs: the three days. So the final answer is  $\{\text{Mon, Tue, Wed}\}$ .

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The range is the set of outputs:  $\{10, 20, 30\}$ . So the final answer is  $\{10, 20, 30\}$ .

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3(0), 3(1), 3(2) = \{0, 3, 6\}$ . So the final answer is  $\{0, 3, 6\}$ .

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The  $x$ -values are  $\{4, 5, 6\}$ . So the final answer is  $\{4, 5, 6\}$ .



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