

Domain and Range

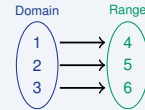
Name: _____ Date: _____ Score: _____ / 18

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.

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| <p>1. Domain of $\{(1, 2), (3, 4), (5, 6)\}$ _____</p> <p>2. Range of $\{(1, 2), (3, 4), (5, 6)\}$ _____</p> <p>3. Domain of $\{(0, 1), (2, 3), (4, 5)\}$ _____</p> <p>4. Range of $\{(0, 1), (2, 3), (4, 5)\}$ _____</p> <p>5. Domain of $\{(-1, 2), (0, 2), (1, 2)\}$ _____</p> <p>6. Range of $\{(-1, 2), (0, 2), (1, 2)\}$ _____</p> <p>7. Domain of $\{(5, 10), (6, 20)\}$ _____</p> | <p>8. Range of $\{(5, 10), (6, 20)\}$ _____</p> <p>9. Domain of $\{(7, 1), (8, 2), (9, 3)\}$ _____</p> <p>10. Range of $\{(7, 1), (8, 2), (9, 3)\}$ _____</p> <p>11. Domain of $\{(-3, 0), (-2, 1), (-1, 2)\}$ _____</p> <p>12. Range of $\{(-3, 0), (-2, 1), (-1, 2)\}$ _____</p> <p>13. Range of $y = x + 2$ for $x \in \{0, 1, 2\}$ _____</p> <p>14. Range of $y = 2x$ for $x \in \{1, 2, 3\}$ _____</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. $\{1, 3, 5\}$ | 7. $\{5, 6\}$ | 13. $\{2, 3, 4\}$ |
| 2. $\{2, 4, 6\}$ | 8. $\{10, 20\}$ | 14. $\{2, 4, 6\}$ |
| 3. $\{0, 2, 4\}$ | 9. $\{7, 8, 9\}$ | 15. $\{\text{Mon, Tue, Wed}\}$ |
| 4. $\{1, 3, 5\}$ | 10. $\{1, 2, 3\}$ | 16. $\{10, 20, 30\}$ |
| 5. $\{-1, 0, 1\}$ | 11. $\{-3, -2, -1\}$ | 17. $\{0, 3, 6\}$ |
| 6. $\{2\}$ | 12. $\{0, 1, 2\}$ | 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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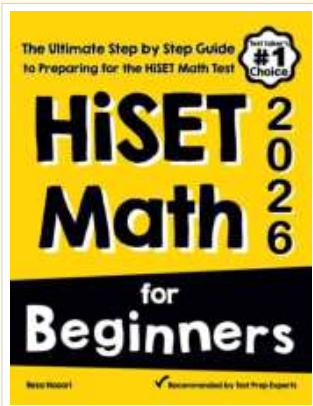
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