

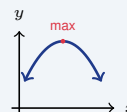
# Interpreting Graphs of Functions

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

## Quick Review and Helpful Hints

A graph tells a story. Where it *rises* left to right, the function is increasing; where it *falls*, it is decreasing; *flat* means constant. The *y*-intercept is the starting value, and the highest or lowest points are the maximum or minimum.

▶ **Example:** A graph rises from left to right. Is the function increasing or decreasing? **Work:** As  $x$  gets larger,  $y$  gets larger too, so the graph is going up.  
 ★ **Answer:** Increasing



Rises, peaks (max), then falls.

### ◆ Practice Problems

Answer each question about a graph.

- |  |  |
|--|--|
| <p>1. Graph rises left-to-right: increasing or decreasing? _____</p> <p>2. Graph falls left-to-right: which? _____</p> <p>3. A flat horizontal graph is? _____</p> <p>4. Where a graph crosses the <math>y</math>-axis is the? _____</p> <p>5. The highest point of a graph is the? _____</p> <p>6. The lowest point is the? _____</p> <p>7. Where a graph crosses the <math>x</math>-axis, <math>y = ?</math> _____</p> | <p>8. A line with positive slope is? _____</p> <p>9. A line with negative slope is? _____</p> <p>10. The value of a function at <math>x = 0</math> is its? _____</p> <p>11. A U-shaped parabola opening up has a? _____</p> <p>12. A graph that peaks then falls has a? _____</p> <p>13. On a distance-time graph, a steeper line means? _____</p> <p>14. Where a profit graph crosses zero, profit =? _____</p> |
|--|--|

### ◆ Word Problems

15. A runner's distance-time graph is flat for a while. What is the runner doing? \_\_\_\_\_
16. A temperature graph rises all morning. The temperature is doing what? \_\_\_\_\_
17. A ball's height graph goes up then down. What is the top point called? \_\_\_\_\_
18. Where a profit graph crosses zero (break-even), the profit equals what? \_\_\_\_\_



## Answer Keys

- |                   |                    |                |
|-------------------|--------------------|----------------|
| 1. Increasing     | 7. 0               | 13. faster     |
| 2. Decreasing     | 8. Increasing      | 14. 0          |
| 3. Constant       | 9. Decreasing      | 15. resting    |
| 4. $y$ -intercept | 10. $y$ -intercept | 16. Increasing |
| 5. maximum        | 11. minimum        | 17. maximum    |
| 6. minimum        | 12. maximum        | 18. 0          |

### 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 Rising means  $y$  grows as  $x$  grows: increasing. So the final answer is Increasing.

**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 Falling means  $y$  drops as  $x$  grows: decreasing. So the final answer is Decreasing.

**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 No change in height means constant. So the final answer is Constant.

**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 That crossing point is the  $y$ -intercept. So the final answer is  $y$ -intercept.

**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 peak is the maximum. So the final answer is maximum.

**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 The bottom is the minimum. So the final answer is minimum.

**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 On the  $x$ -axis the height is 0. So the final answer is 0.

**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 Positive slope goes up: increasing. So the final answer is Increasing.

**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 Negative slope goes down: decreasing. So the final answer is Decreasing.

**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 At  $x = 0$  the output is the  $y$ -intercept. So the final answer is  $y$ -intercept.

**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 An upward U has a lowest point: minimum. So the final answer is minimum.

**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 A peak before falling is a maximum. So the final answer is maximum.

**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 A steeper line covers distance faster. So the final answer is faster.

**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 On the  $x$ -axis the value is 0. So the final answer is 0.

**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 A flat distance graph means no motion: resting. So the final answer is resting.

**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 Rising temperature means increasing. So the final answer is Increasing.

**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 The top of the path is the maximum. So the final answer is maximum.

**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 Break-even means profit = 0. So the final answer is 0.



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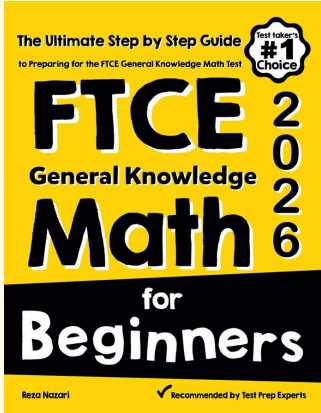
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