

## 1-8

## Study Guide and Intervention

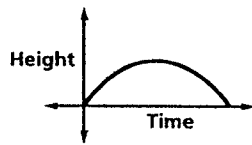
## Graphs and Functions

**Interpret Graphs** A function is a relationship between input and output values. In a function, there is exactly one output for each input. The input values are associated with the **independent variable**, and the output values are associated with the **dependent variable**. Functions can be graphed without using a scale to show the general shape of the graph that represents the function.

STUDY  
THE  
EXAMPLES

**Example 1**

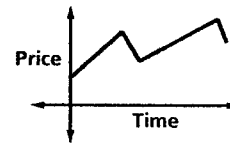
The graph below represents the height of a football after it is kicked downfield. Identify the independent and the dependent variable. Then describe what is happening in the graph.



The independent variable is time, and the dependent variable is height. The football starts on the ground when it is kicked. It gains altitude until it reaches a maximum height, then it loses altitude until it falls to the ground.

**Example 2**

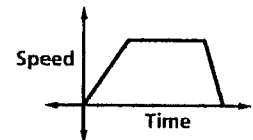
The graph below represents the price of stock over time. Identify the independent and dependent variable. Then describe what is happening in the graph.



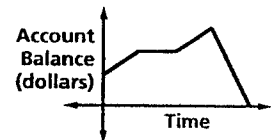
The independent variable is time and the dependent variable is price. The price increases steadily, then it falls, then increases, then falls again.

**Exercises**

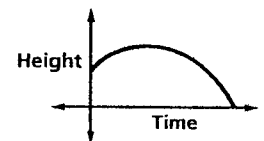
1. The graph represents the speed of a car as it travels to the grocery store. Identify the independent and dependent variable. Then describe what is happening in the graph.



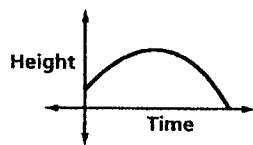
2. The graph represents the balance of a savings account over time. Identify the independent and the dependent variable. Then describe what is happening in the graph.



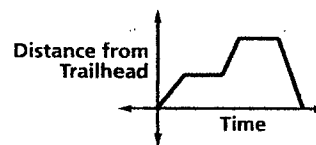
3. The graph represents the height of a baseball after it is hit. Identify the independent and the dependent variable. Then describe what is happening in the graph.



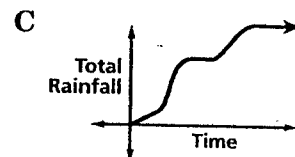
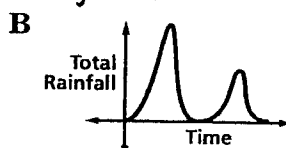
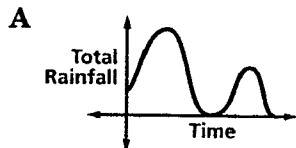
1. The graph below represents the path of a football thrown in the air. Describe what is happening in the graph.



2. The graph below represents a puppy exploring a trail. Describe what is happening in the graph.



3. **WEATHER** During a storm, it rained lightly for a while, then poured heavily, and then stopped for a while. Then it rained moderately for a while before finally ending. Which graph represents this situation? *Explain!*



Evaluate:

④  $\frac{2}{9} \cdot \frac{12}{5}$

⑤  $\frac{7}{8} \cdot \frac{11}{10}$

⑥  $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

⑦  $\frac{1}{7} + \frac{2}{5}$

⑧  $\frac{2}{9} + \frac{5}{18}$

⑨  $\frac{7}{10} + \frac{6}{30}$

⑩  $\frac{1}{2} \div \frac{1}{2}$

⑪  $12 \cdot \frac{3}{5}$

⑫  $0.8$

⑬  $\frac{3}{4} - \frac{2}{3}$

⑭  $\frac{2}{5} \cdot \frac{5}{2}$

⑮  $\frac{5}{8} - \frac{1}{12}$

Simplify each expression. If not possible, write *simplified*.

16.  $w + 14w - 6w$

17.  $3(5 + 6h)$

18.  $14(2r - 3)$

19.  $12b^2 + 9b^2$

20.  $25t^3 - 17t^3$

21.  $c^2 + 4d^2 - d^2$

22.  $3a^2 + 6a + 2b^2$

23.  $4(6p + 2q - 2p)$

24.  $x + \frac{2}{3}x + \frac{x}{3}$