

4-6

Practice

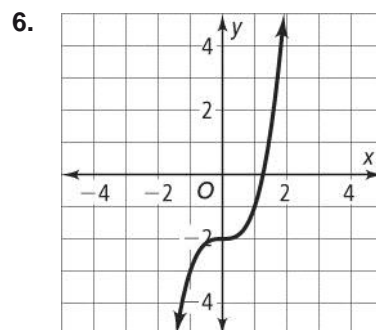
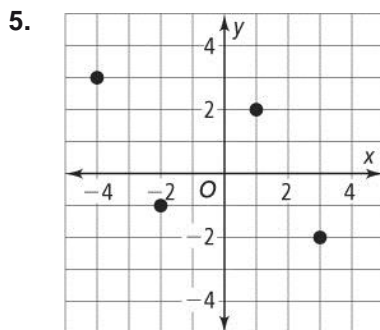
Form G

Formalizing Relations and Functions

Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

1. $\{(3, 6), (5, 7), (7, 7), (8, 9)\}$
2. $\{(0, 0.4), (1, 0.8), (2, 1.2), (3, 1.6)\}$
3. $\{(5, -4), (3, -5), (4, -3), (6, 4)\}$
4. $\{(0.3, 0.6), (0.4, 0.8), (0.3, 0.7), (0.5, 0.5)\}$

Use the vertical line test to determine whether the relation is a function.



7. The function $w(x) = 60x$ represents the number of words $w(x)$ you can type in x minutes. How many words can you type in 9 minutes?
8. Sound travels about 343 meters per second. The function $d(t) = 343t$ gives the distance $d(t)$ in meters that sound travels in t seconds. How far does sound travel in 8 seconds?

4-6

Practice (continued)

Form G

Formalizing Relations and Functions

Find the range of each function for the given domain.

9. $f(x) = -3x + 2$; $\{-2, -1, 0, 1, 2\}$

10. $f(x) = x^3$; $\{-1, -0.5, 0, 0.5, 1\}$

11. $f(x) = 4x + 1$; $\{-4, -2, 0, 2, 4\}$

12. $f(x) = x^2 + 2$; $\{0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1\}$

Find a reasonable domain and range for each function. Then graph the function.

13. A high school is having a pancake breakfast fundraiser. They have 3 packages of pancake mix that each feed 90 people. The function $N(p) = 90p$ represents the number of people $N(p)$ that p packages of pancake mix feed.

14. A charter boat travels at a maximum rate of 25 miles per hour. The function $d(x) = 25x$ represents the distance $d(x)$, in miles, that the boat can travel in x hours. The charter boat travels a maximum distance of 75 miles from the shore.

15. **Reasoning** If $f(x) = x^2 - 3$ and $f(a) = 46$, what is the value of a ? Explain.

16. **Open-Ended** What is a value of x that makes the relation $\{(2, 4), (3, 6), (8, x)\}$ a function?