

4-6

Practice

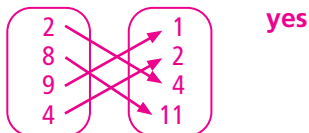
Form K

Formalizing Relations and Functions

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

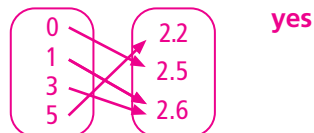
1. $\{(2, 4), (8, 11), (9, 1), (4, 2)\}$

domain: $\{2, 4, 8, 9\}$; range: $\{1, 2, 4, 11\}$



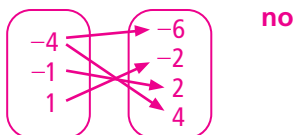
2. $\{(5, 2.2), (3, 2.6), (1, 2.6), (0, 2.5)\}$

domain: $\{0, 1, 3, 5\}$; range: $\{2.2, 2.5, 2.6\}$



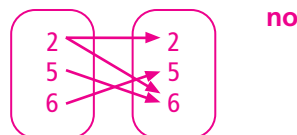
3. $\{(-4, -6), (1, -2), (-4, 4), (-1, 2)\}$

domain: $\{-4, -1, 1\}$; range: $\{-6, -2, 2, 4\}$

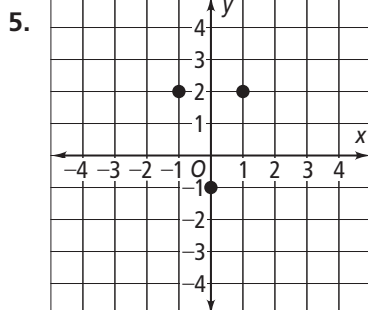


4. $\{(6, 5), (5, 6), (2, 2), (2, 6)\}$

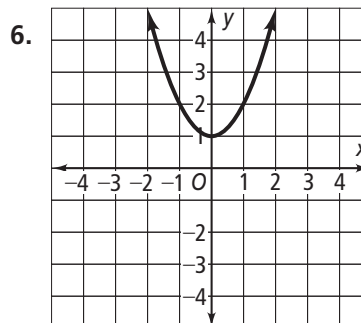
domain: $\{2, 5, 6\}$; range: $\{2, 5, 6\}$



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



function



function

4-6

Practice (continued)

Form K

Formalizing Relations and Functions

Find the range of each function for the given domain.

7. $f(x) = -4x + 3; \{-1, 0, 1, 2, 3\}$
 $\{7, 3, -1, -5, -9\}$

8. $f(x) = x^3 + 1; \{-2, -1, 0, 1, 2\}$
 $\{-7, 0, 1, 2, 9\}$

9. $f(x) = x - 6; \{-5, -3, -1, 1, 3\}$
 $\{-11, -9, -7, -5, -3\}$

10. $f(x) = x^2 - 2; \{-4, -2, 0, 1, 3\}$
 $\{14, 2, -2, -1, 7\}$

11. A tenth grade class is selling granola bars for a fundraiser. They earn \$0.75 for every granola bar that they sell. They have ordered 300 granola bars for the sale. The function $P(b) = 0.75b$ represents the profit P the class earns for each bar b they sell. Find a reasonable domain and range for the function.

Domain: $0 \leq b \leq 300$; **Range:** $0 \leq P(b) \leq 225$

12. The function $t(x) = 150x$ represents the number of words $t(x)$ you can speak in x minutes. How many words can you speak in 20 minutes? **3000**

13. **Reasoning** If $f(x) = x^2 - 15$ and $f(a) = 49$, what is the value of a ? Explain.

± 8 ; because $f(\pm 8) = (\pm 8)^2 - 15 = 49$

14. **Open-Ended** What is a value of x that makes the relation $\{(3, 5), (2, 5), (9, x)\}$ a function?

Answers may vary, but it can be any real number.