Name _____ Class _____ Date _____

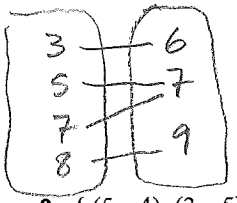
4-6 Practice

Form G

Formalizing Relations and Functions

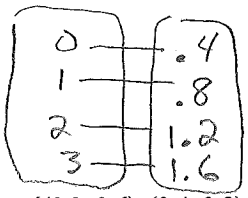
Identify the domain and range of each relation. Use a mapping diagram to determine whether the relation is a function.

1. {(3, 6), (5, 7), (7, 7) (8, 9)}



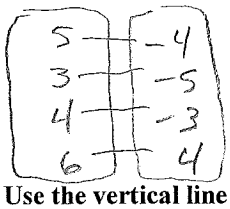
D: {3, 5, 7, 8}
R: {6, 7, 9}
function

2. {(0, 0.4), (1, 0.8), (2, 1.2), (3, 1.6)}



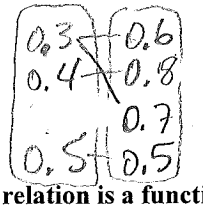
D: {0, 1, 2, 3}
R: {.4, .8, 1.2, 1.6}
function

3. {(5, –4), (3, –5), (4, –3), (6, 4)}



function
D: {3, 4, 5, 6}
R: {-5, -4, -3, 4}

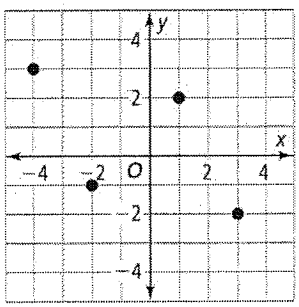
4. {(0.3, 0.6), (0.4, 0.8), (0.3, 0.7), (0.5, 0.5)}



not a function
D: {0.3, 0.4, 0.5}
R: {0.5, 0.6, 0.7, 0.8}

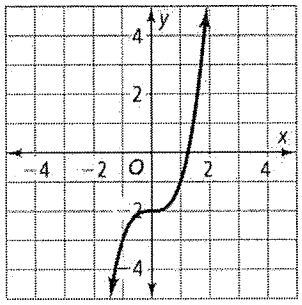
Use the vertical line test to determine whether the relation is a function.

5.



function

6.



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?

$w(9) = 60(9)$

540 words

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?

$d(8) = 343(8) = 2744$ meters

Name _____ Class _____ Date _____

4-6 Practice (continued) Form G

Formalizing Relations and Functions

Find the range of each function for the given domain.

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

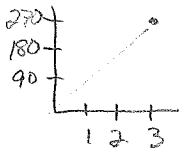
10. $f(x) = x^3$; $\{-1, -0.5, 0, 0.5, 1\}$

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

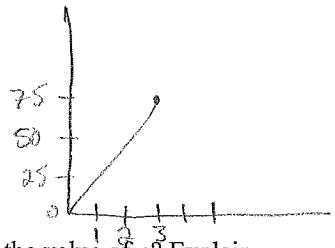
12. $f(x) = x^2 + 2$; $\{0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1\}$

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?