Name KEY Class _____ Date _____

4-6 Practice

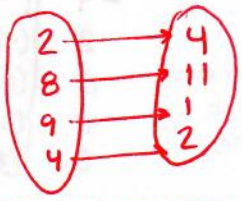
Form K

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)}

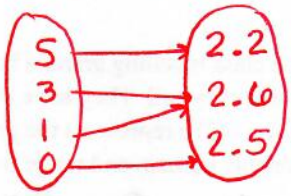
D: {2, 8, 9, 4}
R: {4, 11, 1, 2}



FUNCTION

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

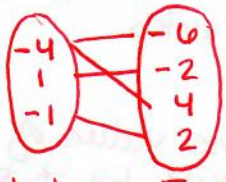
D: {5, 3, 1, 0}
R: {2.2, 2.6, 2.5}



FUNCTION

3. {(−4, −6), (1, −2), (−4, 4), (−1, 2)}

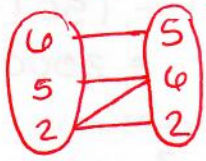
D: {−4, 1, −1}
R: {−6, −2, 4, 2}



Not a Function

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

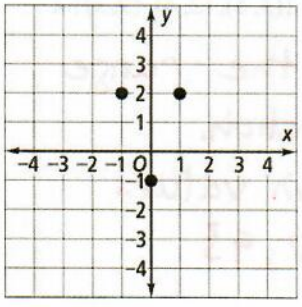
D: {6, 5, 2}
R: {5, 6, 2}



NOT A FUNCTION

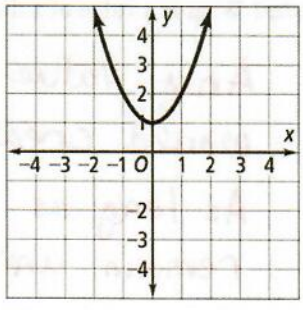
Use the vertical line test to determine whether the relation is a function.

5.



FUNCTION

6.



FUNCTION

Name _____ Class _____ Date _____

4-6 Practice (continued)

Form K

Formalizing Relations and Functions

Find the range of each function for the given domain.

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

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

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

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

(7)

x	f(x)
-1	$-4(-1)+3=7$
0	$-4(0)+3=3$
1	$-4(1)+3=-1$
2	$-4(2)+3=-5$
3	$-4(3)+3=-9$

(8)

x	$f(x)=x^3+1$
-2	$(-2)^3+1=-8+1=-7$
-1	$(-1)^3+1=-1+1=0$
0	$(0)^3+1=0+1=1$
1	$(1)^3+1=1+1=2$
2	$(2)^3+1=8+1=9$

(9)

x	f(x) = x − 6
-5	$-5-6=-11$
-3	$-3-6=-9$
-1	$-1-6=-7$
1	$1-6=-5$
3	$3-6=-3$

(10)

x	$f(x)=x^2-2$
-4	$(-4)^2-2=16-2=14$
-2	$(-2)^2-2=4-2=2$
0	$(0)^2-2=0-2=-2$
1	$(1)^2-2=1-2=-1$
3	$(3)^2-2=9-2=7$

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 - 300 granola bars

Range $(\$0.75)(0) - (\$0.75)(300) = \$0 - \$225$

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?

$t(20) = 150(20)$
$= 3000$

You can speak 3000 words in 20 minutes.

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

$49 = x^2 - 15$
$64 = x^2$
$\pm 8 = x$

$a = \pm 8$

The value of "a" could be ± 8.

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

Any value of x in the range would create a function.

As long as the domain values remain unique $\{3, 2, 9\}$