Algebra 1 – Worksheet 1.6-1.7, 4.7 Name: Key

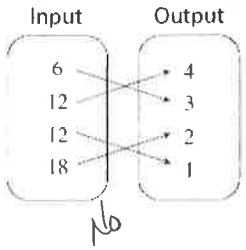
Determine whether or not the given relation is a function. If it is a function, identify the domain and range.

1. yes

Input	Output
1	15
3	20
5	15
7	20

D: {1, 3, 5, 7}

R: {15, 20}

2. 

No

D: _____

R: _____

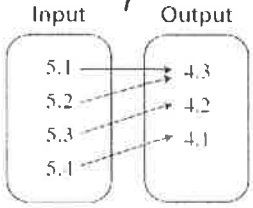
3. yes

Input	Output
5	5
6	5
7	5
8	5

D: {5, 6, 7, 8}

R: {5}

4. yes



D: {5.1, 5.2, 5.3, 5.4}

R: {4.1, 4.2, 4.3}

Make a table for the given values of the function. Then determine the range.

5.

x	y = 4x – 2	y	(x , y)
- 2	$4(-2) - 2 = -8 - 2 = -10$	-10	(-2, -10)
- 1	$4(-1) - 2 = -4 - 2 = -6$	-6	(-1, -6)
0	$4(0) - 2 = 0 - 2 = -2$	-2	(0, -2)
1	$4(1) - 2 = 4 - 2 = 2$	2	(1, 2)
2	$4(2) - 2 = 8 - 2 = 6$	6	(2, 6)

Range: {-10, -6, -2, 2, 6}

6.

x	f(x) = 0.1x + 3	f(x)	(x , f(x))
- 20	$0.1(-20) + 3 = -2 + 3 = 1$	1	(-20, 1)
- 8	$0.1(-8) + 3 = -0.8 + 3 = 2.2$	2.2	(-8, 2.2)
0	$0.1(0) + 3 = 0 + 3 = 3$	3	(0, 3)
3	$0.1(3) + 3 = 0.3 + 3 = 3.3$	3.3	(3, 3.3)
10	$0.1(10) + 3 = 1 + 3 = 4$	4	(10, 4)

Range: {1, 2.2, 3, 3.3, 4}

7.

x	$g(x) = \frac{1}{2}x + 2$	$g(x)$	$(x, g(x))$
-8	$\frac{1}{2}(-8) + 2 = -4 + 2 = -2$	-2	$(-8, -2)$
-4	$\frac{1}{2}(-4) + 2 = -2 + 2 = 0$	0	$(-4, 0)$
0	$\frac{1}{2}(0) + 2 = 0 + 2 = 2$	2	$(0, 2)$
6	$\frac{1}{2}(6) + 2 = 3 + 2 = 5$	5	$(6, 5)$
14	$\frac{1}{2}(14) + 2 = 7 + 2 = 9$	9	$(14, 9)$

Range: $\{-2, 0, 2, 5, 9\}$

8.

x	$y = -x - 10$	y	(x, y)
-2	$-(-2) - 10 = 2 - 10 = -8$	-8	$(-2, -8)$
-1	$-(-1) - 10 = 1 - 10 = -9$	-9	$(-1, -9)$
0	$-(0) - 10 = 0 - 10 = -10$	-10	$(0, -10)$
1	$-(1) - 10 = -1 - 10 = -11$	-11	$(1, -11)$
2	$-(2) - 10 = -2 - 10 = -12$	-12	$(2, -12)$

Range: $\{-12, -11, -10, -9, -8\}$

Write a rule for the function.

9.

Input, x	1	2	3	4
Output, y	5	10	15	20

$y = 5x$

10.

Input, x	10	11	12	13
Output, y	3	4	5	6

$y = x - 7$

11.

Input, x	0	1	2	3
Output, y	3	5	7	9

$y = 2x + 3$

Find the value of *x* so that the function has the given value.

12. $f(x)=4x-2$, $f(x)=18$

$18 = 4x - 2$

$+2 \quad +2$

$\frac{20}{4} = \frac{4x}{4}$

$x = 5$

13. $n(x)=7x+4$, $n(x)=39$

$39 = 7x + 4$

$-4 \quad -4$

$\frac{35}{7} = \frac{7x}{7}$

$x = 5$

14. $q(x)=6-5x$, $q(x)=21$

$21 = 6 - 5x$

$-6 \quad -6$

$\frac{15}{-5} = \frac{-5x}{-5}$ $x = -3$

15. $g(x)=-3x+8$, $g(x)=14$

$14 = -3x + 8$

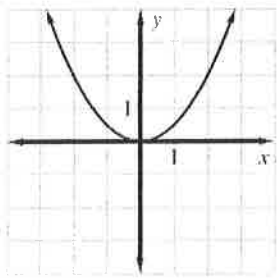
$-8 \quad -8$

$\frac{6}{-3} = \frac{-3x}{-3}$

$x = -2$

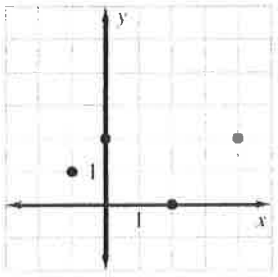
Determine whether or not the graph is a function by the Vertical Line Test.

16.



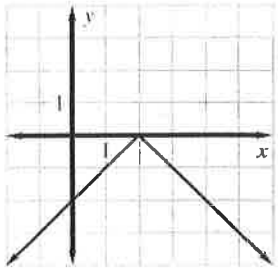
Function? Yes

17.



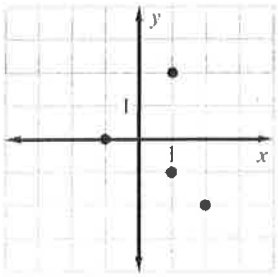
Function? Yes

18.



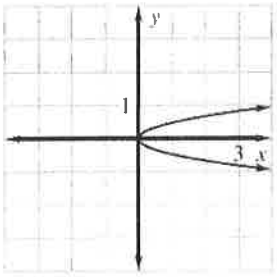
Function? Yes

19.



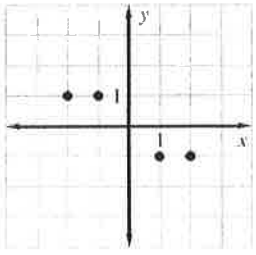
Function? No

20.



Function? No

21.



Function? Yes

22. The table shows men's shoe sizes in the United States and Europe.

1 1.5 2 2.5 3.0

U.S. size	3.5	4	4.5	5	5.5	6
European size	35	35.5	36	36.5	37	37.5

32.5 33 33.5 34 34.5

a. Write a rule for the European size as a function of the United States' size.

$y = x + 31.5$

b. Use your function to predict the European size of a U.S. size 11 shoe.

42.5

$y = 11 + 31.5$

23. A deli worker has created 8 large foot-long subs in the first 2 hours of his shift. He plans on making foot-long subs at the same rate for the rest of his shift.

a. Fill out the table to show the amount of subs made as a function of time.

Time	**0**	**2**	**4**	**6**	**8**
Subs Made	0	8	16	24	32

b. Write a rule for the function.

$y = 4x$

c. When he arrived at work, he received an order for 135 sandwiches in two days. If the deli worker is planning on working a 9.5 hour shift today and 8.5 hour shift tomorrow, will he make the order in time? No

$4(9.5) + 4(8.5) =$

$38 + 34 = 72$