Warm Up September 11, 2018

1.) It costs Marcus an access fee for each visit to his gym, plus it costs him $3 in gas for each trip to the gym and back. This month it cost Marcus $108 for 6 trips to his gym. How much is Marcus's access fee per visit?

$6x + 18 = 108$

$15 access fee

2.) If $-5x+80 > 2x - 25$, what is the greatest possible value of $x+5$?

3.) Evaluate $3+7(2^3 - 6)^2$

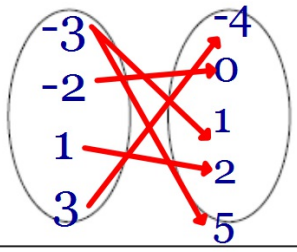
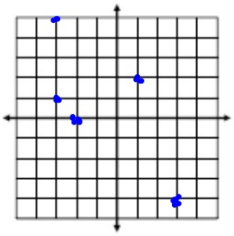
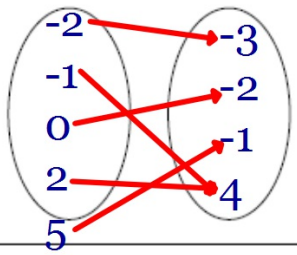
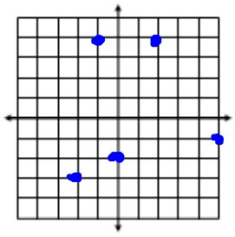
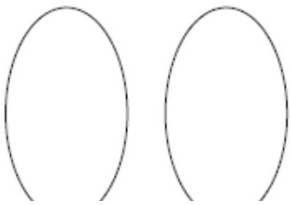
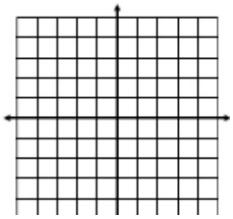
Relations

Definition: a set of ordered pairs

The set of all x-values is called the domain. **The set of all y-values is called the** range

least to greatest; no repeats

Representing Relations

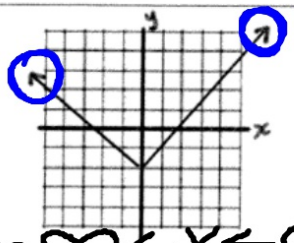
Ordered Pairs	Table	Mapping	Graph
{ (-3, 1), (-2, 0), (1, 2), (3, -4), (-3, 5)} **Domain:** -3, -2, 1, 3 **Range:** -4, 0, 1, 2, 5	x: -3, -2, 1, 3, -3 y: 1, 0, 2, -4, 5		
{ (-2, -3), (-1, 4) , (0 ,-2), (2, 4), (5, -1)} **Domain:** -2, -1, 0, 2, 5 **Range:** -3, -2, -1, 4	x: -2, -1, 0, 2, 5 y: -3, 4, -2, 4, -1		
Domain: _____ **Range:**	x: y:		

X----->DOMAIN & RANGE<-----Y
OF CONTINUOUS GRAPHS

- For **DOMAIN**, scan your pencil left to right along the ___-axis.
- For **RANGE**, scan your pencil bottom to top along the ___-axis.

EXAMPLES:

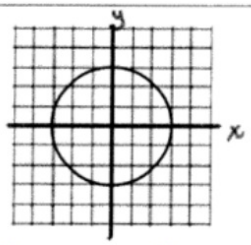
1



Domain = $-\infty \le x \le \infty$

Range = $y \ge -2$

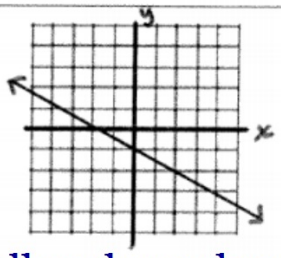
2



Domain = $-3 \le x \le 3$

Range = $-3 \le y \le 3$

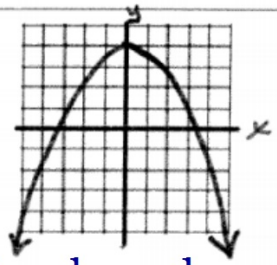
3



Domain = All real numbers

Range = All real numbers

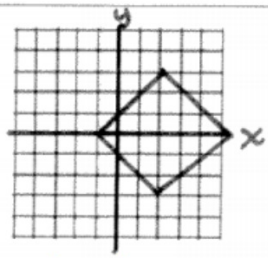
4



Domain = All real numbers

Range = $y \leq 4$

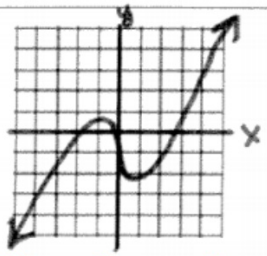
5



Domain = $-1 \leq x \leq 5$

Range = $-3 \leq y \leq 3$

6



Domain = All real numbers

Range = All real numbers

FUNCTIONS

What is a function? a relation representation in which the domain (x - values) do not repeat.

To test whether a relation is a function:

Given Ordered Pairs	If x-values repeat, then it is NOT a function.
Given Graphs	Use the Vertical Line Test. If a vertical line intersects a graph more than once, then it is NOT a function.

Write the domain and range for each relation.

Determine whether the following are functions:

1. {(5, -2), (3, -5), (2, -5), (0, -2), (-1, -3)}

YES

2. {(-2, 3), (0, 1), (2, -4), (3, -1), (2, 4)}

NO, X= 2 repeats

3. {(-4, -1), (-3, -1), (-2, -3), (-1, 0), (-3, 2)}

NO, X = -3 repeats

4. {(1, -5), (2, -3), (3, -1), (4, 0), (5, 2)}

YES

5.

x	y
2	3
-1	0
0	1
1	1
2	2

No, x = 2 repeats.

6.

x	y
-2	3
-1	0
0	1
1	1
2	2

Yes

7.

x	y
-3	4
-1	2
0	1
-1	3
-2	5

No, x = -1 repeats

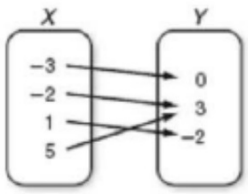
How can you determine whether or not points in a table produce a function?

8.

x	y
1	−5
−4	3
7	6
1	−2

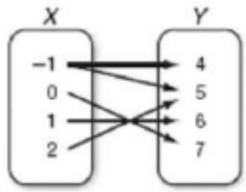
No, x = 1 repeats

9.



Yes

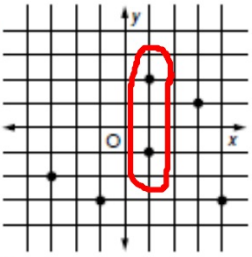
10.



No, x = -1 repeats

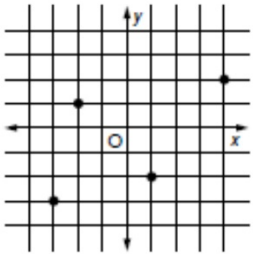
-1, 4
-1, 5
0, 7
1, 6
2, 5

11.



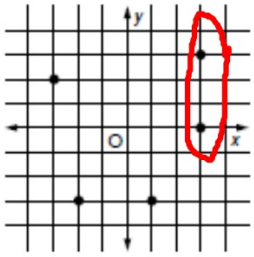
No

12.



Yes

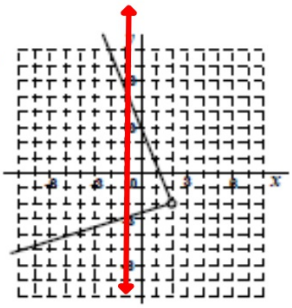
13.



No

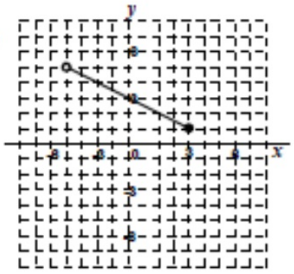
Vertical Line Test

14.



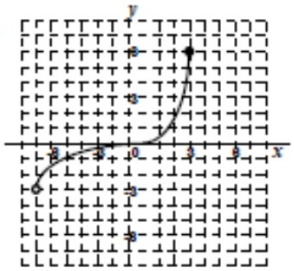
No

15.



Yes

16.



Yes

Vertical Line Test

Ways to Represent RELATIONS

TABLES

x	y
3	1
-2	-4
0	2
3	6

Domain: -2, 0, 3

Range: -4, 1, 2, 6

Function? No

ORDERED PAIRS

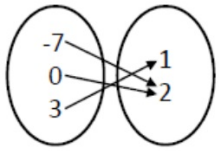
{(-1, 2), (0, 5), (2, 7)}

Domain: -1, 0, 2

Range: 2, 5, 7

Function? Yes

MAPPINGS

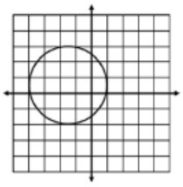


Domain: -7, 0, 3

Range: 1, 2

Function? Yes

GRAPHS



Domain: $-4 \le x \le 1$

Range: $-2 \le y \le 3$

Function? No

EQUATIONS

$y = x^2 - 1$

Domain: All real numbers

Range: $y \ge -1$

Function? Yes