

1. Solve: $-2x + 8 < -12$

$$\begin{array}{r} -8 \quad -8 \\ \hline -2x < -20 \\ -2 \quad -2 \end{array}$$

$$x > 10$$

2. Translate and solve: Four times the difference of a number and 12 is negative 36. Find the number.

$$4(x - 12) = -36$$

$$4x - 48 = -36$$

$$\begin{array}{r} +48 \quad +48 \\ \hline 4x = 12 \end{array}$$

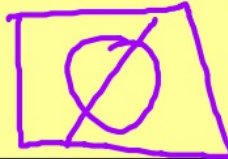
$$\frac{4x}{4} = \frac{12}{4}$$

$$x = 3$$

3. Solve: $5(x - 7) = 5x - 23$

$$5x - 35 = 5x - 23$$

$$\begin{array}{r} -5x \quad -5x \\ \hline -35 = -23 \end{array}$$



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

Representing Relations

Ordered Pairs	Table	Mapping	Graph												
$\{(-3, 1), (-2, 0), (1, 2), (3, -4), (-3, 5)\}$ Domain: $\{-3, -2, 1, 3\}$ Range: $\{-4, 0, 1, 2, 5\}$	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-3</td><td>1</td></tr> <tr><td>-2</td><td>0</td></tr> <tr><td>1</td><td>2</td></tr> <tr><td>3</td><td>-4</td></tr> <tr><td>-3</td><td>5</td></tr> </tbody> </table>	x	y	-3	1	-2	0	1	2	3	-4	-3	5		
x	y														
-3	1														
-2	0														
1	2														
3	-4														
-3	5														
$\{(-2, -3), (-1, 4), (0, -2), (2, 4), (5, -1)\}$ Domain: $\{-2, -1, 0, 2, 5\}$ Range: $\{-3, -2, -1, 4\}$	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-2</td><td>-3</td></tr> <tr><td>-1</td><td>4</td></tr> <tr><td>0</td><td>-2</td></tr> <tr><td>2</td><td>4</td></tr> <tr><td>5</td><td>-1</td></tr> </tbody> </table>	x	y	-2	-3	-1	4	0	-2	2	4	5	-1		
x	y														
-2	-3														
-1	4														
0	-2														
2	4														
5	-1														
Domain: _____ Range: _____	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr><th>x</th><th>y</th></tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	x	y												
x	y														

• For **DOMAIN**, scan your pencil _____ to _____ along the _____-axis.

• For **RANGE**, scan your pencil _____ to _____ along the _____-axis.

left right x
bottom top y

EXAMPLES:

1

Domain = All real number
Range = $y \geq -2$

2

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

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 number

FUNCTIONS

What is a function? A special relation between the input values (x) and their output values (y)

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.

Give the Domain and Range!!!

Determine whether the following are functions:

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

Function

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

Not

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

Not

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

Function

Give the Domain and Range!!!

5.

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

NOT

6.

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

Function

7.

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

NOT

Domain: $\{-2, -1, 0, 1, 2\}$
Range: $\{0, 1, 2, 3\}$

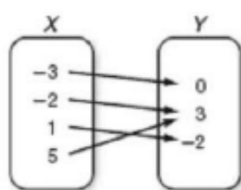
Give the Domain and Range!!!

8.

x	y
1	-5
-4	3
7	6
1	-2

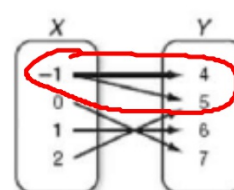
Not

9.



Function

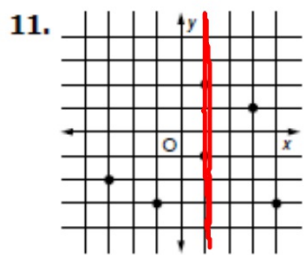
10.



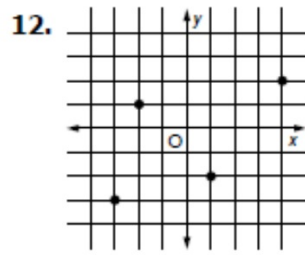
© Gina Wilson (All Things Algebra)

NOT

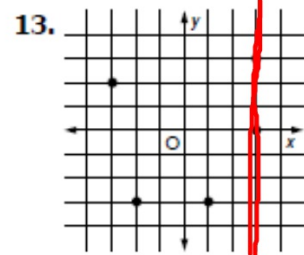
Give the Domain and Range!!!



NOT

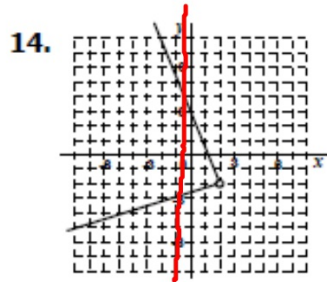


Function

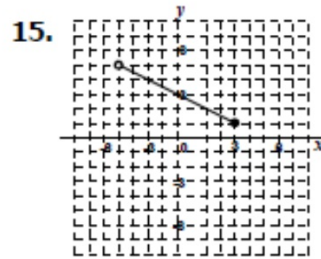


NOT

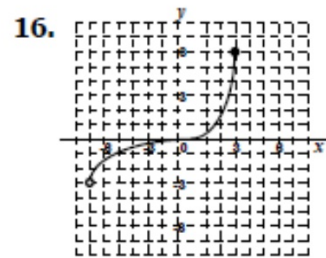
Give the Domain and Range!!!



NOT



Function



Function

Ways to Represent
RELATIONS

TABLES

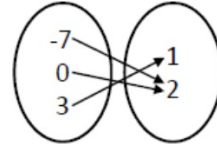
x	y
3	1
-2	-4
0	2
3	6

Domain: _____

Range: _____

Function? _____

MAPPINGS



Domain: _____

Range: _____

Function? _____

ORDERED PAIRS

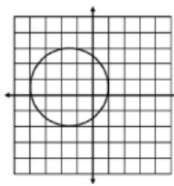
$\{(-1, 2), (0, 5), (2, 7)\}$

Domain: _____

Range: _____

Function? _____

GRAPHS



Domain: _____

Range: _____

Function? _____

EQUATIONS

$$y = x^2 - 1$$

Domain: _____

Range: _____

Function? _____