

Algebra Notes
Relations & Functions

Name: _____
Period: _____

Definitions: set – A group of _____, objects, or _____.

{0, 1, 2} ← This is a set of _____.

{(0, 1), (1, 2), (1, 3), (2, 4)} ← This is a set of _____.

relation – A set of _____.

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

domain – In a relation, the domain is all the _____.

range – the range is all the _____.

Domain Set (x-values): { }

Range Set (y-values): { }

(it is customary to list these values in numerical order, but do not duplicate).

function – A relation where each _____ value (x) is paired with exactly one _____ value (y) is called a function.

function rule – an _____ that describes a function.

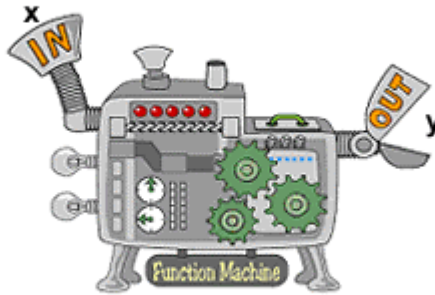
Examples: $y = 3x + 4$ or $f(x) = 3x + 4$

A function is in _____ when $f(x)$ is used in place of the y . Using $f(x)$ instead of y does not change how you would evaluate the equation!

You can think of a function as a number machine. You input the domain value (x) and the function machine outputs the range value (y). Each input (x) can only have one output (y value). If it outputs more than one y value, the function machine will clog. The relation would not be a function.

Input the
domain value
(x)

The output is
the range value
(y)



In order for a relation to be a function, you can only
get one y output for every x you input!!!!

Not all relations are functions. One way we can see whether a relation is a function is to draw a

_____.

Is each relation a function? Use a mapping diagram. Explain your answer.

Example 1: $\{(0, 1), (1, 2), (1, 3), (2, 4)\}$

Domain Values (x)

Range Values (y)

Draw
Mapping \rightarrow
Diagram

Is this a function? _____ Explain:

Example 2: $\{(0, 1), (1, 2), (2, 2), (3, 4)\}$

Domain Values (x)

Range Values (y)

Draw
Mapping \rightarrow
Diagram

Is this a function? _____ Explain:

Example 3: $\{(-2, 3), (2, 2), (2, -2)\}$

Domain Values (x)

Range Values (y)

Draw
Mapping \rightarrow
Diagram

Is this a function? _____ Explain:

Another way to determine if a relation is a function is to use the _____.

Graphing a relation on the coordinate plane gives you a visual way to determine whether a relation is a function. **If you can draw a vertical line that passes through two or more points, the relation is NOT a function.** On the other hand, if the vertical line passes through at most one point on the graph, the relation IS a function.

Graph the relation shown in each table below. Is it a function? Use the vertical line test. Explain.

4.

Domain (x)	Range (y)
-4	-3
2	0
3	0
4	3
5	-2

(x, y)

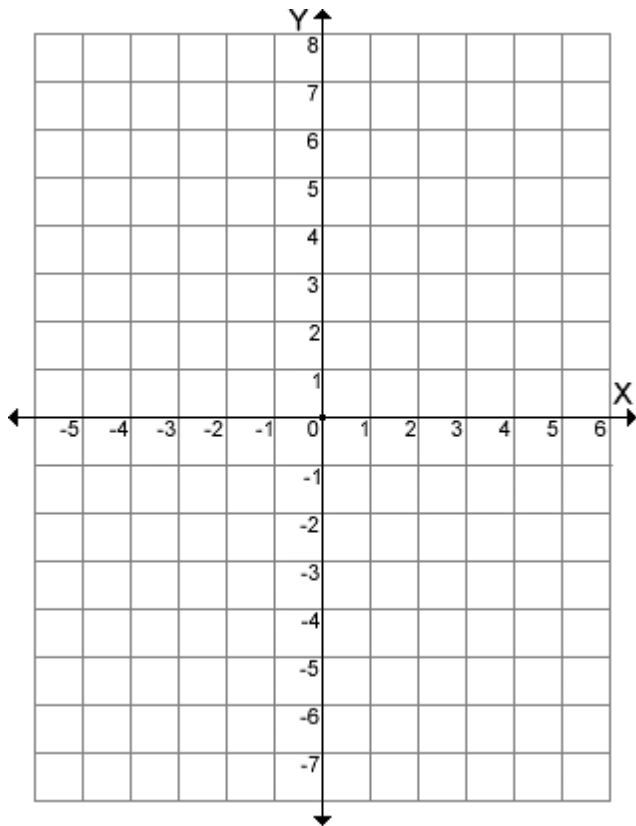
()

()

()

()

()

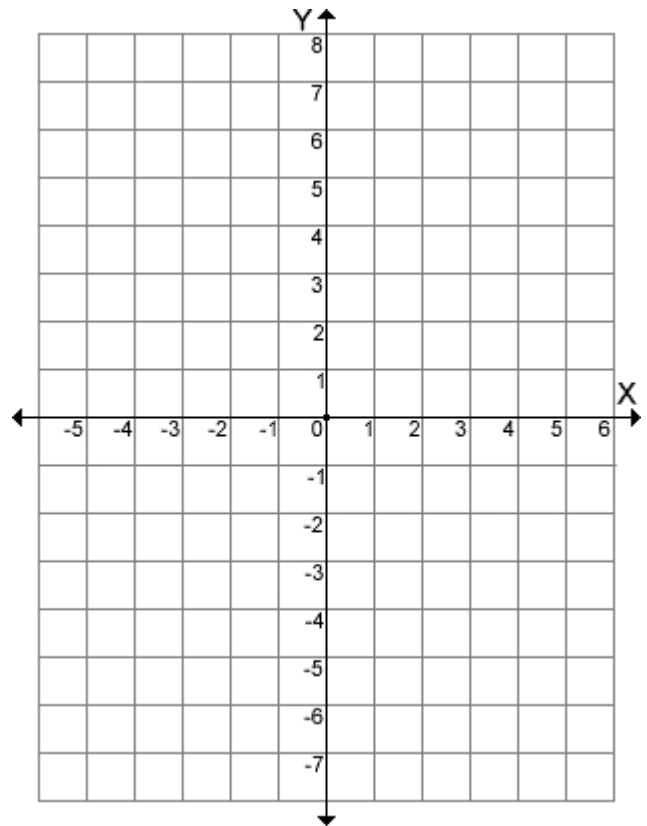


Is this a function? _____

Explain:

5.

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



Is this a function? _____

Explain: