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A **function** is a relation in which each element of the domain is paired with exactly one element of the range.

Equations that are **functions** can be written in a form called **functional notation**, $f(x)$ (read "f of x").

In a function, x is an element of the domain and $f(x)$ is the corresponding element in the range.

EXAMPLES

Is $\{(1, 2), (1, 3)\}$ a function?

Is $\{(1, 4), (3, 2), (5, 4)\}$ a function?

1st relation: not a function

This relation has 1 paired with both 2 & 3.

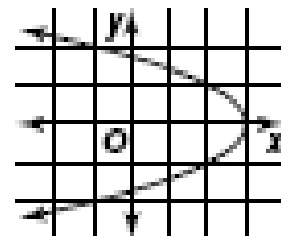
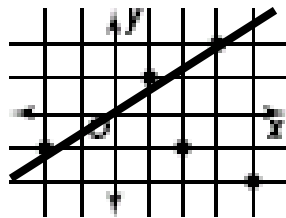
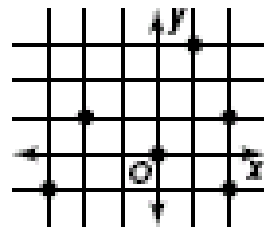
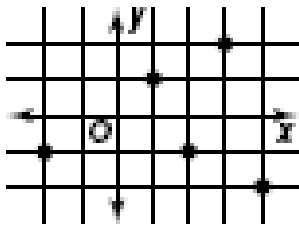
2nd relation: a function

In this relation, each x-value is paired with no more than one y-value.

However, a function can have a y-value paired with more than one x-value.

Vertical Line Test

If each vertical line passes through no more than one point of the graph of a relation, then the relation is a function.



Find each value:

If $f(x) = 3x - 1$ and $g(x) = 2x$,
find $f(1)$ and $g(3)$.

$$f(x) = 3x - 1$$

$$f(1) = 3(1) - 1 \text{ or } 2$$

Replace x with 1.

$$g(x) = 2x$$

$$g(3) = 2(3) \text{ or } 6$$

Replace x with 3.