

March 11, 2016

* **Relation:** is a collection of ordered pairs.
(a, b)

- **Domain:** 1st element of ordered pair
- **Range:** 2nd element of the ordered pair.

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$$R = \{ (3, 2), (-2, 3), (-4, -3), (1, -3) \}$$

Domain Range

a function!

Mapping

- ① $R: 3 \rightarrow 2$ The relation (R) maps 3 to 2.
- ② $R: -2 \rightarrow 3$
- ③ $R: -4 \rightarrow -3$
- ④ $R: 1 \rightarrow -3$

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Function: is a relation if and only if (iff) for an element of the domain it is paired (mapped) with exactly one element from the range.

meaning: that if there is a repeated element from the domain then it is paired with the same element of the range.

Example

$(5, -6), (2, -8), (5, -6)$ a function!
 $5 \rightarrow -6$ $5 \rightarrow -6$

$(5, -6), (2, -8), (5, 9)$ not a function, but a Relation.
 $5 \rightarrow -6$ $5 \rightarrow 9$

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(x, y)

(Domain, Range)

(Independent Variable, Dependent Variable)

a function

not a function

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Domain Range

① $f: 1 \rightarrow 2$

$f: x \rightarrow 2x$

what is 12 mapped to?
 $f: 12 \rightarrow 2(12) = 24$

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function machine "f"

Input output

12 24

$f: x \rightarrow 2x$

$f(x) = 2x$ function notation

↑ ↑

input rule

= output

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