

Definition

A relation is a set of pairs of input and output values

Characteristics

There are multiple ways to represent a relation:

- Ordered pairs
- Input/output table
 - Points on a coordinate plane
- Mapping diagram
 - Equation
- Words (sentence)

Relation

$\{(4,7),(3,2),(0,0),(-1,-4)\}$

Input	Output
x	y
0	1
-2	4
3	7

Example

$4 \leftarrow \text{constant}$

$x \leftarrow \text{variable}$

$7x \leftarrow \text{expression}$

Non-Example

Definition

A function is a relation where every input has exactly one output

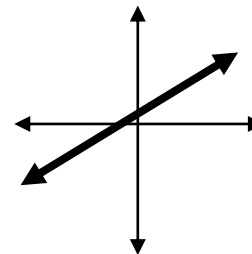
Characteristics

If you can draw a vertical line through the graph that touches it more than once, it is NOT a function.

We say “the relation fails the Vertical Line Test”

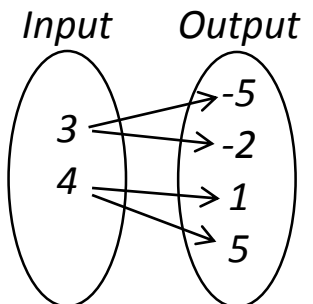
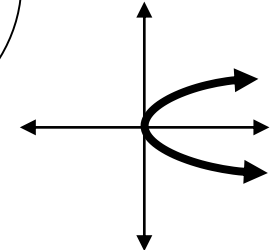
Function

$\{(1,2),(2,2),(3,2),(4,2)\}$



Example

x	y
1	4
2	7
3	8
4	-2



Non-Example