

RELATIONS, FUNCTIONS, & TABLES

Relation- a set of ordered pairs

$$\{(-3, 2), (-5, -5), (4, 0), (7, -9)\}$$

Domain- the set of all possible values of the first variable (also called the input) *x-values*

$$\{-3, -5, 4, 7\}$$

Range- the set of all possible values of the second variable (also called the output) *y-values*

$$\{2, -5, 0, -9\}$$

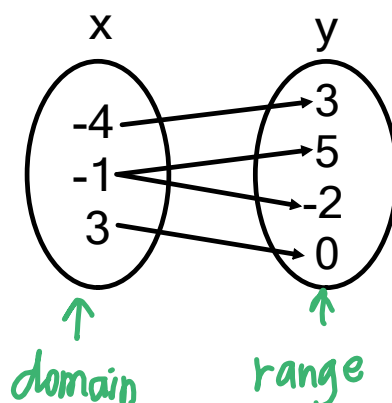
Relations can also be shown using a **table**, a **mapping**, or a **graph**.

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

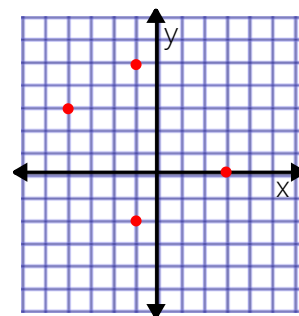
table

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

mapping



graph



Express each relation below as a set of ordered pairs. Determine the domain and range.

1.

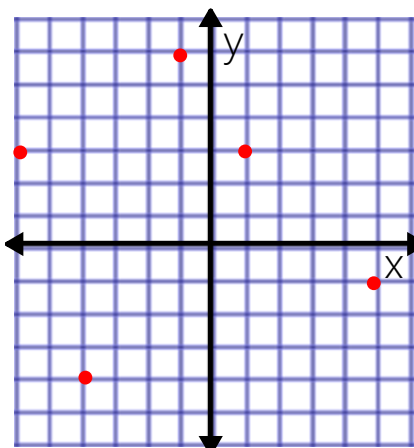
x	y
-3	7
-2	-5
0	6
1	1
4	-2

2.

$\{(-3,7), (-2,-5), (0,6), (1,1), (4,-2)\}$

$D \{-3, -2, 0, 1, 4\}$

$R \{7, -5, 6, 1, -2\}$

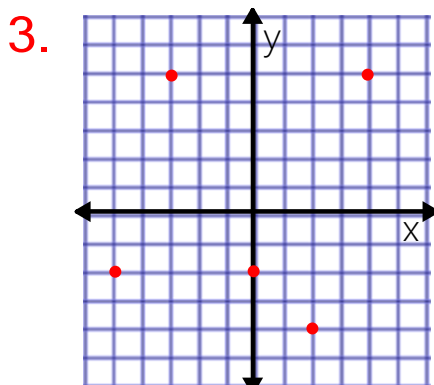


$\{(-6,3), (-4,-4), (-1,6), (1,3), (5,-1)\}$

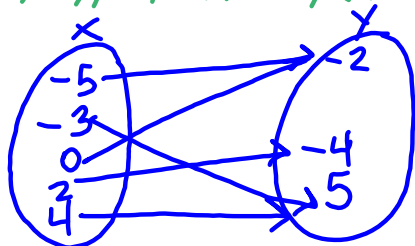
$D \{-6, -4, -1, 1, 5\}$

$R \{3, -4, 6, -1\}$

Draw a mapping for each relation below.

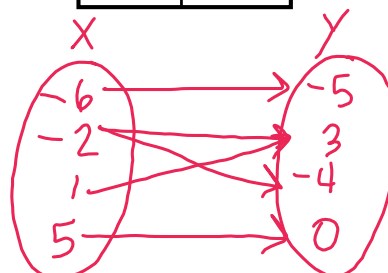


$\{(-5,-2), (-3,5), (0,-2), (2,-4), (4,5)\}$

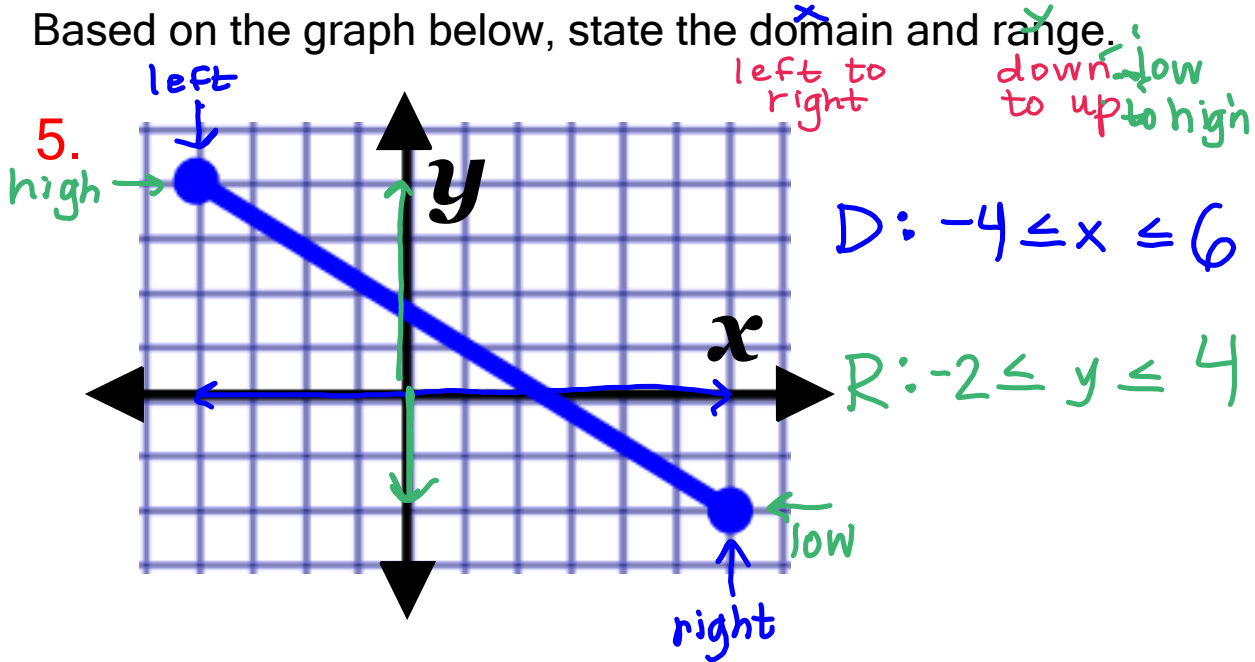


4.

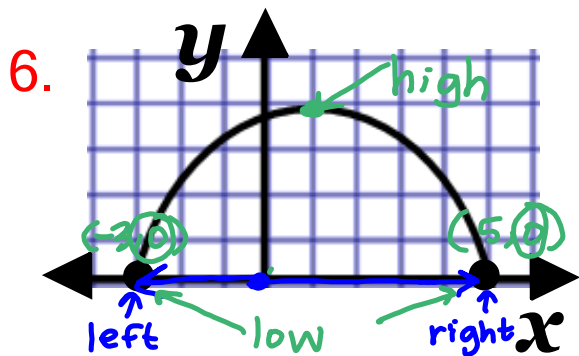
x	y
-6	-5
-2	3
-2	-4
1	3
5	0



Based on the graph below, state the domain and range.

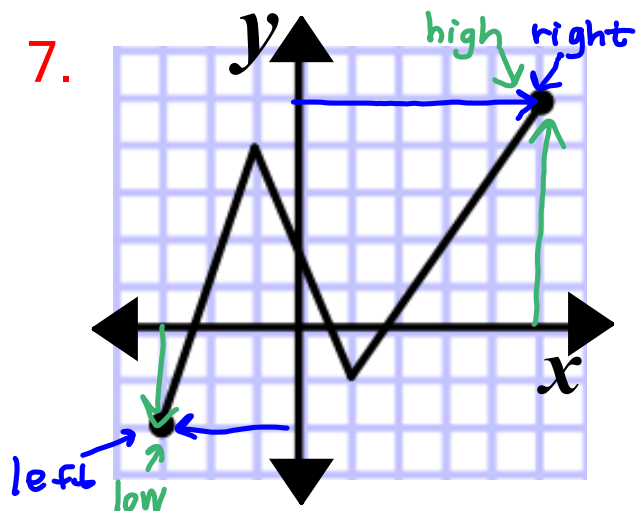


Based on the graphs below, state the domain and range.



$D: -3 \leq x \leq 5$

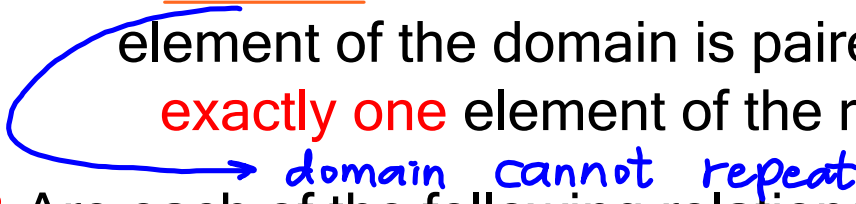
$R: 0 \leq y \leq 4$



$D: -3 \leq x \leq 5$

$R: -2 \leq y \leq 5$

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



8. Are each of the following relations also functions? Why are why not?

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

function b/c domain didn't repeat

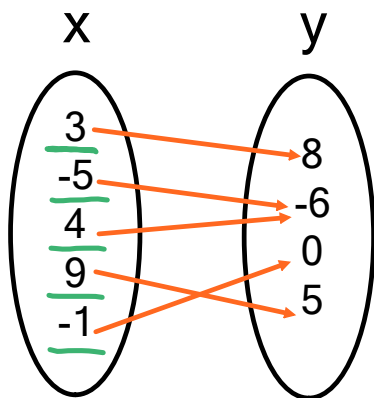
b) $\{(-1,5), (-9,4), (-1,-4), (3,0)\}$

not a function b/c domain repeats

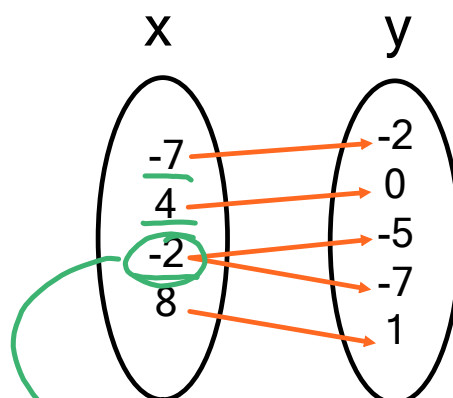
c) $\{(3,2), (8,-6), (-6,2), (7,4)\}$

function b/c domain didn't repeat

9. Which mapping represents a function?



function b/c domain did not repeat



not a function b/c -2 repeated