## 5.1

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## Represent Functions as Ordered Pairs and Rules

Relation

Domain

Range

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(x, y)
(D, R)

a set of ordered pairs

the set of x-values of a function

the set of y-values of a function

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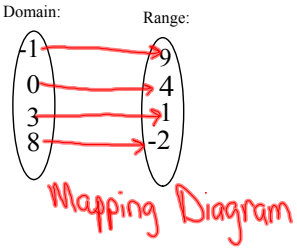
## Example:

identify the domain and range:

{(-1,9),(0,4),(3,1),(8,-2)}

X Y
D R

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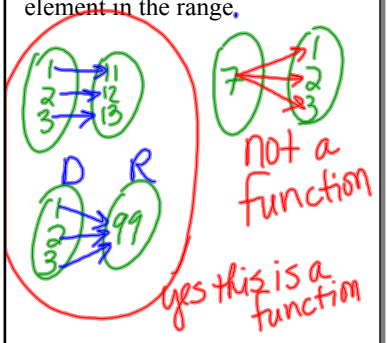
## Function:

a relation where each element of the domain is paired with exactly one element in the range.

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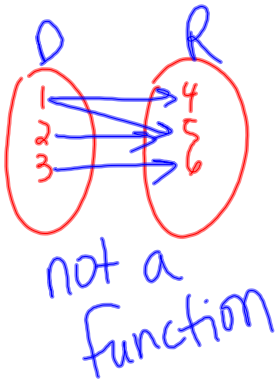


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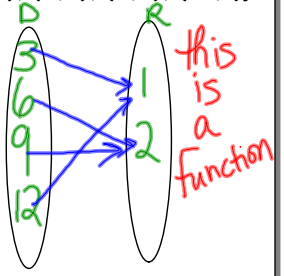
## ★ Example: ★

Determine whether the relation is a function

A) {(3,1), (6,2), (9,2), (12,1)}

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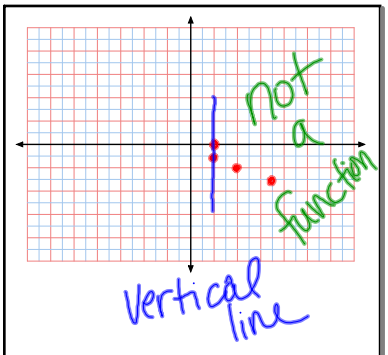


B) {(2,0),(2,-1),(4,-2),(7,-3)

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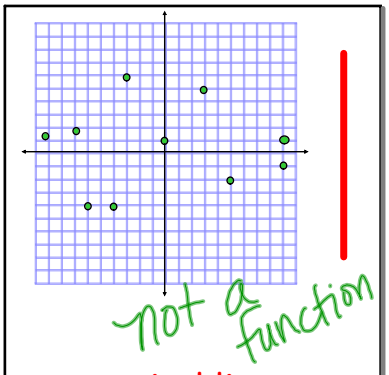


vertical line test

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## Example:

Given the function y = 2x
and the domain: -2,0,2,5,7

Make a table of ordered pairs
Then identify the range of the function

| x | y |
|---|---|
| -2 | -4 |
| 0 | 0 |
| 2 | 4 |
| 5 | 10 |
| 7 | 14 |

Range

$y = 2x$
$2 \cdot -2$
$2 \cdot 0$
$2 \cdot 2$
$2 \cdot 5$

| x | -2 | 0 | 2 | 5 | 7 |
|---|---|---|---|---|---|
| y | | | | | |

Range: -4, 0, 4, 10, 14

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**Independent variable**

is the input variable (x).

**Dependent variable**

the output variable (y)


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Write a rule for the function.

| x | y |
|---|---|
| 1 | 3 |
| 3 | 5 |
| 5 | 7 |
| 7 | 9 |
| 0 | 2 |

$y = 1x + 2$

Rise / Run = y / x = 2

$y = mx + b$

| x | y |
|---|---|
| 2 | 5 |
| 3 | 8 |
| 4 | 11 |
| 5 | 14 |
| 6 | 17 |

$\frac{6}{2} = \frac{3}{1}$

Rise / Run = 3/1

$y = 3x - 1$

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Which relation is a function?

Ⓐ {(0, -2), (0, 3), (5, -4), (10, 5) }

Ⓑ {(0, -1), (1, 2), (4, 8), (6, 12) }

Ⓒ {(0, 7), (-1, 7), (-2, 7), (-2, 8) }

Ⓓ {(-2, 9), (4, 7), (4, 5), (6, -3)}

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Homework:
WB5.1 ; 1-13 only

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