

## Warm-Up

1) Simplify.

$$\frac{1.2 \times 10^{-6}}{4.8 \times 10^4}$$

2) A group of four friends each mowed lawns after school and on the weekends for a month. The total number of lawns mowed can be represented by the equation below.

$$x + \frac{1}{3}x + \frac{1}{2}x + 16 = 49$$

Each friend is represented by a term in the equation. How many lawns,  $x$ , did the first friend mow?

$$\begin{aligned} 1) \frac{1.2 \times 10^{-6}}{4.8 \times 10^4} &= \left(\frac{1.2}{4.8}\right) \times 10^{-6-4} \\ &= .25 \times 10^{-10} \\ &= 2.5 \times 10^{-11} \end{aligned}$$

$$\begin{aligned} 2) \quad x + \frac{1}{3}x + \frac{1}{2}x + 16 &= 49 \\ 6x + 2x + 3x + 96 &= 294 \\ 11x + 96 &= 294 \\ 11x &= 198 \\ x &= 18 \end{aligned}$$

They mowed 18 lawns

# Relations

# Consider these numbers...

2 and 10

2 and -10

5 and 25

5 and -25

7 and ??  
35

7 and ??  
-35

Have you figured out  
the *relation* between  
these numbers?

$$y = 5x$$

$$y = -5x$$

A **relation** is a set of ordered pairs.

$(x, y)$   
(5, 25)  
(2, 10)  
(7, 35)

Can you write a rule  
(equation) that  
relates  $x$  and  $y$ ?

$$y = 5x$$

$(x, y)$   
(5, -25)  
(2, -10)  
(7, -35)

Can you write a rule  
(equation) that  
relates  $x$  and  $y$ ?

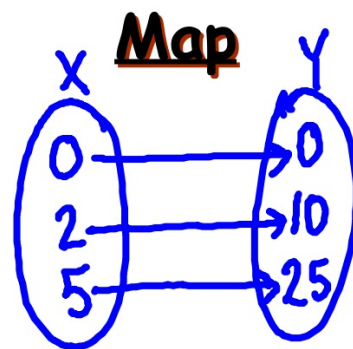
$$y = -5x$$

There are lots of ways to show a relation.

1) Equation  $y = 5x$

2) List (Ordered Pairs)

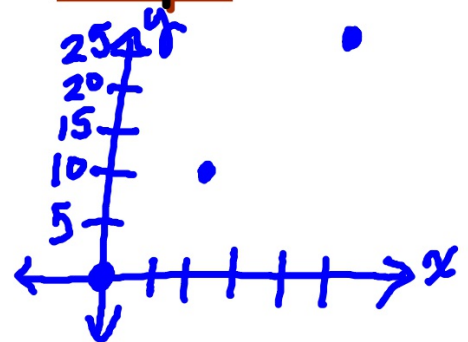
$\{(0,0), (2,10), (5,25)\}$



Table

x	$y = 5x$	y
0	$y = 5(0) = 0$	0
2	$y = 5(2) = 10$	10
5	$y = 5(5) = 25$	25

Graph



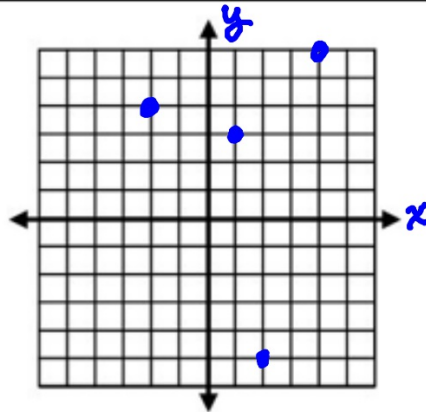
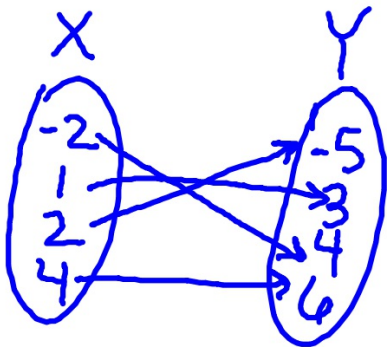
Ordered Pairs

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

X	Y
-2	4
1	3
2	-5
4	6

Table

Mapping Diagram



Graph

X-values  
Domain:  $\{-2, 1, 2, 4\}$

Y-values  
Range:  $\{-5, 3, 4, 6\}$

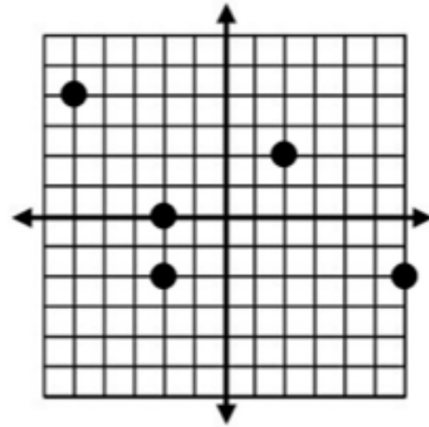
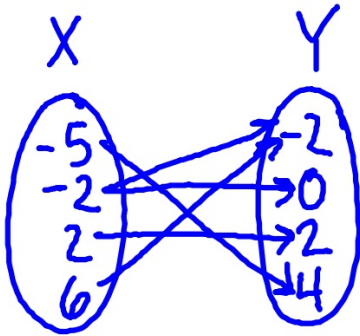
Ordered Pairs

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

X	Y
-5	4
-2	0
-2	-2
2	2
6	-2

Table

Mapping Diagram



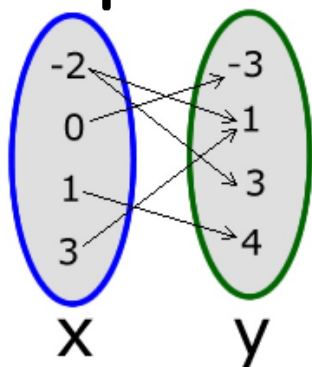
Graph

Domain:  $\{-5, -2, 2, 6\}$

Range:  $\{-2, 0, 2, 4\}$



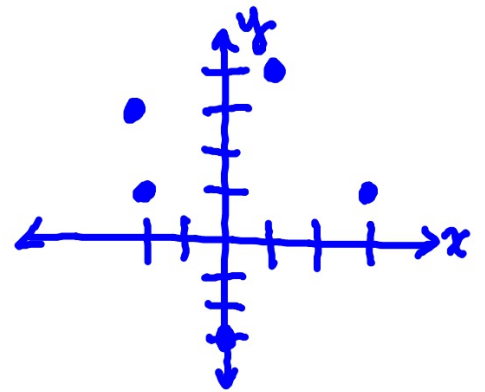
Map



List (Ordered Pairs)

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

Graph



Represent the  
the relation:

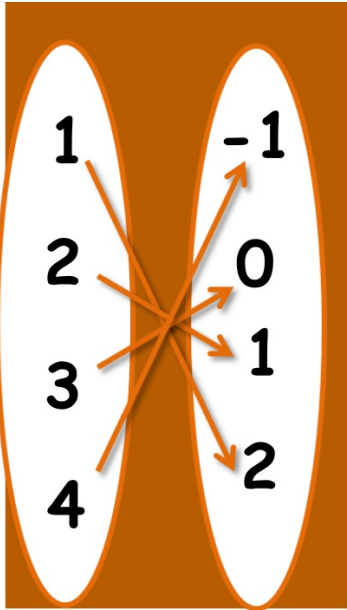
Table

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

There are lots of ways to label the parts.

$x$	$y$
Input	Output
Independent Variable	Dependent Variable
Domain	Range
Cause	Effect

Others that you can think of?



In this relation, what is the output when the input is 3 ?

0

In this relation, what is the value of  $x$  when  $y=1$  ?

2

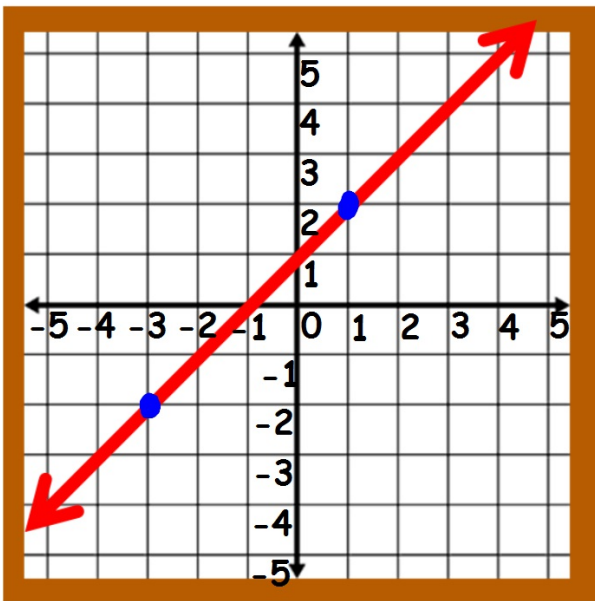
x	y
-2	-3
-1	-2
0	-1
1	0
2	1

In this relation, what is the output when the input is 1 ?

0

In this relation, what is the value of x when  $y = -2$  ?

-1



In this relation, what is the output when the input is 1 ?

2

In this relation, what is the value of  $x$  when  $y = -2$  ?

-3

## HW: Function and Relation WS

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