5.2   Properties of Functions

LESSON FOCUS   Develop the concept of a function.

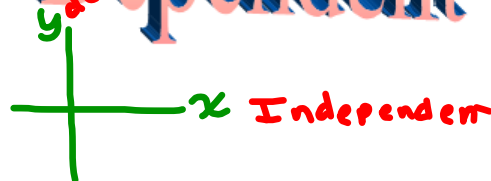### Make Connections

×2   +3
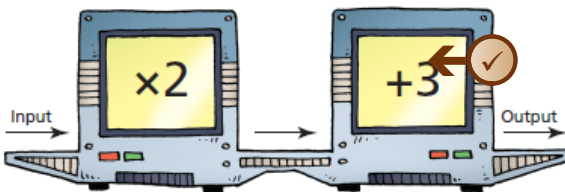
Input → → Output

Input	Output
1	5
2	7
3	9
4	11
5	13

What is the rule for the Input/Output machine above?

Which numbers would complete this table for the machine?

Table $x | y$

Independent / Dependent

Graph y dependent

x Independent

Dependent - a variable whose value is determined by the value of another(independent) variable. (2ⁿᵈ data in chart)

(y) or range
Output

Independent - a variable whose value is not determined by the value of another variable, and whose value determines the value of another (dependent) variable (1ˢᵗ set of data in chart)

(x) or domain
Input

Limits?

There are limits to everything in life!
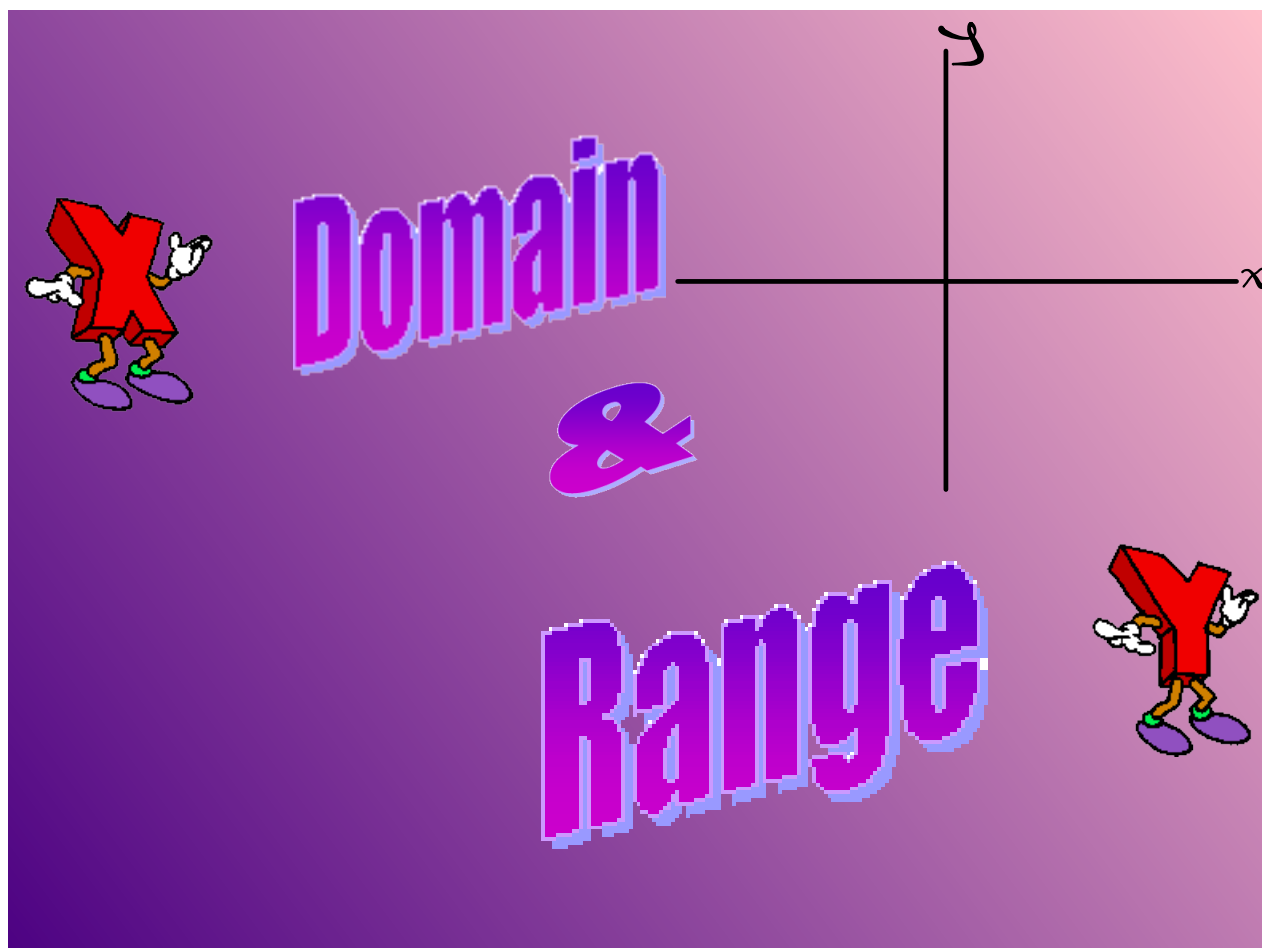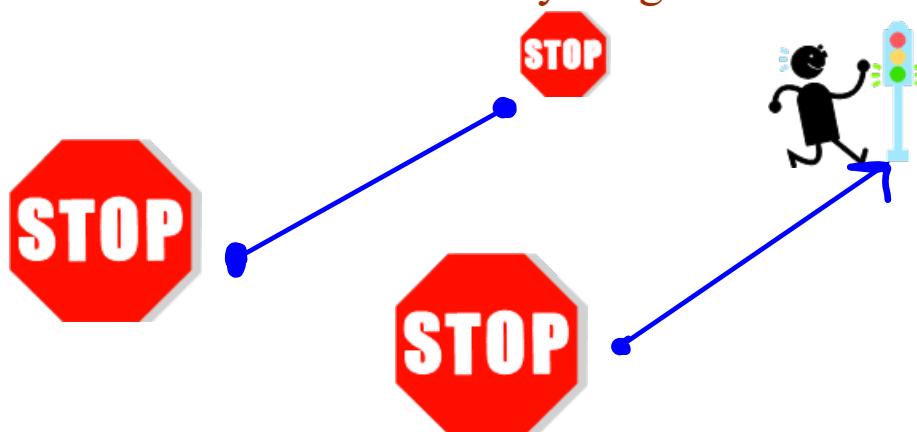
Domain & Range

Domain & Range

Domain - the set of first elements in a relation

Range - the set of second elements in a relation

Input	Output
1	5
2	7
	9
4	
	13

Domain and Range

Dr. Math says...

"The domain of a function is the set of all the stuff you can plug into the function."

"The range of a function is the set of all the stuff you can get out of the function."

(x, y)

domain → part of range

Sport	Equipment
badminton	shuttlecock
badminton	racquet
hockey	puck
hockey	stick
tennis	ball
tennis	racquet
soccer	ball

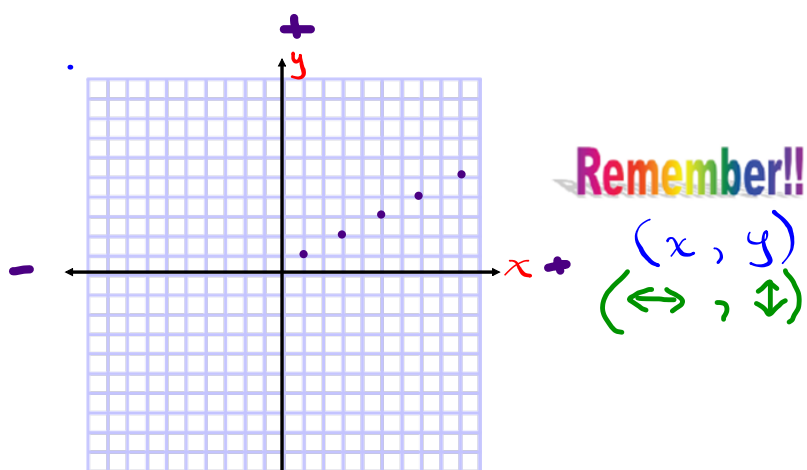**First**   **Second**

(**Sport, Equipment**)

Domain The set of first elements:
{Badminton, hockey, tennis soccer}

Range The set of second elements:
{ shuttle cock, raquet, puck, stick only }

has this number of wheels

bicycle
car
motorcycle
tricycle
unicycle

1
2
3
4
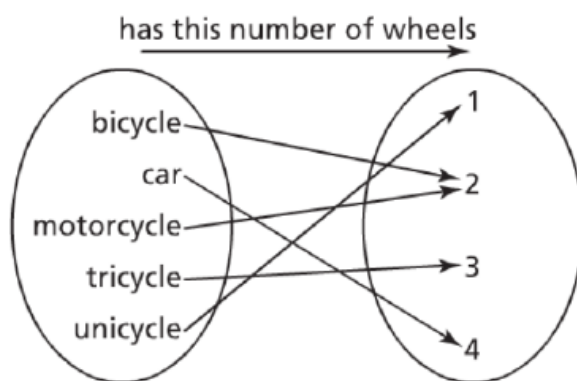
Domain The first set of elements:
{bicycle, car, motorcycle, tricycle, unicycle}

Range The second set of elements:
{1, 2, 3, 4}

Remember!!

(x , y)

$(\leftrightarrow , \updownarrow)$

Ordered Pairs:

$$\left\{ \underset{\text{1st 2nd}}{(1,1)} , \underset{\text{1st 2nd}}{(3, 2)} , \underset{\text{1st 2nd}}{(5, 3)} , \underset{\text{1st 2nd}}{(7, 4)} , \underset{\text{1st 2nd}}{(9, 5)} \right\}$$

Domain The set of first elements: { 1, 3, 5, 7, 9}

Range The set of second elements: { 1, 2, 3, 4, 5}

Attachments

Domain & Range 1.doc