

## Math 1201

### 5.1 Representing Relations

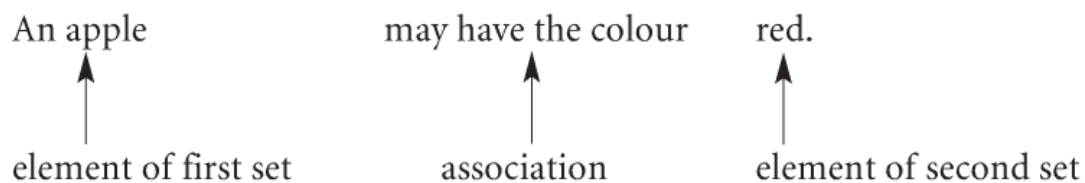
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**Set:** a collection of distinct objects

**Element:** one object in a set

**Relation:** how the elements of one set relate to another

Sets and their relations can be written in various ways. Consider the set of fruits and the set of colours. We can associate fruits with their colours.



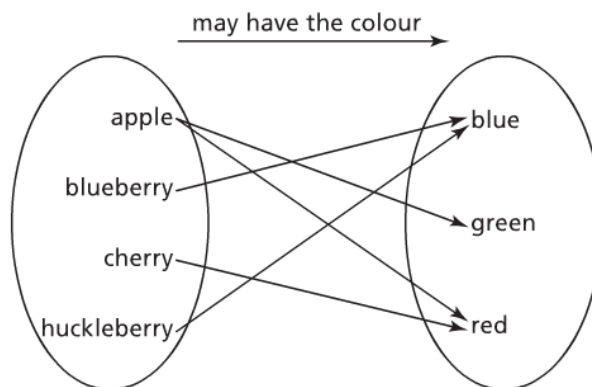
#### Ordered Pairs

This method involves grouping the associated elements as a pair separated by a comma and in brackets.

{(apple, red), (apple, green), (blueberry, blue), (cherry, red), (huckleberry, blue)}

#### Arrow Diagram

Here the two ovals represent the sets and each arrow associates an element of the first set with an element of the second set.



### Table

Simply the elements in each set list in vertical columns. The heading of each column describes each set.

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Fruit	Colour
apple	red
apple	green
blueberry	blue
cherry	red
huckleberry	blue

### Example 1:

Northern communities can be associated with the territories they are in. Consider the relation represented by this table:

(A) Describe the relation in words.

A "community" is in the "territory".

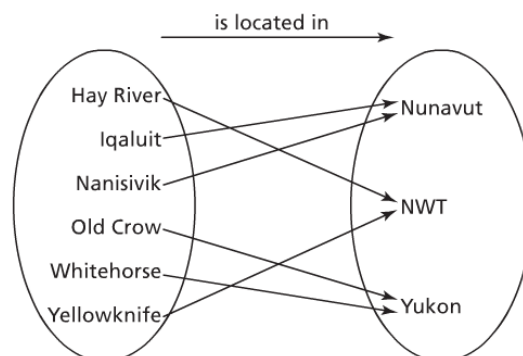
Community	Territory
Hay River	NWT
Iqaluit	Nunavut
Nanisivik	Nunavut
Old Crow	Yukon
Whitehorse	Yukon
Yellowknife	NWT

(B) Represent this relation as:

i. an ordered pair.

The ordered pairs are: {(Hay River, NWT), (Iqaluit, Nunavut), (Nanisivik, Nunavut), (Old Crow, Yukon), (Whitehorse, Yukon), (Yellowknife, NWT)}

ii. an arrow diagram.

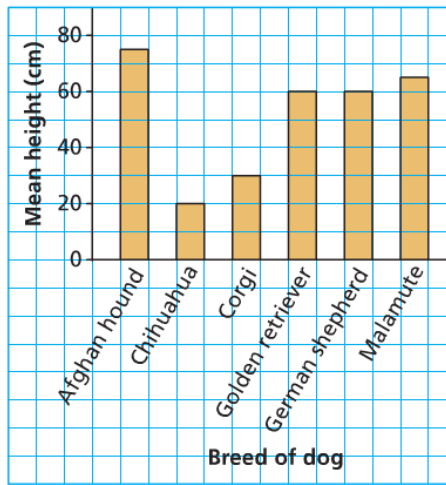


**Example 2:**

Different breeds of dogs can be associated with their mean heights. Consider the relation represented by this graph:

Represent the relation:

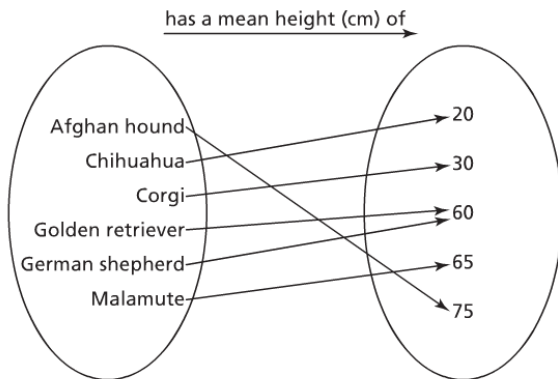
Mean Heights of Different Breeds of Dogs



(A) as a table.

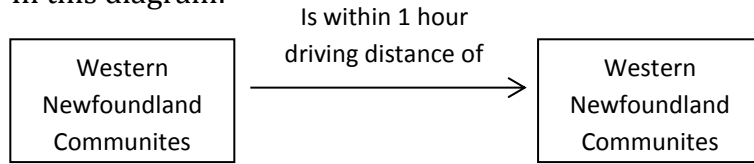
Breed of Dog	Mean Height (cm)
Afghan hound	75
Chihuahua	20
Corgi	30
Golden retriever	60
German shepherd	60
Malamute	65

(B)



**Example 3:**

In this diagram:



(A) Describe the relation in words.

Newfoundland communities that are within 1 hour driving distance.

(B) List <sup>two</sup> ~~two~~ ordered pairs that belong to this relation.

(Deer Lake, Corner Brook)  
(Pasadena, Little Rapids)