

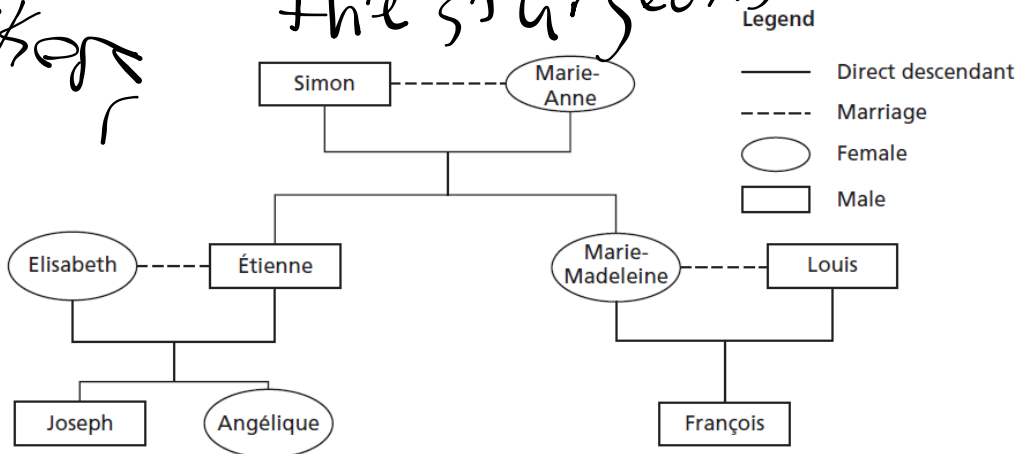
Hi
Kiefer. C

5.1 Representing Relations



Ethan
Vickoff

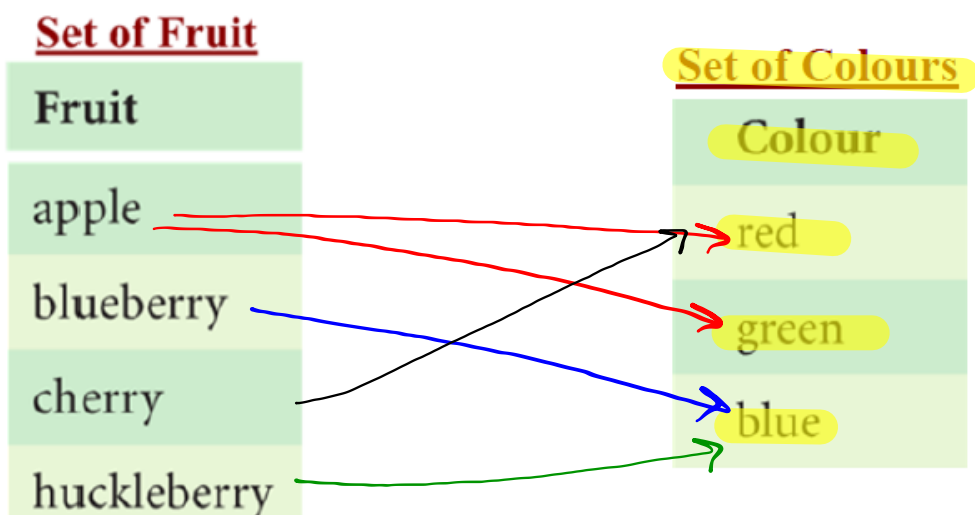
How are we Related !!!!
way back through
the sturgeons



- How is Joseph related to Simon?
- How are Angelique and Francois related?
- How does the family tree show these relations?

Terminology

A set is a collection of distinct objects.



An element of a set is one object in the set.

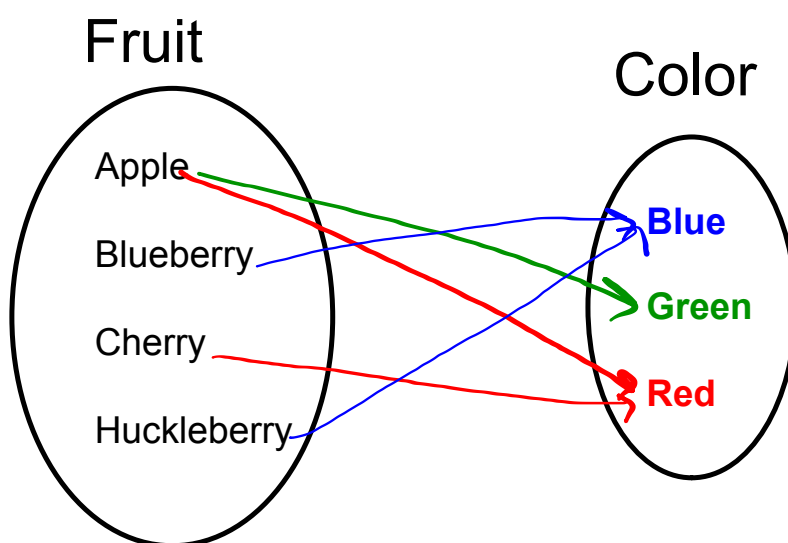


<u>Set of Fruit</u>
Fruit
apple
blueberry
cherry
huckleberry

Apple is an element of the set of Fruit


A relation associates the elements of one set with the elements of another set

Arrow Diagram



Some other ways to display the relation :

Use a table



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




Table of Values

$$Y = 3x + 1$$

x	y
0	1
1	4
2	7
3	10

$$3(x) + 1$$

$$3(0) + 1$$

$$0 + 1$$

$$x = 1$$

$$3(x) + 1$$

$$3(1) + 1$$

$$3 + 1$$

$$4$$

$$x = 2$$

$$3x + 1$$

$$3(2) + 1$$

$$6 + 1$$

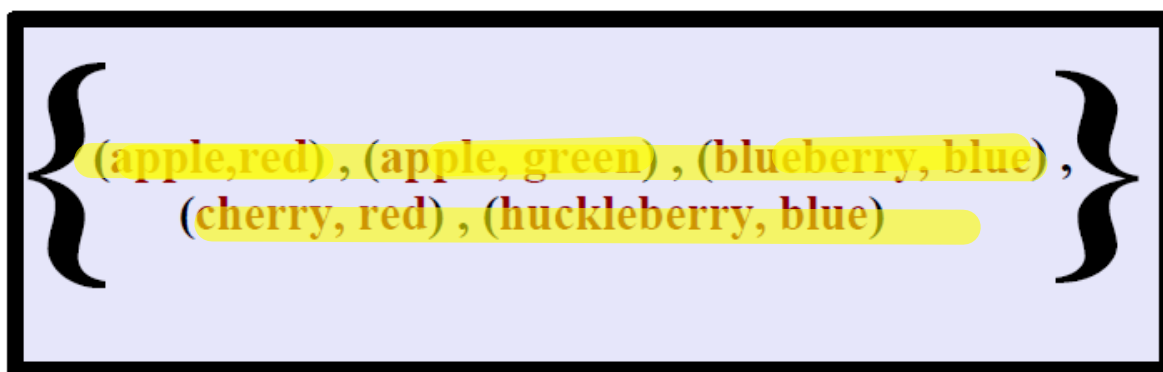
$$7$$

Ordered Pairs (x,y)

$$\{(0, 1), (1, 4), (2, 7), (3, 10)\}$$

Set of ordered pairs

Use a set of *ordered pairs* to display a relation.



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

Northern communities can be associated with the *territories* they are in.

Try !!

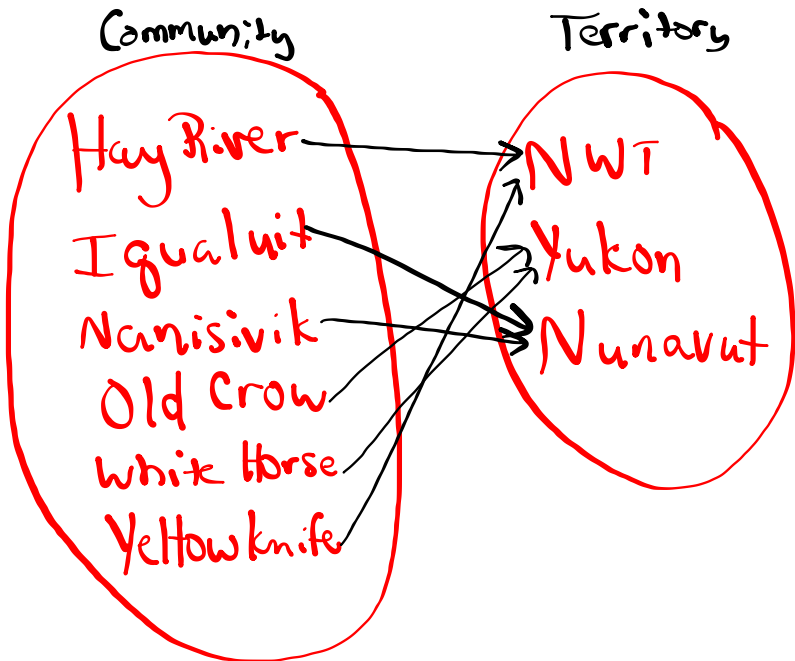
Community	Territory
Hay River	NWT
Iqaluit	Nunavut
Nanisivik	Nunavut
Old Crow	Yukon
Whitehorse	Yukon
Yellowknife	NWT

~~a) Describe this relation in words.~~

b) Represent this relation:

- i) as a set of ordered pairs
- ii) as an arrow diagram

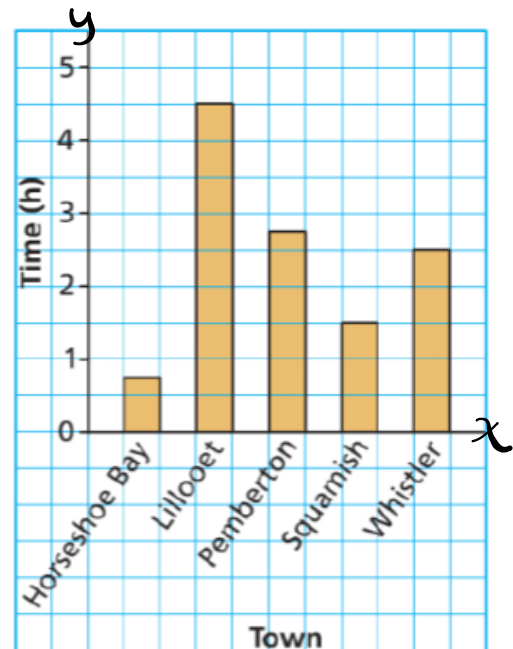
$\left\{ \left(\frac{\text{Hay River}}{\text{NWT}} \right), \left(\frac{\text{Iqaluit}}{\text{Nunavut}} \right), \left(\frac{\text{Nanisivik}}{\text{Nunavut}} \right), \right.$
 $\left. \left(\frac{\text{Old Crow}}{\text{Yukon}} \right), \left(\frac{\text{White Horse}}{\text{Yukon}} \right), \left(\frac{\text{Yellowknife}}{\text{NWT}} \right) \right\}$



ordered
pairs $\rightarrow (x, y)$

You Try !!

Different towns in British Columbia can be associated with the average time, in hours, that it takes to drive to Vancouver.



Represent the relation as a *table*.

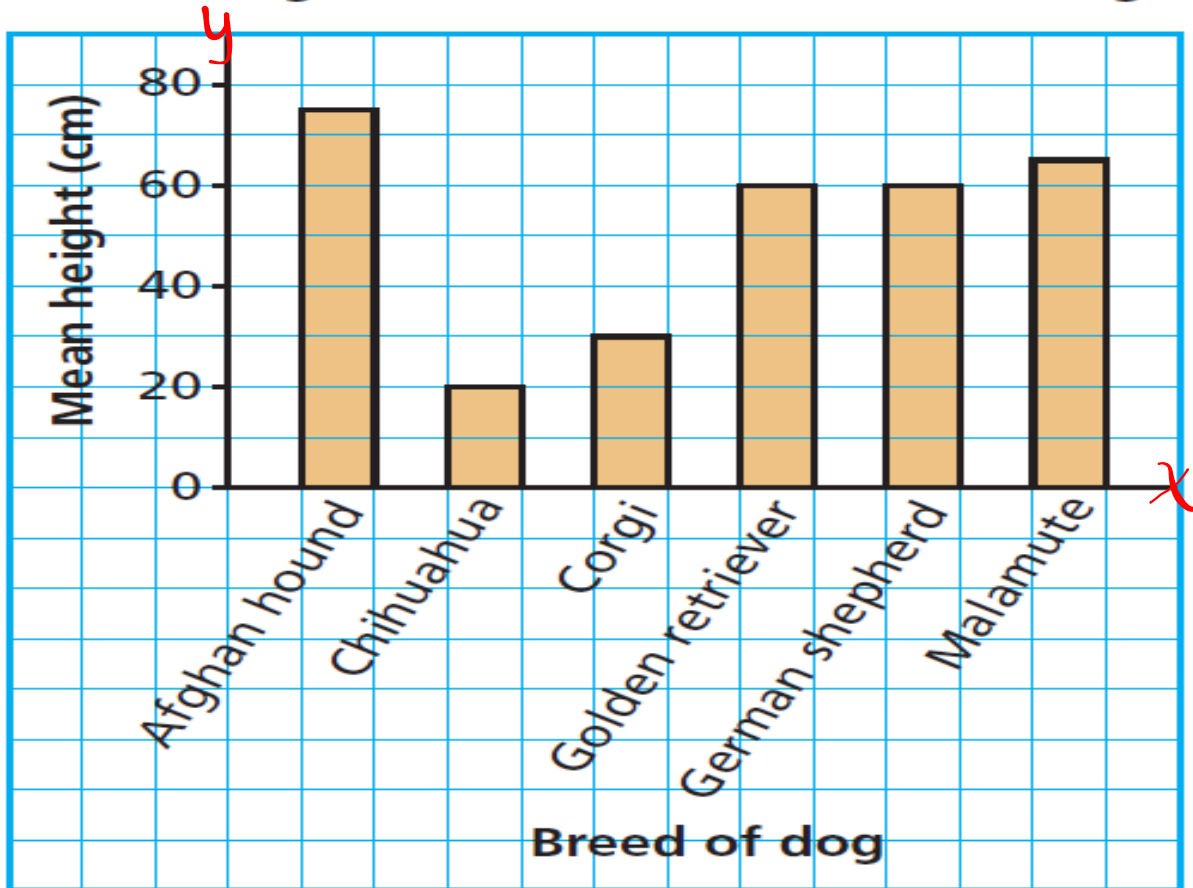
Town	Time (h)
Horseshoe Bay	$\frac{3}{4}$ $\leftarrow 45 \text{ min}$
Lillooet	$4\frac{1}{2}$
Pemberton	$2\frac{3}{4}$ $2 \text{ h } 45 \text{ min}$
Squamish	$1\frac{1}{2}$
Whistler	$2\frac{1}{2}$

Representing a Relation Given as a Bar Graph



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

Mean Heights of Different Breeds of Dogs



Represent the relation:

a) as a table

Breed	Mean Height (cm)
AH	75
Ch	20
Co	30
GR	60
GS	60
M	65

b) as an arrow diagram

