#8

a) $6x^2 - 13x + 2$ $\xrightarrow{+12}$

$(6x - 12)(6x - 1)$

$6 \quad 6$

$(x-2)(6x-1)$

OR

$6x^2 - 12x - 1x + 2$

$6x(x-2) - 1(x-2)$

$(x-2)(6x-1)$

b) $3(m^2 - 2m - 15)$

$3(m-5)(m+3)$

c) $(9x^2 - 1)(9x^2 + 1)$

$(3x-1)(3x+1)(9x^2+1)$

d) $w^2(x+5) - 4(x+5)$

$(x+5)(w^2 - 4)$

$(x+5)(w-2)(w+2)$

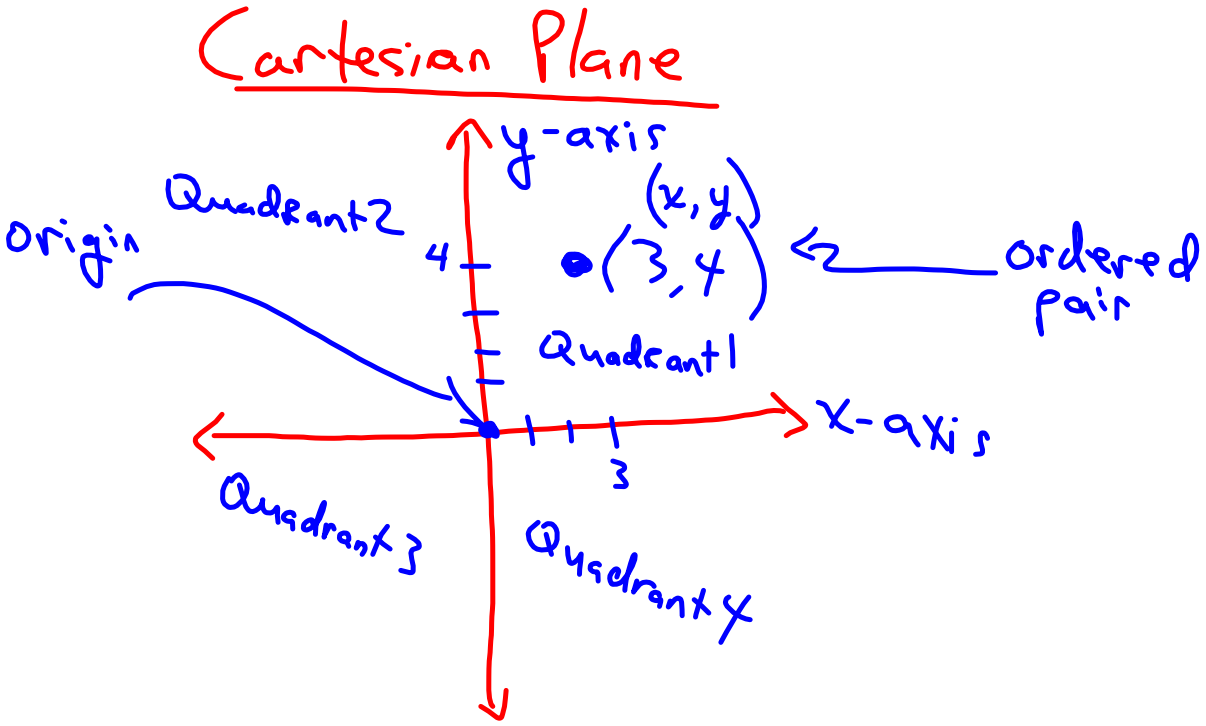
e) $2(49x^2 - 70x + 25)$

$7x \qquad 5$

$2(7x-5)^2$

Unit 3:

Relations and Functions

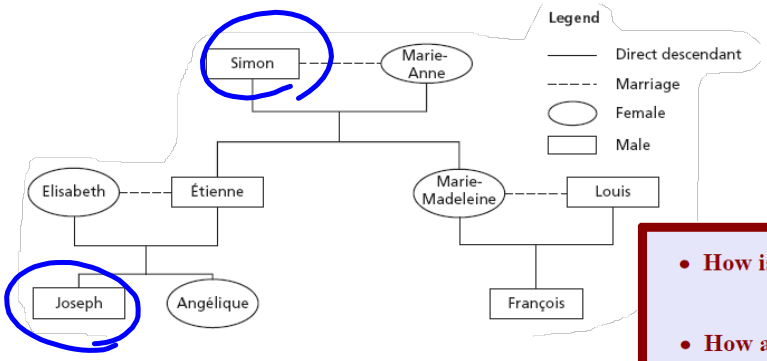

Cartesian Plane
y-axis
(x, y)
Quadrant 2
origin
4
(3, 4)
ordered pair
Quadrant 1
x-axis
3
Quadrant 3
Quadrant 4

Representing Relations

LESSON FOCUS Represent relations in different ways.

Make Connections

This family tree shows relations within a family.



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

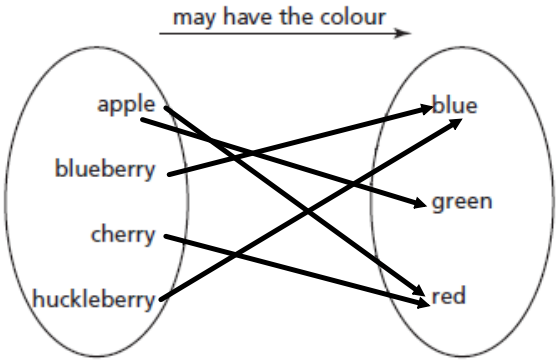
Here are some other ways to represent this relation:

- a table

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

The heading of each column describes each set.

- an **arrow diagram**



The two ovals represent the sets. Each arrow associates an element of the first set with an element of the second set.

The order of the words in the ordered pairs, the columns in the table, and the ovals in the arrow diagram is important. It makes sense to say, "an apple may have the colour red," but it makes no sense to say, "red may have the colour apple." That is, a relation has direction from one set to the other set.

5.1 Representing Relations

Terminology

A *set* is a collection of distinct objects.

Set of Fruit

Fruit
apple
blueberry
cherry
huckleberry

Set of Colours

Colour
red
green
blue

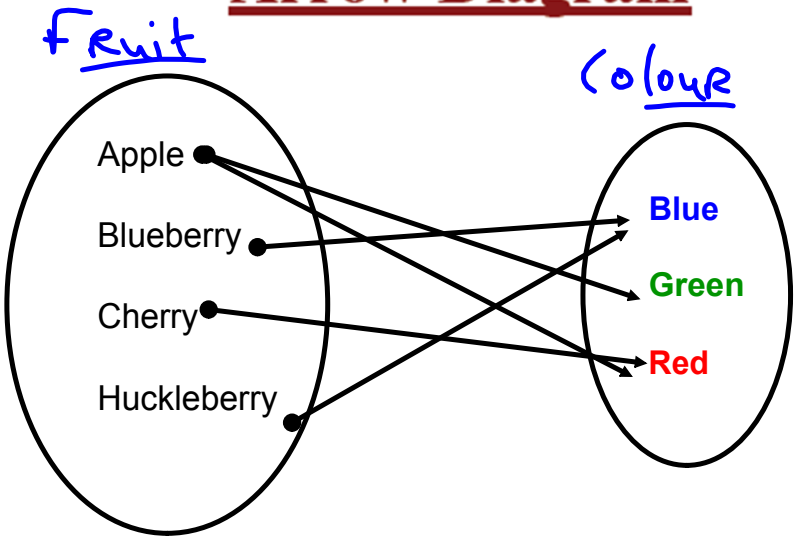
An *element* of a set is one object in the set.

Set of Fruit
Fruit
apple
blueberry
cherry
huckleberry

***Apple* is an element of the set of Fruit**

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

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

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

Representing Relations

Here are some of the most common means of describing mathematical relations:

(1) Verbally
(2) Ordered Pairs
(3) Table of Values
(4) Arrow Diagram
(5) Graph
(6) Equation

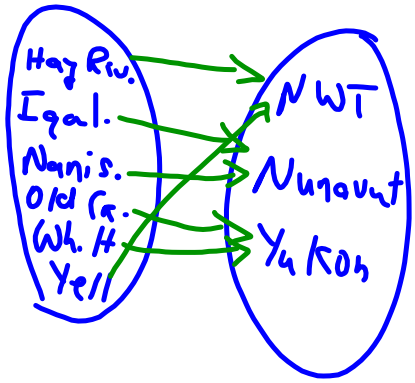
Example 1 Representing a Relation Given as a Table

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

a) Describe this relation in words.

b) Represent this relation:
i) as a set of ordered pairs
ii) as an arrow diagram

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



(Hay River, NWT)

5.1 Representing Relations

SOLUTIONS...

a)

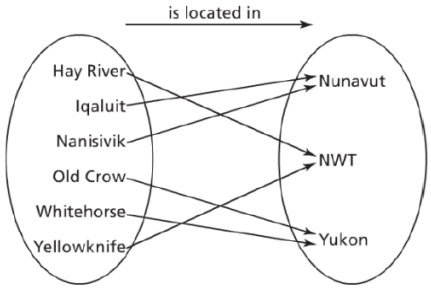
Community	Territory
Hay River	NWT
Iqaluit	Nunavut
Nanisivik	Nunavut
Old Crow	Yukon
Whitehorse	Yukon
Yellowknife	NWT

b) i)

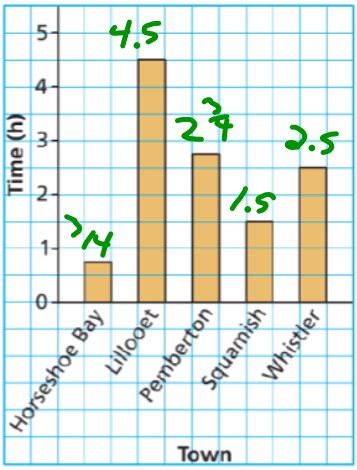
The communities are the first ordered pairs.
The territories are the second ordered pairs.

{ (Hay River, NWT) , (Iqaluit, Nunavut) , (Nanisivik, Nunavut) , (Old Crow, Yukon), (Whitehorse, Yukon) , (Yellowknife , NWT) }

ii)



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*.

community	time

solution:

Town	Average Time (h)
Horseshoe Bay	0.75
Lillooet	4.5
Pemberton	2.75
Squamish	1.5
Whistler	2.5

Practice problems:

3 4/2 5

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#4, 5, 7, 13, 14

Attachments

Worksheet - Sketching Angles in Radians.doc

Warm-Up - Intro to Limits.docx

Review - Factoring.pdf

Worksheet - Factoring Review.doc