Test: Review

M/Choice:

6. $3z^4 - 768z^2$ 4.

$3z^2(z^2 - 256)$

$3z^2(z-16)(z+16)$

Part 2

1. (a) $15x^3 + 7x^2 + 10x + 8$

(b) $(3a-2)^2 + (5-6a)^2$

$9a^2 - 12a + 4 + 25 - 60a + 36a^2$

$45a^2 - 72a + 29$

2. a) $180 = 5 \times 3^2 \times 2^2$

$168 = 7 \times 3 \times 2^3$

b) LCM

$= 5 \times 7 \times 3^2 \times 2^3$

$= 2520$

GCF

$= 3^1 \times 2^2$

$= 12$

3 a) $9x^2 - 30xy + 25y^2$

$(3x - 5y)^2$ (24)

b) $8x^2 - 10x + 3$

$(8x - 6)(8x - 4)$

$(4x-3)(2x-1)$

c) $5w^2 - 65x - 150$

$5(w^2 - 13w - 30)$

$5(w-15)(w+2)$

4. $73x^2 - 69x + 68$

5. a) $9a^2 - 49$

$(3a-7)(3a+7)$

b) $x^2 - 5x + 6$

$(x-3)(x-2)$

c) $4x^2 + 36x + 81$

$= (2x+9)^2$

d) $7w^2 - 20w - 3$ -21

$(2w-21)(7w+1)$

$(w-3)(7w+1)$

e) $3aw - 36w + 2ay - 2by$

$3w(a-6) + 2y(a-6)$

$(a-6)(3w+2y)$

f) $9x^4 + 35x^2 - 4$ -36

$(9x^2 - 1)(9x^2 + 36)$

$(9x^2 - 1)(x^2 + 4)$

$(3x-1)(3x+1)(x^2+4)$

Unit 3:

Relations and Functions

Representing Relations

A mathematical relationis, in general, a relationship between sets of numbers or sets of elements.

A set is a collection of distinct objects.
An element of a set is one object in the set.
A relation associates the elements of one set with the elements of another set.

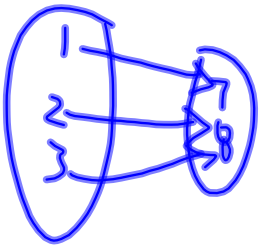
Should be able to represent relations in using various methods.

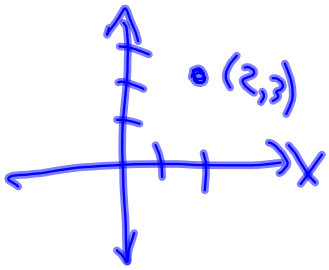
Here are some of the most common means of describing mathematical relations:

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

(-3, 2)

x	y
2	3





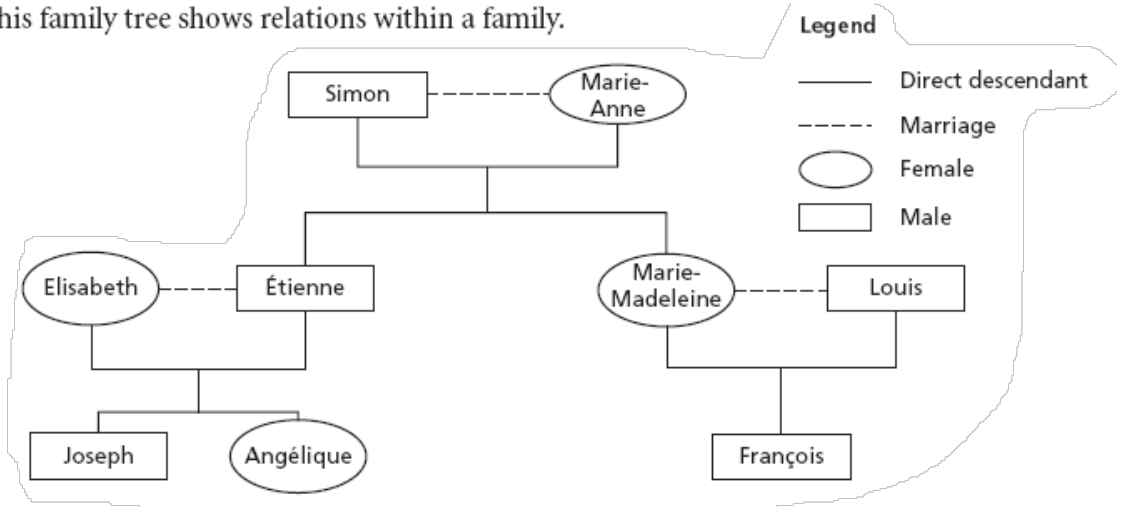
$y = x + 7$

Representing Relations

LESSON FOCUS Represent relations in different ways.

Make Connections

This family tree shows relations within a family.



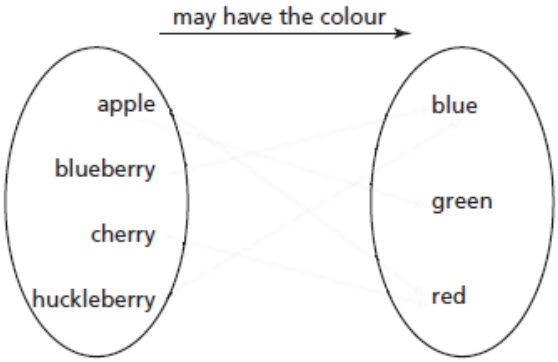
Here are some other ways to represent this relation:

- 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.

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.

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

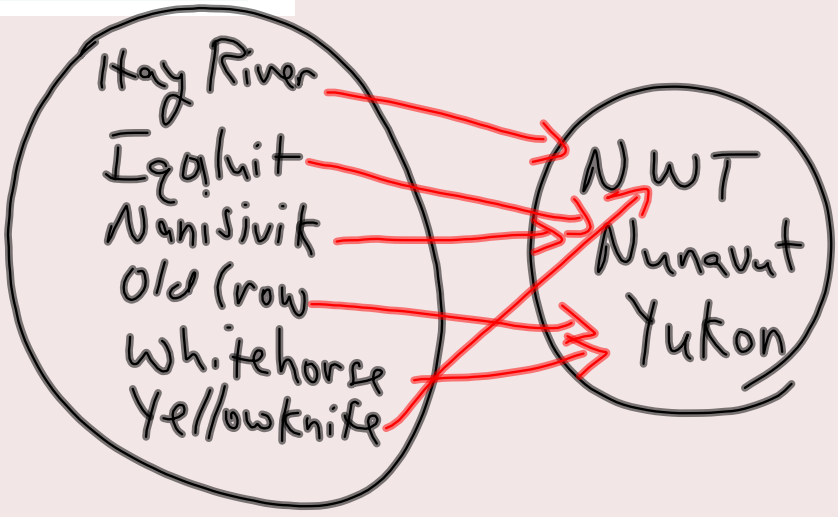
a) Describe this relation in words.

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

(Hay River, NWT)

(Whitehorse, Yukon)

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



Practice problems:

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