Math 10

Section 5.2.2

Common Factors

Focus:

1. To be able to determine prime factors, greatest common factors and least common multiples of whole numbers.
2. To be able to write polynomials in factored form.

Curricular Competencies:
B4: I can solve problems with persistence and a positive attitude

GCF as binomials

Greatest common factors are not restricted to monomials. Sometimes a GCF can be a binomial or other polynomial.

Factor:

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

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

GCF: $(x-1)$ leftovers: $(9x+2)$

$10x(x - 3) + 7(x - 3)$

$(x-3)(10x+7)$

$3x^2(x - 7) + 2x(x - 7) - 4(x - 7)$

$(x-7)(3x^2+2x-4)$

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

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

$7a(a + 2b) - (a + 2b)$

$(a+2b)(7a-1)$

Opposites

Some binomial factors are opposites of each other; they have a GCF of -1.

$(a - b) = -1(-a + b) = -1\ (b - a)$

$(a-b)$ $-1(-a+b)$

Factor the following:

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

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

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

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

$4x(x + 1) - 7(1 + x)$

$4x(x+1)-7(x+1)$

$(x+1)(4x-7)$

*when reordering, signs infront stay with the term

Grouping with Polynomials

Sometimes you may need to break the polynomial into groups and factor each part separately

Group first two and last two with brackets

Find GCF of each group to produce the same leftovers

brackets are now the GCF

Factor by grouping:

$5m^2 + 10mn - 3m - 6n$

$5m(m+2n)-3(m+2n)$

$(m+2n)(5m-3)$

$3p^2 - 6pq + 5p - 10q$

$3p(p-2q)+5(p-2q)$

$(p-2q)(3p+5)$

$2m^2 - 6mn - 3m + 9n$

$2m(m-3n)-3(m-3n)$

$(m-3n)(2m-3)$

$y^2 + 8xy + 2y + 16x$

$y(y+8x)+2(y+8x)$

$(y+8x)(y+2)$

Problem Solving:

Paula has 18 toonies, 30 loonies, and 48 quarters. She wants to group her money so that each group has the same number of each coin and there are no coins left over.

a. What is the maximum number of groups she can make?

18 30 48

GCF = 6

6 groups

b. How many of each coin will be in each group?

toonies = 3 ~ $6

loonies = 5 ~ $5

quarters = 8 ~ $2

c. How much money will each group be worth?

assignment: p 220 7, 12, 16 ~~Extra Practice 5.2~~

13, 19