

Lesson 1.6 GCF Factoring and Factoring Completely

Algebra 2

Factoring out a GCF – Greatest Common Factor

GCF Number	Find the <u>greatest</u> number that <u>can divide</u> each coefficient
GCF Variable	Make sure each term has a ^{common} variable, then look for the <u>Smallest</u> exponent on the variable

1. $6n^4 + 54n^3 + 12n^2 - 6n$ ^{o.k.} GCF = $6n$

$$6n(n^3 + 9n^2 + 2n - 1)$$

2. $-40p^4q^7 + 64p^2q^3m - 32p^4q^2 + 56p^3q^2$ ^{o.k.} GCF = $8p^2q^2$

$$8p^2q^2(-5p^2q^5 + 8qm - 4p^2 + 7p)$$

Factoring out a -1

- Keeps the leading coefficient positive
- Allows polynomial to be written in standard form
- -1 becomes part of GCF

3. $-x^2 - 5x + 6$

$$-1(x^2 + 5x - 6)$$

$$-(x + 6)(x - 1)$$

4. $16 - x^2$

$$-x^2 + 16$$

$$-(x^2 - 16)$$

$$-(x + 4)(x - 4)$$

5. $8 + 7x - x^2$

$$-x^2 + 7x + 8$$

$$-(x^2 - 7x - 8)$$

$$-(x + 1)(x - 8)$$

Factoring Completely

- Involves more than one step of factoring
- Try to factor out a GCF first
- Try factoring out a -1

6. $6x^2 - 24$ GCF = 6

$$6(x^2 - 4)$$

$$6(x+2)(x-2)$$

7. $12x^2 - 48x - 27$

$$3(4x^2 - 16x - 9)$$

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

8. $100 - 4x^2$

$$-4x^2 + 100$$

$$-4(x^2 - 25)$$

$$-4(x+5)(x-5)$$

9. $100x^2 + 120x + 36$

$$4(25x^2 + 30x + 9)$$

$$4(5x+3)(5x+3)$$

$$4(5x+3)^2$$

10. $5x - x^2$

$$-x^2 + 5x$$

$$-x(x-5)$$