

Lesson #1: Factoring Expressions with Common Factors

Learning Goal: We are learning to Factor expressions that contain common factors.

Simplify each expression.

$$1) (5r - 1 - 4r^4) + (1 - 7r^3 + 2r^4)$$

$$= -2r^4 - 7r^3 + 5r$$

$$3) \frac{6x^3y + 3x^2y^3}{3x^2y}$$

$$= 2x + 1y^2$$

$\frac{x^2}{x^2} = x^0 = 1$

Expand

$$2) 2n^2(6n - 8)$$

$$= 12n^3 - 16n^2$$

$$4) 5(2y^2 + 3y - 8) - 2y(3y - 4)$$

$$= 10y^2 + 15y - 40 - 6y^2 + 8y$$

$$= 4y^2 + 23y - 40$$

Notes on Common Factoring: Factoring is the opposite of expanding. Hence, when expanding, that work eliminates brackets. Factoring brings brackets back into the equation. Also, expanding uses multiplication, therefore factoring uses division.

Factor the common factor out of each expression.

$$5) \frac{8n^2}{2} - \frac{6}{2}$$

GCF = 2

$$= 2(4n^2 - 3)$$

must include.

$$6) 20m^5 + 15$$

GCF = 5

$$= 5(4m^5 + 3)$$

$$7) 2p^5 + 5p^4$$

$$GCF = p^4$$

$$= p^4(2p + 5)$$

$$8) \frac{3x^6}{x^2} + \frac{x^4}{x^4}$$

$$GCF = x^4$$

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

If the first number is negative, make the GCF negative

$$GCF = -uv$$

$$9) \frac{-8uv^5}{-uv} - \frac{3u^2v}{-uv} - \frac{2uv}{-uv}$$

$$-uv(8v^4 + 3u + 2)$$

$$10) 8x^4y^2 - 18x^3y + 18x^2y$$

$$GCF = 2x^2y$$

$$= 2x^2y(4x^2y - 9x + 9)$$

$$11) \frac{5x(x-3)}{(x-3)} + \frac{8(x-3)}{(x-3)} \quad GCF = (x-3)$$

$$= (x-3)(5x + 8)$$

$$12) 3xy(y+2) - 17w^2(y+2)$$

$$= (y+2)(3xy - 17w^2)$$

Success Criteria:

- I can identify common factors
- I can factor expressions by dividing each term by the common factor
- I can write a factored expression as a monomial \times a polynomial