

Lesson #1: Factoring Expressions with Common Factors

Date: Apr. 29**Learning Goal:** We are learning to Factor expressions that contain common factors.**Simplify each expression.**

1) $(5r - 1 - 4r^4) + (1 - 7r^3 + 2r^4)$ *combining like terms.*

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

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

2) $2n^2(6n - 8)$ *Distributive Property "Expand"*

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

$$a^b \cdot a^c = a^{b+c}$$

$$\frac{a^b}{a^c} = a^{b-c}$$

$$y^0 = 1$$

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

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

$$= 2x + y^2$$

OR

$$2x + y^2$$

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

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

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

① Expand
② Collect like terms

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

G.C.F: 2

$$= 2(4n^2 - 3) \quad \checkmark$$

6) $\frac{20m^5}{5} + \frac{15}{5}$

GCF: 5

$$= 5(4m^5 + 3) \quad \checkmark$$

$$7) \frac{2p^5}{1p^4} + \frac{5p^4}{1p^4}$$

GCF: $1p^4$

Factor the
Smallest exponent
in common.

$$1p^4(2p + 5)$$

OR

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

$$8) \frac{3x^6}{1x^4} + \frac{1x^4}{1x^4}$$

GCF: x^4

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

$$9) \frac{-8uv^5}{-1uv} - \frac{3u^2v}{-1uv} - \frac{2uv}{-1uv}$$

* If the 1st # is
negative, factor at
the negative too.

$$10) \frac{8x^4y^2}{2x^2y} - \frac{18x^3y}{2x^2y} + \frac{18x^2y}{2x^2y}$$

GCF: $2x^2y$

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

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

$$11) 5x(x - 3) + 8(x - 3)$$

GCF: $(x - 3)$

Suppose $5xa + 8a$

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

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

GCF: $(y + 2)$

$$3xya - 17w^2a$$

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

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