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Lesson #5.1: Factoring Expressions with Common Factors

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

Simplify each expression.

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

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

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

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

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

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

$= 2x + y^2$

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

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

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

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

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

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

8) $3x^6 + x^4$

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

9) $-8uv^5 - 3u^2v - 2uv$

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

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

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

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

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

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 × a polynomial