

Distributive Property!

Unit 3: Polynomials

3.2 Multiplying a Monomial by a Polynomial

The Distributive Property: $a(b+c) = ab+ac$

Ex.) Use the distributive property to simplify:

a) $4(3x+1)$

$= 12x + 4$

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

$= -10x^2 - 5x + 30$

c) $(x^3-2)x^2 = x^2(x^3-2)$

$= x^5 - 2x^2$

d) $-3x(7x-2y+z)$

$= -21x^2 + 6xy - 3xz$

Distributive Property!

Ex.) Expand and simplify:

a) $6 - 4(8x+1)$

$= 6 - 32x - 4$

$= -32x + 2$

b) $4(2x-3) - 2(x-6)$

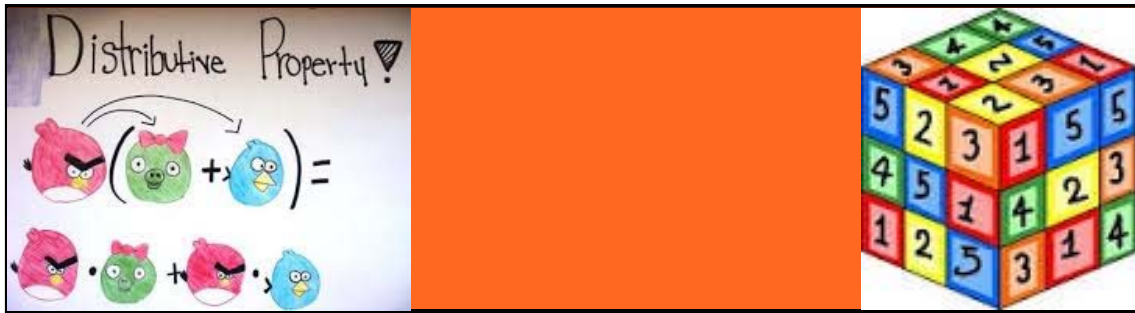
$= 8x - 12 - 2x + 12$

$= 6x$

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

$= 15x^3 - 35x^2 + 5x + 28x + 21x^2$

$= 15x^3 - 38x^2 + 33x$



An Area Diagram can also be used to efficiently multiply polynomials.

Ex.) $x^2(3x^2 + 5x - 6) = 3x^4 + 5x^3 - 6x^2$

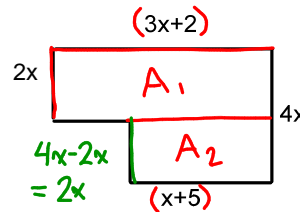
/	x^2
$3x^2$	$3x^4$
$5x$	$5x^3$
-6	$-6x^2$



Ex.) Determine an expression for the area of the given polygon.

a)

$$\begin{aligned}
 A_T &= A_1 + A_2 \\
 &= lw + lw \\
 &= (3x+2) \cdot 2x + (x+5)(2x) \\
 &= \underline{6x^2} + \underline{4x} + \underline{2x^2} + \underline{10x} \\
 &= \boxed{8x^2 + 14x}
 \end{aligned}$$



b) $x=5$

$$A = 8(5)^2 + 14(5) = \boxed{270 \text{ units}^2}$$