Algebra 1 8.2

Multiply a polynomial by a monomial

Solve equations involving the product of a monomial and a polynomial

monomial
polynomial
distributive property
like terms

Whiteboards

$2(x+3)$

$2x+6$

Example 2 Simplify Expressions

Simplify $2p(-4p^2 + 5p) - 5(2p^2 + 20)$.

$2p \cdot -4p^2 + 2p \cdot 5p + -5 \cdot 2p^2 + -5 \cdot 20$

$-8p^3 + 10p^2 + -10p^2 + -100$

$-8p^3 - 100$

Distributive property
Combine like terms

Simplify each expression.

24. $3(5x^2 + 2x - 4) + 7x(7x^2 + 2x - 3)$

$3 \cdot 5x^2 + 3 \cdot 2x + 3 \cdot -4 + -1x \cdot 7x^2 + -1x \cdot 2x + -1x \cdot -3$

$15x^2 + -6x + -12 + -7x^3 + -2x^2 + 3x$

$-7x^3 + 13x^2 + 9x + -12$

2B. $15t(10y^3t^5 + 5y^2t) + 2y(yt^2 + 4y^2)$

$15t \cdot 10y^3t^5 + 15t \cdot 5y^2t + 2y \cdot yt^2 + 2y \cdot 4y^2$

$150y^3t^6 + 75y^2t^2 + 2y^2t^2 + 8y^3$

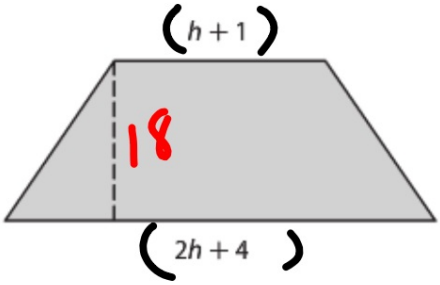
$150y^3t^6 + 73y^2t^2 - 8y^3$

$150t^6y^3 + 73t^2y^2 - 8y^3$

Area of trapezoid...

Standardized Test Example 3 Write and Evaluate a Polynomial Expression

GRIDDED RESPONSE The theme for a school dance is "Solid Gold." For one decoration, Kana is covering a trapezoid-shaped piece of poster board with metallic gold paper to look like a bar of gold. If the height of the poster board is 18 inches, how much metallic paper will Kana need in square inches?



→ $A = \frac{1}{2}h(b_1 + b_2)$

$= \frac{1}{2} \cdot 18(h+1+2h+4)$

$= \frac{1}{2} \cdot 18(3h+5)$

$= 9(3h+5)$

$9 \cdot 3h + 9 \cdot 5$

$27h + 45$

Solve means x= $a=$

Example 4 Equations with Polynomials on Both Sides

Solve $2a(5a-2)+3a(2a+6)+8=a(4a+1)+2a(6a-4)+50.$

$2a\cdot 5a+2a\cdot -2+3a\cdot 2a+3a\cdot 6+8=a\cdot 4a+a\cdot 1+2a\cdot 6a+2a\cdot -4+50$

Distributive property
Like terms
Zero pairs
x=

$10a^2-4a+6a^2+18a+8=4a^2+a+12a^2-8a+50$

$16a^2+14a+8=16a^2-7a+50$

$-16a^2 \quad +7a-8 \quad -16a^2+7a-8$

$\frac{21a}{21}=\frac{42}{21}$

$a=2$

GuidedPractice

Solve each equation.

4A. $2x(x + 4) + 7 = (x + 8) + 2x(x + 1) + 12$

$2x \cdot x + 2x \cdot 4 + 7 = x + 8 + 2x \cdot x + 2x \cdot 1 + 12$

$2x^2 + 8x + 7 = (x) + 8 + 2x^2 + (+2x) + 12$

$2x^2 + 8x + 7 = 2x^2 + 3x + 20$

$-2x^2 \quad -3x - 7 \quad -2x^2 - 3x - 7$

$\frac{5x}{5} = \frac{13}{5}$

$x = \frac{13}{5}$

4B. $d(d+3) - d(d-4) = 9d - 16$

12. $-6(11 - 2c) = 7(-2 - 2c)$

13. $t(2t + 3) + 20 = 2t(t - 3)$