

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

5 in a row (if time)

$$\begin{array}{r} 2 \cdot 2 + 3 = 7 \quad \text{!!} \\ 4 + 3 = 7 \\ 2x + 3 = 7 \\ -3 \quad -3 \\ \hline 2x = 4 \\ \frac{2}{2} \quad \frac{4}{2} \\ x = 2 \end{array}$$

Example 2 Simplify Expressions

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

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

$$2p \cdot 4pp \qquad -5 \cdot 2pp$$

$$-8p^3 \boxed{+10p^2 + -10p^2} + 100$$
$$-8p^3 + -100$$

Distributive property
Combine like terms

Simplify each expression.

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

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

$$\begin{array}{ccccccc} \downarrow & \downarrow & & \downarrow & & & \\ \textcircled{15x^2} & \textcircled{+6x} & + -12 & \textcircled{+ -7x^3} & + & \textcircled{-2x^2} & \textcircled{-3x} \end{array}$$

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

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

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

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

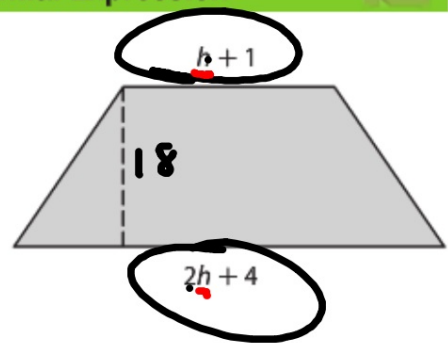
$$150y^3t^6 + 73t^2y^2 + 8y^3$$

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?



$A = b \cdot h$ $A = \frac{1}{2} h (b_1 + b_2)$

$A = \frac{b \cdot h}{2}$ $A = \frac{1}{2} \cdot 18 (2h+4+h+1)$
 $A = 9 (3h+5)$

$= 9 \cdot 3h + 9 \cdot 5$
 $= 27h + 45$ $= 27 \cdot 18 + 45$
 $486 + 45$

531

Solve means x=

Example 4 Equations with Polynomials on Both Sides

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

$$2a \cdot 5a + 2a \cdot 2 \quad 3a \cdot 2a + 3a \cdot 6 + a \cdot 4a \quad 2a \cdot 6a \quad 2a \cdot 4$$

$$\underline{10a^2} + \underline{-4a} + \underline{6a^2} + \underline{18a} + \underline{8} = \underline{4a^2} + \underline{a} + \underline{12a^2} - \underline{8a} + \underline{50}$$

Distributive property
Like terms
Zero pairs
x=

$$\begin{array}{r} 16a^2 + 14a + 8 = 16a^2 - 7a + 50 \\ -16a^2 \quad +7a \quad -8 \quad -16a^2 \quad +7a \quad -8 \end{array}$$

a =

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

$a = 2$

Guided Practice

Solve each equation. ↓

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

$$2x^2 + 8x + 7 = \underline{1x + 8} + 2x^2 + \underline{2x} + \underline{12}$$

$$\begin{array}{r} 2x^2 + 8x + 7 = 2x^2 + 3x + 20 \\ -2x^2 \quad -3x \quad -7 \quad -2x^2 \quad -3x \quad -7 \end{array}$$

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

$$x = \frac{13}{5} = 2.6$$

$x =$ ans.

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

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

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