

8.2 Multiplying Polynomials by Monomials

↓  
multiple terms

one term

$$\begin{array}{r} \rightarrow 376 \\ \times 3 \leftarrow \\ \hline \end{array}$$

$$\rightarrow -3x^2(7x^2 - x + 4)$$

horizontal  
& distributive Prop.

$$\begin{array}{r} \overbrace{7x^2 - (x + 4)} \\ \hline + 3x^3 - 12x^2 \end{array}$$

Vertical  
\* like regular multiplication of

$$\begin{array}{r} 7x^2 - x + 4 \\ \times (x) \\ \hline -21x^4 + 3x^3 - 12x^2 \end{array}$$

Example: Simplify

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

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

$$\boxed{-8p^3 - 100}$$

Example: Solve an Equation

$$\begin{aligned}
 -2) + 3a(2a + b) + 8 &= a(4a + 1) + 2a(6a - 4) + 5c \\
 -4a + 6a^2 + 18 + 8 &= 4a^2 + a + 12a^2 - 8a + 5c
 \end{aligned}$$

$$\begin{aligned}
 \cancel{16a^2} - \cancel{16a^2} - 4a + 2b &= \cancel{16a^2} - \cancel{16a^2} - 7a + 50
 \end{aligned}$$

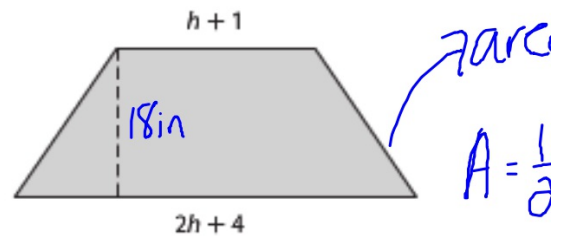
$$\begin{aligned}
 -4a + 2b &= -7a + 50 \\
 +7a &+7a
 \end{aligned}$$

$$\begin{aligned}
 3a + 2b &= 50 \\
 -2b &-2b \\
 \hline
 3a &= 24 \\
 \frac{3a}{3} &= \frac{24}{3}
 \end{aligned}$$

$$\boxed{a=8}$$

**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?

Area



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

$$A = 9(3h+5)$$

$$A = 27h + 45$$

$$\rightarrow \boxed{27h + 45 \text{ inches}^2}$$