

Multiplying Polynomials

Exponent Rule: when multiplying exponents with like bases, add the exponents.

Methods for Multiplying Polynomials

1. Vertical or Horizontal Distribution
2. Method 2 FOIL - First, Outer, Inner, Last
 - works when multiplying a binomial by another binomial

Simplify the expression using the horizontal distribution method.

$$1. (2x - 6) (-5x^2 + 3x - 7)$$

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$$-10x^3 + 6x^2 + -14x + 30x^2 + -18x + 42$$

combine like terms

$$-10x^3 + 36x^2 + -32x + 42$$

Simplify the expression using the vertical distribution method.

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

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

$$\begin{array}{r} 4x^2 + -5x + 3 \\ \cdot \quad -3x + 7 \\ \hline 28x^2 + -35x + 21 \\ -12x^3 + 15x^2 + -9x + 0 \\ \hline -12x^3 + 43x^2 + -44x + 21 \end{array}$$

Simplify the expression using the FOIL method.

$$3. (2a - 4) (-5a + 7)$$

Simplify the expression using the FOIL method.

3. $(2a - 4)(-5a + 7)$ FOIL - First, Outer, Inner, Last

$$-10a^2 + 14a + 20a - 28$$

Combine like terms

$$-10a^2 + 34a - 28$$

Simplify the expression using the FOIL method.

$$4. (-2w + 8) (-6w + 5)$$

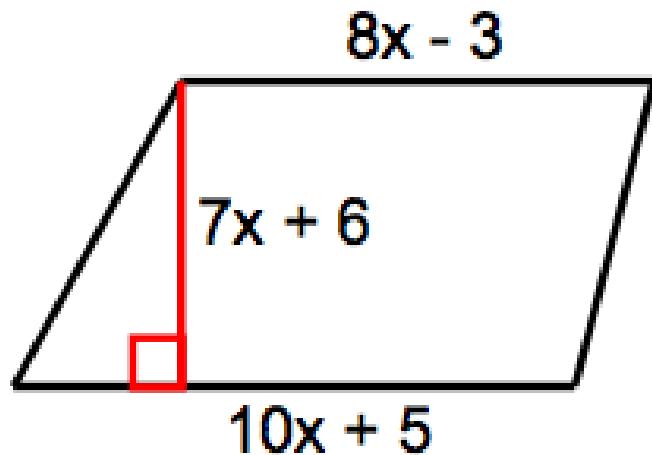
Simplify the expression using the FOIL method.

4. $(-2w + 8) (-6w + 5)$ **FOIL - First, Outer, Inner, Last**

$12w^2 + -10w + -48w + 40$

$12w^2 + -58w + 40$

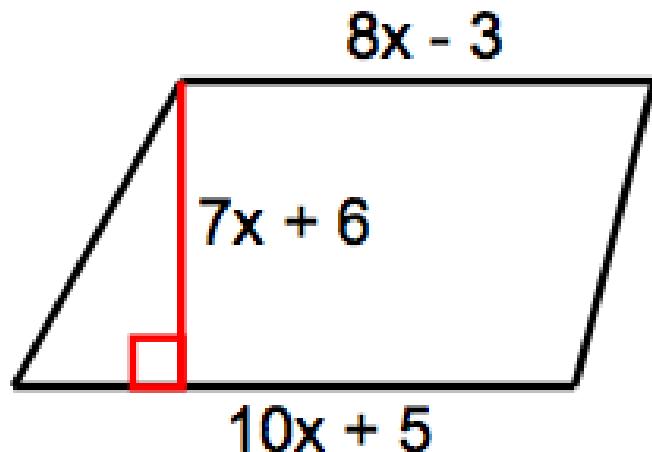
5. Write a simplified expression for the area of the trapezoid.
Area of a Trapezoid $\frac{1}{2} (b_1 + b_2) h$



6. If the area is 1000 square feet, what is the value of x ?

5. Write a simplified expression for the area of the trapezoid.

Area of a Trapezoid $\frac{1}{2} (b_1 + b_2) h$



$$\frac{1}{2} (8x - 3 + 10x + 5)(7x + 6)$$

combine

$$\frac{1}{2} (18x + 2)(7x + 6)$$

take half

$$(9x + 1)(7x + 6)$$

FoIL $63x^2 + 54x + 7x + 6$

$$63x^2 + 61x + 6$$

6. If the area is 1000 square feet, what is the value of x?

$$1000 = 63x^2 + 61x + 6$$
$$-1000$$
$$0 = 63x^2 + 61x - 994$$

use quadratic formula

$$x = \frac{-61 \pm \sqrt{61^2 - 4(63)(-994)}}{2(63)}$$

$$x = \frac{-61 \pm \sqrt{254209}}{126}$$

$$x = \frac{-61 \pm 504}{126}$$

$$x = 3.5 \text{ or } -4.5$$

only 3.5 is reasonable
cannot have a negative measurement