

Distributive Property!

## Unit 3: Polynomials

3.5 Polynomial Problem Solving

Ex.) A rectangular garden with a length of  $(8-3a)$  m and width of  $(a+8)$  m contains a square flower bed with a side length of  $(2a+5)$  m. The rest of the garden is grass.

a) Draw a diagram.

b) Write an expression for the area of grass in the garden.

$$(8-3a)(a+8) - (2a+5)(2a+5) \checkmark$$

c) Expand and simplify the expression found above.

$$= 8a + 64 - 3a^2 - 24a - (4a^2 + 10a + 10a + 25)$$

$$= -3a^2 - 16a + 64 + (4a^2 + 20a + 25)$$

$$= -7a^2 - 36a + 39 \text{ m}^2 \checkmark$$

d) Determine the area of grass if  $a = (-1.5)$

$$-7(-1.5)^2 - 36(-1.5) + 39$$

$$= 77.25 \text{ m}^2$$

Distributive Property!

## Unit 3: Polynomials

Ex.) The hypotenuse of a right triangle is  $(5x+5)$  cm and the lengths of the other two sides are  $(4x+8)$  cm and  $(3x-5)$  cm.

a) Form an equation to solve for x.

$$a^2 + b^2 = c^2$$

$$(4x+8)^2 + (3x-5)^2 = (5x+5)^2$$

$$(4x+8)(4x+8) + (3x-5)(3x-5) = (5x+5)(5x+5)$$

$$16x^2 + 64x + 64 + 9x^2 - 30x + 25 = 25x^2 + 50x + 25$$

$$25x^2 + 34x + 89 = 25x^2 + 50x + 25$$

$$-50x \quad -50x$$

$$-16x + 89 = 25$$

$$-89 \quad -89$$

$$\frac{-16x}{-16} = \frac{-64}{-16}$$

$$x = 4$$

b) Determine the length of each side of the triangle.

7cm, 24cm, 25cm

Distributive Property!

$$A \cdot (B + C) = A \cdot B + A \cdot C$$