

5.4

Subtracting Polynomials

- Using the properties of integers

We know that -6 is the opposite of 6 .

Subtracting -6 from an integer is the same as adding 6 to that integer.

The same process is true for like terms.

To subtract: $(3x^2 - 4x) - (2x^2 - 6x)$

$$\begin{aligned}(3x^2 - 4x) - (2x^2 - 6x) &= 3x^2 - 4x - (2x^2) - (-6x) \\ &= 3x^2 - 4x - 2x^2 - (-6x) \\ &= 3x^2 - 4x - 2x^2 + 6x \\ &= 3x^2 - 2x^2 - 4x + 6x \\ &= x^2 + 2x\end{aligned}$$

Subtract each term.

Add the opposite term.

Collect like terms.

Combine like terms.

Example 2**Subtracting Trinomials in Two Variables**

Subtract: $(5x^2 - 3xy + 2y^2) - (8x^2 - 7xy - 4y^2)$

Check the answer.

► **A Solution**

$$\begin{aligned}(5x^2 - 3xy + 2y^2) - (8x^2 - 7xy - 4y^2) &= 5x^2 - 3xy + 2y^2 - (8x^2) - (-7xy) - (-4y^2) \\ &= 5x^2 - 3xy + 2y^2 - 8x^2 + 7xy + 4y^2 \\ &= 5x^2 - 8x^2 - 3xy + 7xy + 2y^2 + 4y^2 \\ &= -3x^2 + 4xy + 6y^2\end{aligned}$$

To check, add the difference to the second polynomial:

$$\begin{aligned}(-3x^2 + 4xy + 6y^2) + (8x^2 - 7xy - 4y^2) &= -3x^2 + 4xy + 6y^2 + 8x^2 - 7xy - 4y^2 \\ &= -3x^2 + 8x^2 + 4xy - 7xy + 6y^2 - 4y^2 \\ &= 5x^2 - 3xy + 2y^2\end{aligned}$$

The sum is equal to the first polynomial.

So, the difference is correct.

Example 3.

The height of a ball kicked on Earth can be modelled by: $18 + 35t - 4.9t^2$

On Mars the height is modelled by: $52 + 26t - 1.3t^2$

Find a formula for the difference in the height of the ball on Mars as compared to Earth.

$$(52 + 26t - 1.3t^2) - (18 + 35t - 4.9t^2)$$

$$52 + 26t - 1.3t^2 - (18) - (35t) - (-4.9t^2)$$

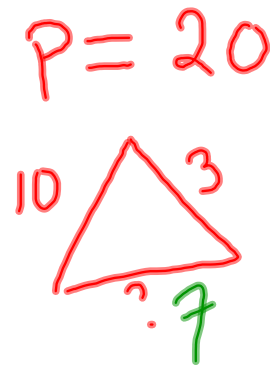
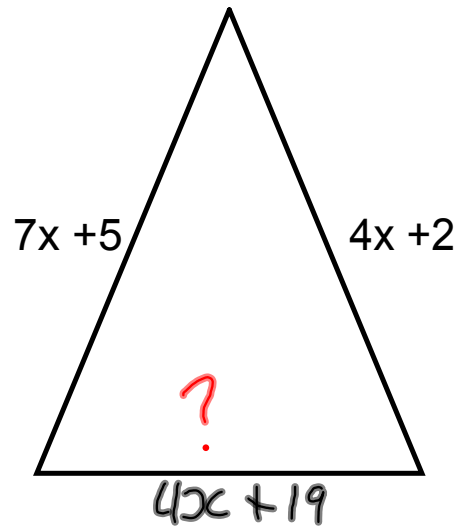
$$52 + 26t - 1.3t^2 - 18 - 35t + 4.9t^2$$

$$-1.3t^2 + 4.9t^2 + 26t - 35t + 52 - 18$$

$$\boxed{3.6t^2 - 9t + 34}$$

Example 4.

Find the length of the unknown side. The perimeter is $15x + 26$



$$? = \text{Perimeter} - \text{each side}$$

$$= (15x + 26) - (7x + 5) - (4x + 2)$$

$$= 15x + 26 - (7x) - (5) - (4x) - (2)$$

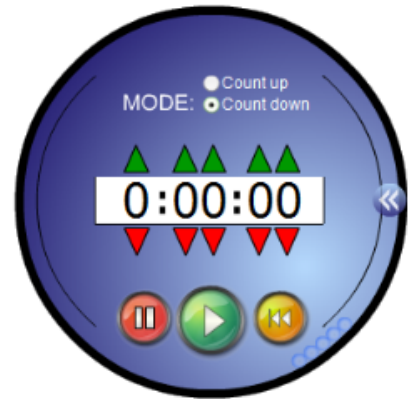
$$= 15x + 26 - 7x - 5 - 4x - 2$$

$$= 15x - 7x - 4x + 26 - 5 - 2$$

$$\boxed{= 4x + 19}$$

You have 5 minutes to have these handed in

$$\begin{aligned} \text{c) } & (-3x + 5) - (4x + 3) \\ & (-3x + 5) - (4x) - (3) \\ & -3x + 5 - 4x - 3 \\ & -3x - 4x + 5 - 3 \\ & \boxed{-7x + 2} \end{aligned}$$



$$\begin{aligned} \text{g) } & (-4x^2 - 3x - 11) - (x^2 - 4x - 15) \\ & -4x^2 - 3x - 11 - (x^2) - (-4x) - (-15) * \\ & -4x^2 - 3x - 11 - x^2 + 4x + 15 \\ & -4x^2 - x^2 - 3x + 4x - 11 + 15 \\ & \boxed{-5x^2 + x + 4} \end{aligned}$$

Friday, Feb. 11, 2011

Pascal Math Competition
Review For Quiz

HW: Pg 235 # 8, 13, 15.

Mid-Chapter Review: 1, 2, 5, 11.