

Ch -9 Algebraic Expressions

Coefficients

$$2x + 4y - 9$$

Variables

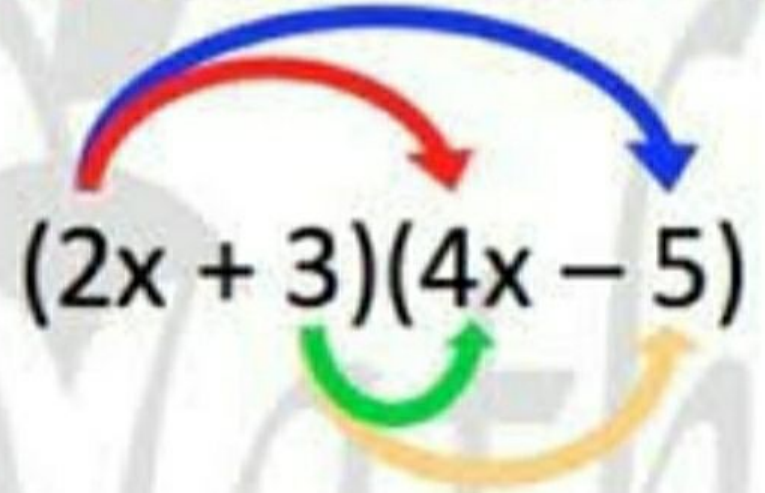
Constant

Terms

— $2x, 4y, 9$

Binomial by Binomial

F **O** **I** **L**
First Outer Inner Last



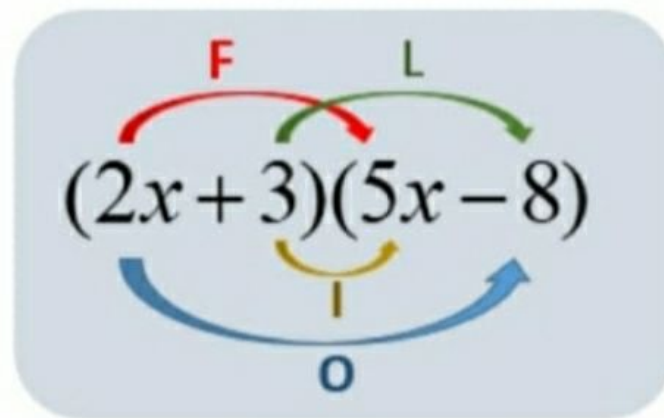
$$(2x)(4x) + (2x)(-5) + (3)(4x) + (3)(-5)$$

$$8x^2 - 10x + 12x - 15$$

combine

$$8x^2 + 2x - 15$$

FOIL Method



First: $(2x)(5x) = 10x^2$

Outer: $(2x)(-8) = -16x$

Inner: $(3)(5x) = 15x$

Last: $(3)(-8) = -24$

$$\begin{aligned}(2x + 3)(5x - 8) \\ &= 10x^2 - 16x + 15x - 24 \\ &= 10x^2 - x - 24\end{aligned}$$

How to multiply a binomial by a binomial using the FOIL method and a Smiley Face Method?

FOIL stands for First, Outer, Inner, Last.

Examples:

$$(2x - 3)(5x + 9)$$

$$(7x - 3)(2x + 3)$$

1. Multiply a binomial by a binomial:

(i) $(a + 2)$ and $(a + 10)$

(ii) $(m + 5)$ and $(m - 3)$

(iii) $(a - 5)$ and $(a + 1)$

(iv) $(m - 7)$ and $(4 - m)$

(v) $(x - 7)$ and $(1 + x)$

1. (i) $a^2 + 12a + 20$

ANSWER

(ii) $m^2 + 2m - 15$

(iii) $a^2 - 4a - 5$

(iv) $-m^2 + 11m - 28$

(v) $x^2 - 6x - 7$

3. Multiply the following binomials:

(i) $(ax - by)(ax + by)$

(ii) $(x + 9)$ by $(y + 2)$

(iii) $(10 - ab)$ by $(ab + 2)$

(iv) $(ab + 1)$ by $(ab + 10)$

(v) $(xy + yz)$ by $(xy - yz)$

$$3 \quad (i) \quad a^2x^2 - b^2y^2$$

ANSWERS

$$(ii) \quad xy + 2x + 9y + 18$$

$$(iii) \quad -a^2b^2 + 8ab + 20$$

$$(iv) \quad a^2b^2 + 11ab + 10$$

$$(v) \quad x^2y^2 - y^2z^2$$