

Worksheet #3 *Factoring Quadratic Polynomials: $ax^2 + bx + c$ (Grouping Method)*

Factoring a quadratic polynomial is like "un-F-O-I-L"

EX $6x^2 + 13x - 15$

⇒ Since $6 \cdot -15 = -90$, find two numbers that **multiply** to **-90** and **add** to the **middle term** of **13**.

$$\begin{array}{r} \underline{\quad} \cdot \underline{\quad} = -90 \\ \underline{\quad} + \underline{\quad} = 13 \end{array}$$

⇒ **18** and **-5** work! So **rewrite $13x$** as **$18x - 5x$**

⇒ Now factor by **grouping**.

The factors of $6x^2 + 13x - 15$ are $(6x - 5)(x + 3)$

EXERCISES:

Use the **BOX METHOD** to factor each quadratic polynomial.

1. $8x^2 + 14x - 15$

2. $6x^2 + 29x + 20$

3. $15x^2 - 41x + 14$

4. $12x^2 - 32x + 5$

5. $24x^2 + 38x + 3$

6. $4x^2 - 8x - 21$

7. $4x^2 + 29x - 24$

8. $8x^2 - 19x - 15$

9. $6x^2 + 17x + 12$

10. $12x^2 + 7x - 10$

11. $6x^2 + 91x + 15$

12. $15x^2 + 19x + 6$

Solutions:

1. $(2x + 5)(4x - 3)$ 2. $(3x - 7)(5x - 2)$ 3. $(12x + 1)(2x + 3)$ 4. $(x + 8)(4x - 3)$ 5. $(2x + 3)(3x + 4)$ 6. $(x + 15)(6x + 1)$