

## 9.6 Factor with Lead Coefficient $\neq 1$

- Steps for Factoring:
- ① put your polynomial in standard form
  - ② ALWAYS factor out a GCF (if possible)
  - ③ If your leading coefficient is negative, GCF is neg.
  - ④ then factor COMPLETELY

But what happens when the L.C.  $\neq 1$ ?

Let's Practice! Factor:

①  $2x^2 + 3x + 1$

$$\begin{array}{c} \boxed{(2x + 1)(x + 1)} \\ \hline \begin{array}{c} 1x \\ 1x + 2x = 3x \\ 2x \end{array} \end{array}$$

②  $3x^2 + 16x + 13$

$$\begin{array}{c} \boxed{(3x + 13)(x + 1)} \\ \hline \begin{array}{c} 13x \\ 13x + 3x = 16x \\ 3x \end{array} \end{array}$$

③  $5t^2 - 6t + 1$

$$\begin{array}{c} \boxed{(5t - 1)(t - 1)} \\ \hline \begin{array}{c} -t \\ -5t - t = -6t \\ -5t \end{array} \end{array}$$

④  $-3x^2 - 8x - 5$

$$\begin{array}{c} -1 \boxed{(3x^2 + 8x + 5)} \\ \hline \begin{array}{c} 5x \\ 3x + 5x = 8x \\ 3x \end{array} \end{array}$$

$$\textcircled{5} 4c^2 - 14c + 6$$

$$2(2c^2 - 7c + 3)$$

$$\boxed{2(2c - 1)(c - 3)}$$

$\begin{array}{c} \text{---} \\ | \\ -c \\ \text{---} \\ -6c \end{array}$

$$-c + -6 = -7c$$

$$\textcircled{6} -8h^2 + 10h - 3$$

$$-1(8h^2 - 10h + 3)$$

$$\boxed{-1(4h - 3)(2h - 1)}$$

$\begin{array}{c} \text{---} \\ | \\ -6h \\ + \\ -4h \\ \text{---} \\ -10h \end{array}$

Solve!

$$\textcircled{1} 6y^2 - 5y - 4 = 0$$

$$\textcircled{2} -4x^2 = -12x - 112$$

$$\textcircled{3} 3n^2 + 5 = 8n$$

CHALLENGE!

$$\textcircled{4} -23x^2 - 20x - 6x^3 = 0$$