

## Warm-up

Solve

$$\textcircled{1} (m-3)(4m+12)=0$$

$$\textcircled{2} 2x^2 + 15x = 0$$

$$\textcircled{3} 2x(x+5)=0$$

$$\textcircled{4} 6h^2 = 3h$$

# 9.5 Factoring Polynomials

\* P.M.A. - Positive Mental Attitude

Multiply

$$(y+3)(y-7) = y^2 - 7y + 3y - 21$$

$$y^2 - 4y - 21$$

First · First ← was  $y \cdot y$       was  $+3 \cdot -7$  → Last · Last

Came from  $-7$  &  $+3$

For

$$x^2 + 5x + 6$$

$x \cdot x$   
 $5 = 2 \cdot 3$   
 $\begin{cases} -1 \cdot -6 \\ -2 \cdot -3 \end{cases}$   
 Flip the signs  
 $(x+2)(x+3)$   
 $\begin{array}{r} 2x \\ +3x \\ \hline 5x \end{array}$

1<sup>st</sup> - Break up the  $x^2$  &  $+6$  into factors

2<sup>nd</sup> - Which factors of 6 add up to the middle term...  $5x$ ?  
 $2+3=5$

3<sup>rd</sup> - Place the factors & check middle term

$$\textcircled{1} y^2 - 6y + 8$$

$y \cdot y$   
 $1 \cdot 8$   
 $2 \cdot 4$   
 $\left. \begin{array}{l} -1 \cdot -8 \\ -2 \cdot -4 \end{array} \right\} = -6$

$$(y-2)(y-4)$$

$\begin{array}{r} 2y \\ -4y \\ \hline -6y \end{array}$

$$\textcircled{2} z^2 + 1z - 30$$

$z \cdot z$   
 $1 \cdot -30$   
 $2 \cdot -15$   
 $3 \cdot -10$   
 $5 \cdot -6$   
 add up to 1

$$\left. \begin{array}{l} -1 \cdot 30 \\ -2 \cdot 15 \\ -3 \cdot 10 \\ -5 \cdot 6 \end{array} \right\}$$

$$(z-5)(z+6)$$

Homework:

I ♥ factoring

$$\textcircled{1} a^2 + 6a + 8$$

$$\textcircled{2} x^2 + 3x - 18$$

$$\textcircled{3} a^2 + 5a - 50$$

$$\textcircled{4} y^2 - 2y - 15$$