

Unit 2 Factoring

① GCF first!
Greatest Common Factor

② Perfect Squares

- Difference of Two Squares
Two terms $a^2 - b^2 = (a+b)(a-b)$

- Perfect Square Trinomial
 $(a+b)^2 = a^2 + 2ab + b^2$ 3 terms

③ # of terms

- Three terms $ax^2 + bx + c$
() ()

$$\text{Ex: } a^2 + 2ab + b^2$$

$$x^2 + 10x + 25$$

$$(x+5)^2$$

x^2 $ab=5x$ 25

$$(x+5)^2$$

$$(x+5)(x+5)$$

$$x^2 + 5x + 5x + 25$$

$$\text{Ex: } 9a^2 + 24a + 16$$

$$(3a+4)^2$$

$-12a$

$$\underline{a^2} + 2\underline{ab} + \underline{b^2}$$

$$\text{Ex: } 25a^2 + 60a + 36$$

$$(5a+6)^2$$

$30a$

$$\text{Ex: } 144x^2 - 72xy + 9y^2$$

$$\text{Ex: } 121a^2 - 100ab + 25b^2$$

$$\text{Ex: } \underline{64x^2} \ominus 48x + 9$$

$$(8x - 3)^2 \rightarrow 3 \text{ terms}$$

$$\boxed{-24x}$$

$$\text{Ex: } 81a^2 + 90a + 25$$

$$\boxed{(9a + 5)^2}$$

$$45a$$

$$2ab$$

$$a^2 \mp b^2$$

$$\text{Ex: } 36x^2 - 120xy \oplus 100y^2$$

$$(6x - 10y)^2$$

$$a^2 \mp 2ab \mp b^2$$

$$\text{Ex: } 9x^2 - 49$$

$$\begin{array}{r} 1 \\ 4 \\ 9 \\ \hline 169 \end{array}$$

$$\text{Ex: } 16x^2 - 81$$

$$(4x+9)(4x-9)$$

$$\begin{array}{r} 16 \\ 25 \\ 36 \\ 49 \end{array}$$

$$\text{Ex: } 25a^2 - 121b^2$$

$$(5a+11b)(5a-11b)$$

$$\begin{array}{r} 64 \\ 81 \\ 100 \end{array}$$

$$\underline{ax^2 + bx + c}$$

"unfoiling"

$$a = 1$$

$$\text{Ex: } x^2 + \frac{0+I}{4}x + \frac{L}{3}$$

Factors of $\frac{3}{1+3=4}$

$$\begin{array}{c} (x+1)(x+3) \\ \text{---} \\ 1x \\ \text{---} \\ 3x \\ \text{---} \\ 4x \end{array}$$

$$\text{Ex: } x^2 + 7x + 12$$

$$\begin{array}{l} 12 \\ 1 \cdot 12 \\ 2 \cdot 6 \\ 3 \cdot 4 \quad 3+4=7 \end{array}$$

$$\begin{array}{c} (x+3)(x+4) \\ \text{---} \\ 3x \\ \text{---} \\ 4x \\ \text{---} \\ 7x \end{array}$$

Warm-up

Factor:

$$a. \quad 3x^2 - 48 = 3(x^2 - 16)$$

$$b. \quad 25x^2 - 100y^2 = 25(x^2 - 4y^2)$$

$$25(x^2 - 4y^2)$$

$$25(\underset{a}{x+2y})(\underset{b}{x-2y})$$

$$25(\underset{b}{x-2y})(\underset{a}{x+2y})$$

