

Review: Factoring

1 - Factoring Using the GCF

↳ Greatest Common Factor

$$\text{Ex 1: } \underline{45}x^2 - \underline{25}x$$

$$5(\underline{9}x^2 - \underline{5}x)$$

$$\boxed{5x(9x - 5)}$$

$$\text{Ex 2: } \underline{30}qp - \underline{5}qp + \underline{50}q$$

$$5(6qp - qp + 10q)$$

$$\boxed{5q(6p - p + 10)}$$

2 - Factoring by Grouping

$$\text{Ex 3: } (12a^3 - 9a^2)(4a - 3)$$

★ Look for GCF in both groups★

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

★ Kick out what they have in common and write what's left over

$$\boxed{(4a - 3)(3a^2 + 1)}$$

$$\underline{\text{Ex 4}}: (35xy - 5x)(-56y + 8)$$

$$5x(7y - 1) - 8(7y - 1)$$

$$\boxed{(7y - 1)(5x - 8)}$$

#3 - Factoring by Difference of Squares (Difference)

Ex 5: $h^2 - 25$

- ① check for 2 terms being subtracted
- ② Check for $\sqrt{\quad}$ of both

$$\sqrt{h^2} = h$$

$$\sqrt{25} = 5$$

$$\boxed{(h+5)(h-5)}$$

Ex 6: $49g^2 - 100$

$$\sqrt{49g^2} = 7g$$

$$\sqrt{100} = 10$$

$$\boxed{(7g + 10)(7g - 10)}$$

#4 Factoring Trinomials $ax^2 + bx + c$

↳ 3 terms

Ex 7: $1x^2 - x - 56$

$$(x - 8)(x + 7)$$

$$a \cdot c = 1 \cdot -56$$

$$= -56$$

$$\begin{array}{l} 56 \cdot 1 \\ 2 \cdot 23 \\ \textcircled{8 \cdot 7} \end{array}$$

$$\begin{array}{c} \swarrow \quad \searrow \\ -8x + 7x = -1x \end{array}$$

b term
↓

Ex 8: $2n^2 + 5n + 2$

$$(2n + 1)(n + 2)$$

$$a \cdot c = 2(2)$$

$$= 4$$

$$\begin{array}{l} \textcircled{4 \cdot 1} \\ 2 \cdot 2 \end{array}$$

$$\begin{array}{c} \swarrow \quad \searrow \\ 4n + 1n = 5n \end{array}$$

b term
↓

	<u>2n</u>	<u>1</u>
<u>n</u>	$2n^2$	$1n$
<u>2</u>	$4n$	2

Mixed Practice

1. $33a^8b^2 + 11a^6b^2 + 55a^4b^3$

2. $7x^3 + 21x^2 + x + 3$

3. $-2x^2 + 32$

4. $k^2 - 100$

5. $m^2 - 13m + 40$