

1. Factor $2x^2 + 6x + 4$ (GCF first!).

$$2(x^2 + 3x + 2)$$

Answer: $2(x + 1)(x + 2)$

2. Factor $3x^2 - 3x - 18$.

$$3(x^2 - x - 6)$$

Answer: $3(x - 3)(x + 2)$

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

$ac = 6$; split $7x$ as $6x + x$

$$2x(x + 3) + 1(x + 3)$$

Answer: $(2x + 1)(x + 3)$

4. Factor $3x^2 + 10x + 8$.

$ac = 24$; split $10x$ as $6x + 4x$

$$3x(x + 2) + 4(x + 2)$$

Answer: $(3x + 4)(x + 2)$

5. Factor $2x^2 - x - 6$.

$ac = -12$; split $-x$ as $-4x + 3x$

$$2x(x - 2) + 3(x - 2)$$

Answer: $(2x + 3)(x - 2)$

6. Factor $5x^2 + 13x - 6$.

$ac = -30$; split $13x$ as $15x - 2x$

$$5x(x + 3) - 2(x + 3)$$

Answer: $(5x - 2)(x + 3)$

7. Factor $4x^2 - 9$. (Not a trinomial - what is it?)

Difference of squares: $2x$ and 3

Answer: $(2x + 3)(2x - 3)$

8. Factor $6x^2 + 7x + 2$.

$ac = 12$; split $7x$ as $3x + 4x$

$$6x^2 + 3x + 4x + 2$$

$$3x(2x + 1) + 2(2x + 1)$$

Answer: $(3x + 2)(2x + 1)$

9. Factor $4x^2 - 100$ completely. ★ challenge

GCF 4 first: $4(x^2 - 25)$

Then conjugates

Answer: $4(x + 5)(x - 5)$

10. Factor $2x^3 + 10x^2 + 12x$ completely. ★ challenge

GCF 2x: $2x(x^2 + 5x + 6)$

Then the trinomial

Answer: $2x(x + 2)(x + 3)$