

# Reteaching 5-4

## Factoring Quadratic Expressions

**OBJECTIVE:** Factoring quadratic expressions

**MATERIALS:** None

### Example

Factor the expression  $6x^2 - 5x - 4$ .

$a = 6, b = -5, \text{ and } c = -4$

← Find  $a, b, \text{ and } c$ ; they are the coefficients of each term.

$ac = -24 \text{ and } b = -5$

← We are looking for factors with product  $ac$  and sum  $b$ .

<b>Factors of -24</b>	1, -24	-1, 24	2, -12	-2, 12	3, -8	-3, 8	4, -6	-4, 6
<b>Sum of factors</b>	-23	23	-10	10	-5	5	-2	2

The factors 3 and -8 are the combination whose sum is -5.

$\underbrace{6x^2 + 3x}_{3x(2x + 1)} - \underbrace{8x - 4}_{4(2x + 1)}$

← Rewrite the middle term using the factors you found.

$3x(2x + 1) - 4(2x + 1)$

← Find common factors by grouping the terms in pairs.

$(3x - 4)(2x + 1)$

← Rewrite using the Distributive Property.

Check:  $(3x - 4)(2x + 1)$

← You can check your answer by multiplying it back together.

$6x^2 + 3x - 8x - 4$

$6x^2 - 5x - 4$

Remember that not all quadratic expressions are factorable.

### Exercises

Factor each expression.

1.  $x^2 + 6x + 8$

2.  $x^2 - 4x + 3$

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

4.  $2x^2 - 11x + 5$

5.  $2x^2 - 7x - 4$

6.  $4x^2 + 16x + 15$

7.  $x^2 - 5x - 14$

8.  $7x^2 - 19x - 6$

9.  $x^2 - x - 72$

10.  $2x^2 + 9x + 7$

11.  $x^2 + 12x + 32$

12.  $4x^2 - 28x + 49$

13.  $x^2 - 3x - 10$

14.  $2x^2 + 9x + 4$

15.  $9x^2 - 6x + 1$

16.  $x^2 - 10x + 9$

17.  $x^2 + 4x - 12$

18.  $x^2 + 7x + 10$

19.  $x^2 - 8x + 12$

20.  $2x^2 - 5x - 3$

21.  $x^2 - 6x + 5$

22.  $3x^2 + 2x - 8$

23.  $2x^2 + 11x + 5$

24.  $x^2 + 3x - 28$