

**LARSON ALGEBRA 2**  
**CHAPTER 5, LESSON 2, EXTRA EXAMPLES**

**Extra Example 1 Factoring Trinomials of the Form  $x^2 + bx + c$**

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Factor  $x^2 - 2x - 48$ .

**SOLUTION**

You want  $x^2 - 2x - 48 = (x + m)(x + n)$  where  $m + n = -2$  and  $mn = -48$ . Find factors of  $-48$ . Taking  $m = -8$  and  $n = 6$  gives  $x^2 - 2x - 48 = (x - 8)(x + 6)$ .

**Extra Example 2 Factoring a Trinomial of the Form  $ax^2 + bx + c$**

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Factor  $4y^2 - 4y - 3$ .

**SOLUTION**

You want  $4y^2 - 4y - 3 = (ky + m)(ly + n)$  where  $k$  and  $l$  are factors of 4 and  $m$  and  $n$  are factors of 3. Check possible factorizations by multiplying.

$$(4y - 3)(y + 1) = 4y^2 + y - 3$$

$$(4y - 1)(y + 3) = 4y^2 + 11y - 3$$

$$(2y - 1)(2y + 3) = 4y^2 + 4y - 3$$

$$(2y - 3)(2y + 1) = 4y^2 - 4y - 3 \quad \checkmark$$

◆ The correct factorization is  $4y^2 - 4y - 3 = (2y - 3)(2y + 1)$ .

**Extra Example 3 Factoring with Special Patterns**

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Factor the quadratic expression.

a.  $16y^2 - 225 = (4y)^2 - (15)^2$                       Difference of two squares  
 $= (4y - 15)(4y + 15)$

b.  $4z^2 - 12z + 9 = (2z)^2 + 2(2z)(-3) + (-3)^2$                       Perfect square trinomial  
 $= (2z - 3)^2$

c.  $36w^2 + 60w + 25 = (6w)^2 + 2(6w)(5) + 5^2$                       Perfect square trinomial  
 $= (6w + 5)^2$