

**GUIDED PRACTICE** for Examples 1 and 2

Factor the trinomial.

1. $3t^2 + 8t + 4$

2. $4s^2 - 9s + 5$

3. $2h^2 + 13h - 7$

FACTORING WHEN a IS NEGATIVE To factor a trinomial of the form $ax^2 + bx + c$ when a is negative, first factor -1 from each term of the trinomial. Then factor the resulting trinomial as in the previous examples.

**EXAMPLE 3** Factor when a is negativeFactor $-4x^2 + 12x + 7$.**Solution****STEP 1** Factor -1 from each term of the trinomial.

$$-4x^2 + 12x + 7 = -(4x^2 - 12x - 7)$$

STEP 2 Factor the trinomial $4x^2 - 12x - 7$. Because b and c are both negative, the factors of c must have different signs. As in the previous examples, use a table to organize information about the factors of a and c .

Factors of 4	Factors of -7	Possible factorization	Middle term when multiplied	
1, 4	1, -7	$(x + 1)(4x - 7)$	$-7x + 4x = -3x$	X
1, 4	7, -1	$(x + 7)(4x - 1)$	$-x + 28x = 27x$	X
1, 4	-1, 7	$(x - 1)(4x + 7)$	$7x - 4x = 3x$	X
1, 4	-7, 1	$(x - 7)(4x + 1)$	$x - 28x = -27x$	X
2, 2	1, -7	$(2x + 1)(2x - 7)$	$-14x + 2x = -12x$	← Correct
2, 2	-1, 7	$(2x - 1)(2x + 7)$	$14x - 2x = 12x$	X

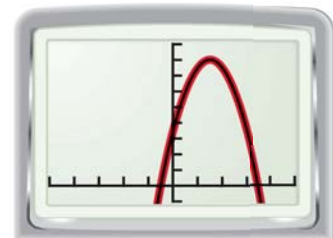
AVOID ERRORS

Remember to include the -1 that you factored out in Step 1.

$$\triangleright -4x^2 + 12x + 7 = -(2x + 1)(2x - 7)$$

CHECK You can check your factorization using a graphing calculator.

Graph $y_1 = -4x^2 + 12x + 7$ and $y_2 = -(2x + 1)(2x - 7)$. Because the graphs coincide, you know that your factorization is correct.

**GUIDED PRACTICE** for Example 3

Factor the trinomial.

4. $-2y^2 - 5y - 3$

5. $-5m^2 + 6m - 1$

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