

# 7.6

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

For use with Exploration 7.6

**Essential Question** How can you use algebra tiles to factor the trinomial  $ax^2 + bx + c$  into the product of two binomials?

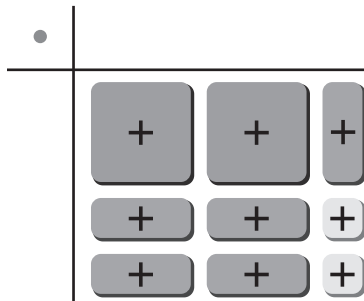
### 1 EXPLORATION: Finding Binomial Factors

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

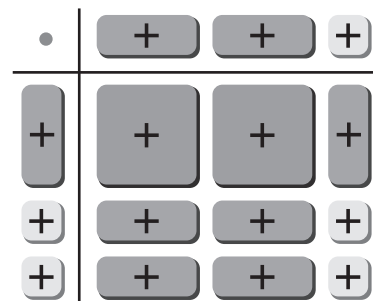
**Work with a partner.** Use algebra tiles to write each polynomial as the product of two binomials. Check your answer by multiplying.

**Sample**  $2x^2 + 5x + 2$

**Step 1** Arrange algebra tiles that model  $2x^2 + 5x + 2$  into a rectangular array.



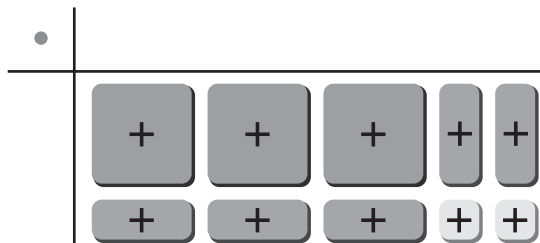
**Step 2** Use additional algebra tiles to model the dimensions of the rectangle.



**Step 3** Write the polynomial in factored form using the dimensions of the rectangle.

width      length  
 $\text{Area} = 2x^2 + 5x + 2 = (x + 2)(2x + 1)$

a.  $3x^2 + 5x + 2 =$  \_\_\_\_\_





**7.6****Notetaking with Vocabulary**

For use after Lesson 7.6

In your own words, write the meaning of each vocabulary term.

polynomial

greatest common factor (GCF)

Zero-Product Property

**Notes:**

**7.6** Notetaking with Vocabulary (continued)**Extra Practice**

In Exercises 1–18, factor the polynomial.

1.  $2c^2 - 14c - 36$

2.  $4a^2 + 8a - 140$

3.  $3x^2 - 6x - 24$

4.  $2d^2 - 2d - 60$

5.  $5s^2 + 55s + 50$

6.  $3q^2 + 30q + 27$

7.  $12g^2 - 37g + 28$

8.  $6k^2 - 11k + 4$

9.  $9w^2 + 9w + 2$

10.  $12a^2 + 5a - 2$

11.  $15b^2 + 14b - 8$

12.  $5t^2 + 12t - 9$

**7.6** Notetaking with Vocabulary (continued)

13.  $-12b^2 + 5b + 2$

14.  $-6x^2 + x + 15$

15.  $-60g^2 - 11g + 1$

16.  $-2d^2 - d + 6$

17.  $-3r^2 - 4r - 1$

18.  $-8x^2 + 14x - 5$

19. The length of a rectangular shaped park is  $(3x + 5)$  miles. The width is  $(2x + 8)$  miles. The area of the park is 360 square miles. What are the dimensions of the park?

20. The sum of two numbers is 8. The sum of the squares of the two numbers is 34. What are the two numbers?