ACTIVITY 10.5

Developing Concepts

Group Activity for use with Lesson 10.5

Modeling the Factorization of $x^2 + bx + c$

GROUP ACTIVITY
Work with a partner.

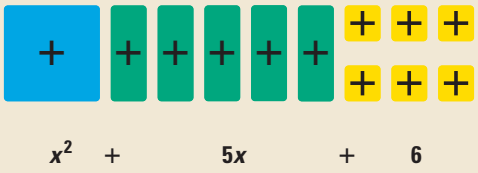
MATERIALS
algebra tiles

QUESTION **How can you model the factorization of a trinomial of the form $x^2 + bx + c$ using algebra tiles?**

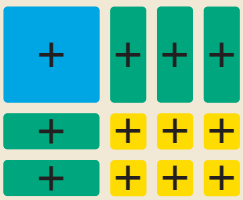
EXPLORING THE CONCEPT

You can use algebra tiles to create a model that can be used to factor a trinomial that has a leading coefficient of 1. Factor the trinomial $x^2 + 5x + 6$ as follows.

1 Use algebra tiles to model $x^2 + 5x + 6$.



2 With the x^2-tile at the upper left, arrange the x-tiles and the 1-tiles around the x^2-tile to form a rectangle.

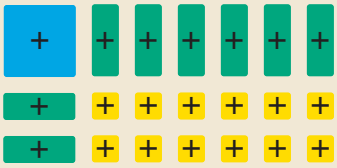


3 The width of the rectangle is ? , and the length of the rectangle is ? .
Complete the statement: $x^2 + 5x + 6 =$? $\cdot$? .

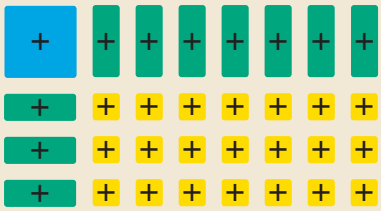
EXERCISES

Use the model to write the factors of the trinomial.

1.



2.



In Exercises 3–8, use algebra tiles to factor the trinomial. Sketch your model.

3. $x^2 + 7x + 6$ **4.** $x^2 + 6x + 8$ **5.** $x^2 + 8x + 15$

6. $x^2 + 6x + 9$ **7.** $x^2 + 4x + 4$ **8.** $x^2 + 7x + 10$

9. Use algebra tiles to show why the trinomial $x^2 + 3x + 4$ cannot be factored.