ACTIVITY 3.4

Developing Concepts

Group Activity for use with Lesson 3.4

Modeling Equations with Variables on Both Sides

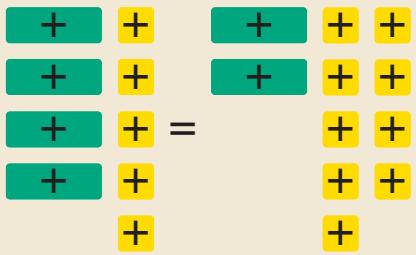
GROUP ACTIVITY
Work with a partner.

MATERIALS
algebra tiles

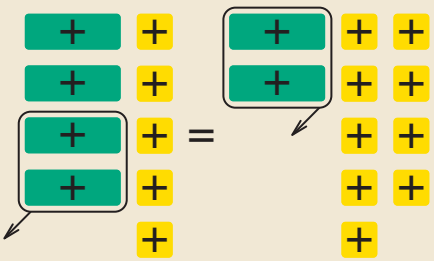
QUESTION **How can you use algebra tiles to solve an equation with a variable on both the left side and the right side of the equation?**

EXPLORING THE CONCEPT

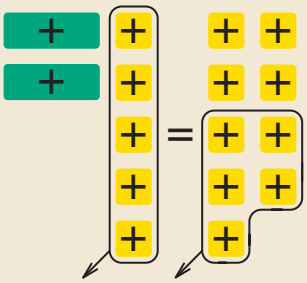
1 Use algebra tiles to model the equation $4x + 5 = 2x + 9$.



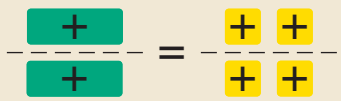
2 You want to have x-tiles on only one side of the equation, so subtract 2 x-tiles from each side. Write the new equation.

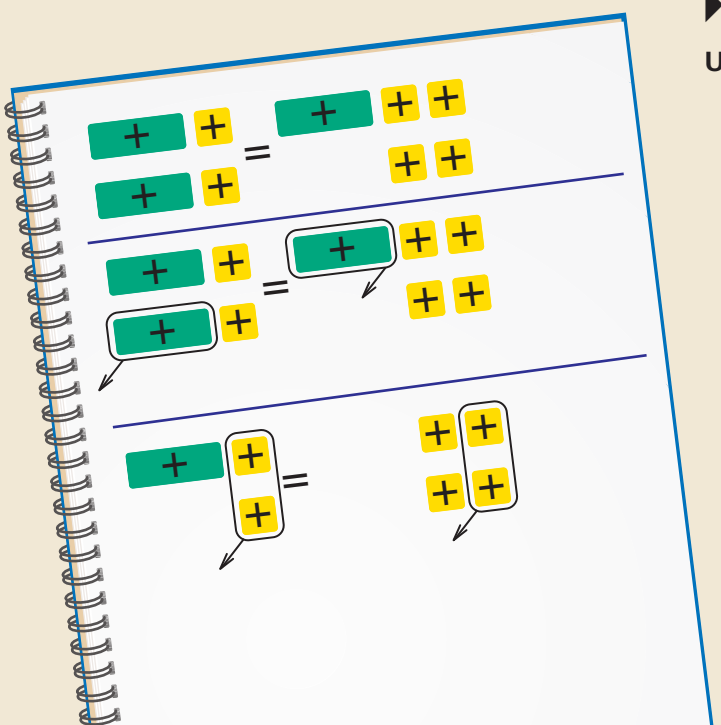


3 To isolate the x-tiles, subtract five 1-tiles from each side. Write the new equation.



4 You know the value of $2x$. To find the value of x, split the tiles on each side of the equation in half to get $x =$?.





DRAWING CONCLUSIONS

Use algebra tiles to model and solve the equation.

1. $4x + 4 = 3x + 7$ **2.** $2x + 3 = 6 + x$

3. $6x + 5 = 3x + 14$ **4.** $5x + 2 = 10 + x$

5. $8x + 3 = 7x + 3$ **6.** $x + 9 = 1 + 3x$

7. The model at the left shows the solution of an equation. Copy the model. Write the solution step and an explanation of the step beside each part of the model.

8. Look back at **Step 2**. To get x-tiles on only one side of the equation you can subtract 4 x-tiles from each side instead of subtracting 2 x-tiles from each side. How is the result different? Which method do you prefer? Why?