In these activities, you will use the distributive property to rewrite expressions for a given context. After completing the activities, discuss and/or present your findings to the rest of the class.

Activity 1 [Page 1.3]

1. Reset page 1.3. Select the button **c, s**. Each equation below is a statement of the distributive property. Use the TNS activity to find the values for each of the blanks.

   a. $3(\_\_ + \_\_) = 18c + 6s$

   b. $8c + \_\_s = 4(\_\_ + 3s)$

   c. $\_\_(4c + \_\_s) = 20c + 25s$

2. Reset page 1.3 and select **values**.

   a. Describe the difference in the ways used on the left and on the right to find the total value for each expression.

   b. Keep the same values for the circle and square. Explain how to change the number of circles or squares to get a total of 104.

   c. Reset the page. Predict what will change if you increase the values in the squares to 3. Check your prediction by making $s = 3$.

d. Predict what will change if the value of each circle is 9, and the value of each square remains 3.

Activity 2 [Page 2.3]

1. Make the height of the brown rectangle 4.

   a. What will the area of the yellow rectangle be if the area of the aqua rectangle is 22?

   b. Move the pink dot to the left. Describe the change in the areas of the rectangles and in the expressions for the areas for each rectangle. Explain why your answer makes sense.

Activity 3 [Page 3.2]

1. Reset page 3.2.

   a. Using only boards of length *s* or smaller, write an expression that would describe how you could make the border. Drag the boards to see if your expression works.

   b. What is the fewest number of boards you can use to make the border? Write the expression.

c. Jerine wanted to make the border using a collection of boards only one of which has length $s+2$. Could she make the border? Why or why not?

d. Trey claimed the expressions used in the answers for the questions above are all equivalent. Do you agree with Trey? Why or why not?

Activity 4 [Page 3.3]

1. Think about the distributive property and decide which of the lengths represented by the given expressions can be used to make the border. If a combination does not make the border, explain how to add or subtract the fewest number of pieces to make it work.

   a. $3(s+1)+1$

   b. $2s+2s+4$

   c. $1+2(s+1)$

2. Think about building the border and decide whether you agree or disagree with each of the following. Explain why or why not.

   a. Sophie claimed that $1+3(s+1)$ is equivalent to $4(s+1)$.

   b. Bern said that $2s+4$ would be the same as $2(s+2)$.

   c. Singe said that $2(s+1)+2(s+1)=4s+1$.