**Problem 1 – A Square and a Rectangle Have Different Perimeters.**

On page 1.2, view the picture of the square and rectangle and read the description. Grab the open circle to change the size of the square and rectangle.

- Do the expressions on the rectangle reflect the description? Explain.

- What is an algebraic expression for the perimeter of the *square*?

- What is an algebraic expression for the perimeter of the *rectangle*?

- If the rectangle has a perimeter that is 10 units longer than the perimeter of the square, which of the following equations are true?

  **a.** $4x + 10 = 2(x + 3) + 2(2x)$

  **b.** $4x – 10 = 2(x + 3) + 2(2x)$

  **c.** $4x = (x + 3) + 2x + 10$

  **d.** none of these

- What value of *x* will make the equation true?

**Problem 2 – An Equilateral Triangle and a Square have Different Perimeters.**

On page 2.1, view the square and the triangle on the right and read the description on the left. Grab the open circle to change the size of the equilateral triangle and square.

- What is an algebraic expression for the perimeter of the *square*?

- What is an algebraic expression for the perimeter of the *triangle*?

- Write an equation that shows the relationship of the perimeters of the square and triangle.

- Solve this equation and state the length of each side of the square.

**Problem 3 – A Regular Hexagon and a Regular Octagon**

Read the descriptions on pages 3.1 and 3.2 and view the polygons. Grab the open circle to change the size of the hexagon and octagon.

- Write an algebraic expression for the perimeter of the *hexagon*.

- Write an algebraic expression for the perimeter of the *octagon*.

- The perimeter of the hexagon is 20 inches longer than that of the octagon. How long are the sides of the hexagon?

**Problem 4 – An Equilateral Triangle and a Rectangle**

On page 4.1, view the figure and read the description.

- Find the length, *x,* of each side of the triangle.

**Problem 5 – Regular Decagon and 15-gon**

View the polygons on page 5.1.

- If the lengths of their sides are the same, what is the difference in their perimeters? Use the spreadsheet on page 5.3 to test your theories. Enter in some possible lengths for the sides. Then make a conclusion based on what you see in the table.