Module 9   **Characteristics of Geometric Shapes**
Lesson 2   **Quadrilaterals**

**Challenge
Problems**

9.2

Set 1

1   Mac says that drawing a quadrilateral with three right angles and without it being a rectangle is impossible. Do you agree? Explain.

2   Is it possible for a quadrilateral to have four acute angles? Explain why or why not.

3   Use what you know about alternate interior angles to explain why the value of x in the parallelogram is 100°.

80°

x

Possible Answers

Set 1

1. **Yes: A right angle measures 90°. If a quadrilateral with three right angles is drawn, the fourth angle has to be a right angle. It can also be proven by using the Quadrilateral Sum Property. If there are three right angles and the sum of the measures of the four angles must be 360°, then the fourth angle must measure 90°.**

2. **No: it is not possible. An acute angle measures less than 90°. The sum of four 90° angles is 360°, so if the angles were less than 90°, the sum would be less than 360°.**

3. **If we extend the lines, we have two parallel lines and a transversal. Then, alternate interior angles are congruent, and the measure of the angle to the right of x equals 80°. 80° + x = 180°, because those angles form a straight angle. That makes x equal to 100°.**