# Lesson 2: Construct an Equilateral Triangle

## Classwork

### Opening Exercise

You will need a compass, a straightedge, and another student's Problem Set.

Directions:

Follow the directions of another student's Problem Set write-up to construct an equilateral triangle.

- What kinds of problems did you have as you followed your classmate's directions?
- Think about ways to avoid these problems. What criteria or expectations for writing steps in constructions should be included in a rubric for evaluating your writing? List at least three criteria.

**Exploratory Challenge 1**

You will need a compass and a straightedge.

Using the skills you have practiced, construct **three** equilateral triangles, where the first and second triangles share a common side and the second and third triangles share a common side. Clearly and precisely list the steps needed to accomplish this construction.

Switch your list of steps with a partner, and complete the construction according to your partner's steps. Revise your drawing and list of steps as needed.

Construct three equilateral triangles here:

**Exploratory Challenge 2**

On a separate piece of paper, use the skills you have developed in this lesson construct a **regular hexagon**. Clearly and precisely list the steps needed to accomplish this construction. Compare your results with a partner and revise your drawing and list of steps as needed.

Can you repeat the construction of a hexagon until the entire sheet is covered in hexagons (except the edges will be partial hexagons)?

## Problem Set

Why are *circles* so important to these constructions? Write out a concise explanation of the importance of circles in creating equilateral triangles. Why did Euclid use *circles* to create his equilateral triangles in Proposition 1? How does construction of a circle ensure that all relevant segments will be of equal length?