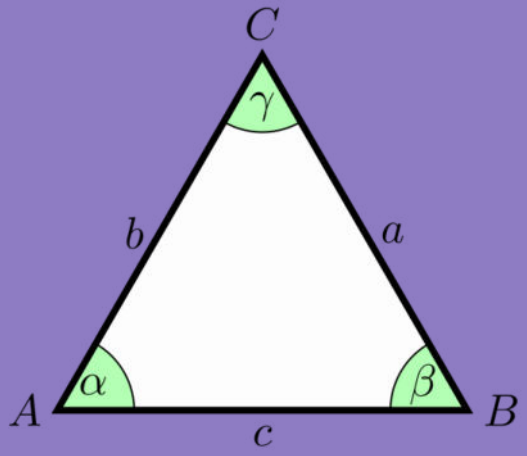
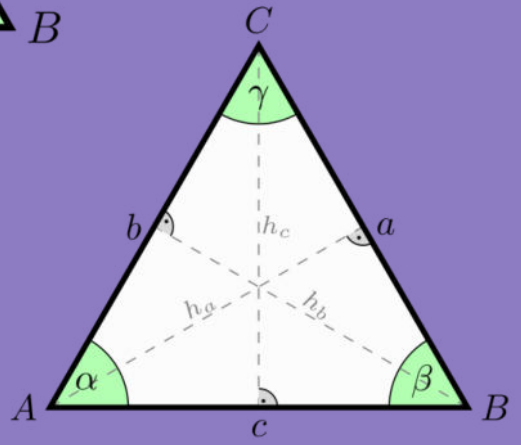
Lesson 4- Construction Techniques 2: Equilateral Triangles



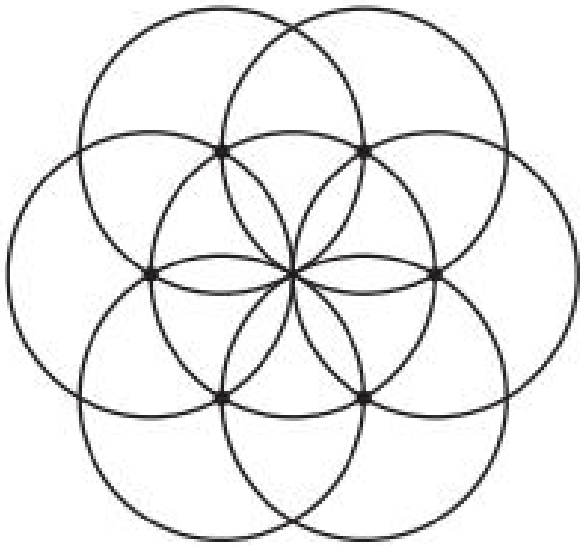


Learning Targets

- **I can construct an equilateral triangle**

- **I can identify congruent segments in figures and explain why they are congruent.**

4.1 Notice and Wonder: Circles Circles Circles



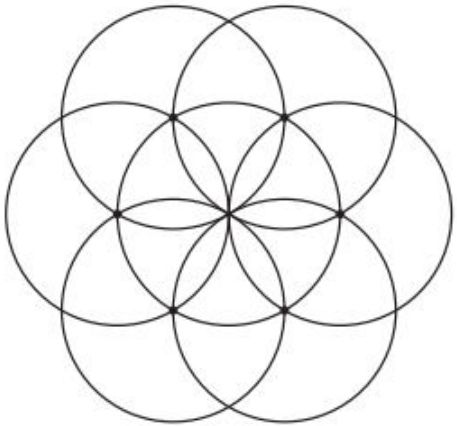
- What do you notice?
- What do you wonder?

4.2 Launch- What Polygons Can You Find?

When a shape fits inside a circle and every vertex of the polygon is on the circle, the shape is **inscribed** in the circle.

4.2 What Polygons Can You Find?

Here is a straightedge and compass construction of a regular hexagon inscribed in a circle just before the last step of drawing the sides:



1. Use a straightedge to draw at least 2 polygons on the figure. The vertices of your polygon should be intersection points in the figure. Lightly shade in your polygons using different colored pencils to make them easier to see.

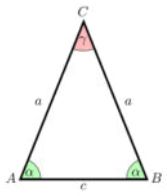
2. Write at least 2 conjectures about the polygons you made.

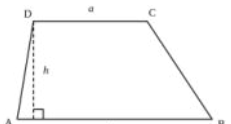
Activity Synthesis

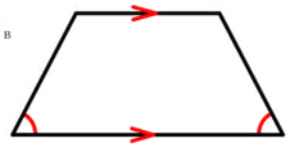
- Are all the circles the same size?
  - Connecting the centers of any pair of adjacent circles shows they have the same radius. Comparing successive pairs shows that they all have the same length of radius
- For which of these conjectures can we give a convincing explanation as to why it’s true?
- For which of these conjectures do we not know enough about yet to explain?

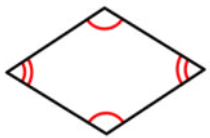
Activity Synthesis

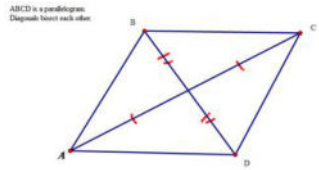
- What is it called when a triangle has two congruent sides?
  - Isosceles triangle
- What is the quadrilateral that has two parallel sides called?
  - Trapezoid
- What is two of the quadrilateral sides are congruent?
  - Isosceles trapezoid
- What is the quadrilateral with two pairs of parallel sides are called?
  - Parallelogram
- What if all 4 of its sides are congruent?
  - Rhombus







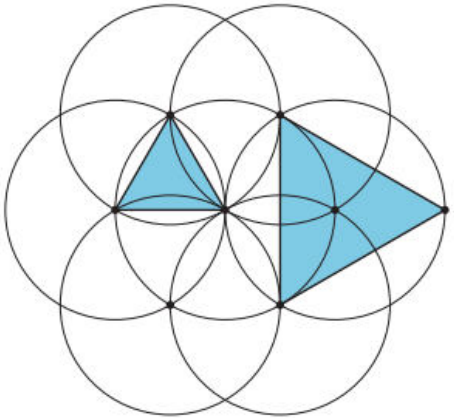




4.3 Spot the Equilaterals

Use straightedge and compass moves to construct at least 2 equilateral triangles of different sizes.

Example:

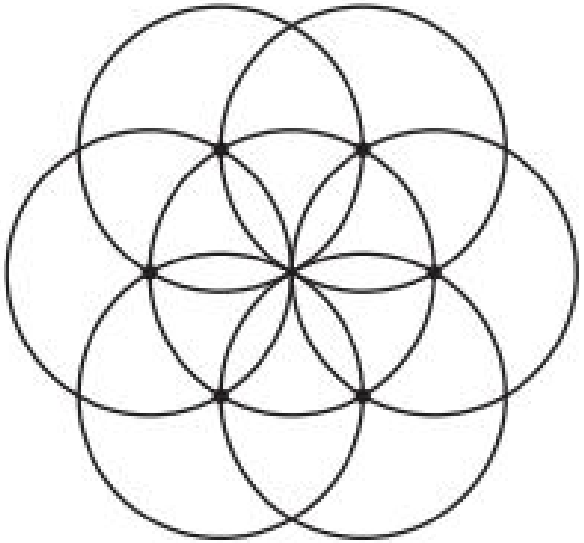


Activity Synthesis

What are the different methods for producing equilateral triangles?

How do you know each triangle is equilateral?

Lesson Synthesis:



Are there any shapes you are able to find now that you didn't notice at the beginning of the lesson?

What conjectures can you make about your shape?