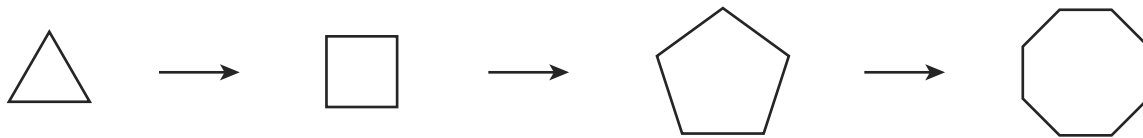


Math Background

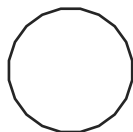
Generalizations From Polygons to Circles

In the first lesson of this unit, students explore how the interior angles of a regular polygon change when the number of sides changes.



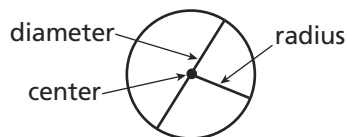
Polygons with more sides have larger interior angles.

In lesson 2, students extend this pattern when they use a series of straight lines to approximate a circle. This helps students see that many of the characteristics of a circle can be generalized from characteristics of polygons.



Relationships in Circles

Students measure circles to determine their main defining characteristic: every point on the outside edge of a circle is the same distance from the center. This distance, the radius, helps us draw the circle and calculate its circumference, or perimeter. In later study, students will see that the radius of a circle is also helpful in calculating the circle's area.



Activity 3 in Lesson 2 guides students to discover the relationship between the diameter and the circumference of a circle. By arranging short line segments, students discover that the circumference of a circle is always just a little more than 3 times the diameter. The constant value $\pi = 3.14$ is introduced and students are told that the circumference of a circle is always exactly π times the diameter. They will use this relationship to generalize a formula for the circumference of a circle ($C = \pi d$).

The approximate value of π , 3.14, is accurate enough for students to use to calculate the circumference of circles, and for many other purposes. The exact value of π has been calculated to millions of decimal places.