Mathematics Standards: *Geometry - Circles*

Grades 9 – 12

Understand and apply theorems about circles
1. Prove that all circles are similar.
2. Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
4. (+) Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles
5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Description

- These Standards define what students should understand and be able to do in their study of mathematics. The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations.
- *The complexity options for these standards assure that all students, including those with the significant cognitive disabilities, have access to these core standards through appropriate instructional tasks.*

Mathematics Standards: *Geometry – Circles* **Extended Standards**

Essence of the Standards:
- Understand properties of circles.

Most Complex ⟵————————————————⟶ **Least Complex**

Understand and apply theorems about circles.		
G.C.912.1a Use the radius of a circle to determine the diameter and vice versa.	**G.C.912.1b** Identify parts of a circle (radius, diameter, circumference, chord, arc).	**G.C.912.1c** Identify three-dimensional shapes with a circle as a cross-section and/or identify shapes or objects that have a circular base.