Unit 10 Properties of Circles

Content Area: **Math**
Course(s): **CP Geometry**
Time Period: **Marking Period 3**
Length: **3**
Status: **Published**

Unit Overview

In this ~~chapter~~ unit students investigate aspects of circles. They start by drawing tangents to circles and seeing how a tangent to a circle is related to the radius at the point of tangency. They use intercepted arcs of circles to measure angles formed by chords in a circle. They use the standard equation of a circle to graph and describe circles in a coordinate plane.

Enduring Understandings

The length and the measure of an arc of a circle, the diameter and the circumference of a circle, and the radius and the area of a circle can be related by setting up a proportion.

Students will understand the use of properties of segments the intersect circles.

Students will understand how to apply angle relationships in circles.

Students will understand how to use circles in coordinate plane.

Essential Questions

What are the relationships among chords, arcs, angles, and tangent lines?

How do we calculate the length of an arc?

How do we find the measure of an arc?

How do arc measure and arc length differ?

What are central angles?

What are inscribed angles?

How do you write the equation of a circle?

How can you read the center and radius of a circle from its equation?

New Jersey Student Learning Standards (No CCS)

MA.G-CO.A.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
MA.A-SSE.B.3b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
MA.G-C	Circles
MA.G-C.A	Understand and apply theorems about circles
MA.G-C.A.1	Prove that all circles are similar.
MA.G-C.A.2	Identify and describe relationships among inscribed angles, radii, and chords.
MA.G-C.A.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
MA.G-C.B.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.
MA.G-GPE	Expressing Geometric Properties with Equations
MA.G-GPE.A.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
MA.G-GPE.B	Use coordinates to prove simple geometric theorems algebraically
MA.G-GMD	Geometric Measurement and Dimension
MA.G-MG	Modeling with Geometry
MA.G-MG.A	Apply geometric concepts in modeling situations

Interdisciplinary Connections

LA.W.9-10.6	Use technology, including the Internet, to produce, share, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
SCI.HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.

Technology Standards

TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.D.CS3	Exhibit leadership for digital citizenship.
TECH.8.1.12.E.CS4	Process data and report results.
TECH.8.1.12.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
TECH.8.1.12.F.CS4	Use multiple processes and diverse perspectives to explore alternative solutions.
TECH.8.2.12.C.CS2	The application of engineering design.

21st Century Themes/Careers

CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.

Financial Literacy Integration

PFL.9.1.12.C.1	Compare and contrast the financial benefits of different products and services offered by a variety of financial institutions.
PFL.9.1.12.C.2	Compare and compute interest and compound interest and develop an amortization table using business tools.
PFL.9.1.12.C.3	Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.

Instructional Strategies & Learning Activities

- Lesson Discovery Activities
- Partner/ Group Work
- Completing the Square
- Inscribed angles activity

Formative Assessments

- Daily homework checks
- Quiz
- ~~Chapter~~ Unit Test
- Exit Tickets
- Warm-ups

Summative Assessment

- Unit Test
- Unit Project (Optional)

Benchmark Assessments

Students will take NJSLA Geometry Benchmark A

Alternate Assessments

- Modified homework
- Modified quizzes
- Modified tests
- Modified projects