Unit 11 Measurement of Figures and Solids

Content Area: **Math**
Course(s): **CP Geometry**
Time Period: **Marking Period 4**
Length: **7**
Status: **Published**

Unit Overview

In this ~~chapter~~ unit students~~, students~~ explore circles, relating arc lengths and circumferences to areas of sectors. They use lengths of segments and areas of regions to calculate probabilities ~~probabilites~~. They identify and name solids, including Platonic solids, and use Euler's Theorem to relate the number of faces, vertices, and edges of solids. Students describe cross sections of solids, find the volume of prisms, cylinders, pyramids, cones, and composite solids, and find the surface area and volume of spheres.

Enduring Understandings

The formula for surface area and volume of a given 3D solid can be used to solve for a missing value.

Students will understand and compare measures for parts of circles and the whole circle.

Students will understand and solve problems using surface area and volume.

Essential Questions

What are the formulas for area and circumference of a circle?

How do you find area of regular polygons?

What are solids and how do they relate to 2D figures?

What are the formulas for surface area and volume of 3D figures?

What makes solids similar?

New Jersey Student Learning Standards (No CCS)

MA.F-IF	Interpreting Functions
MA.G-SRT.C.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

MA.G-C.B	Find arc lengths and areas of sectors of circles
MA.G-GPE.A	Translate between the geometric description and the equation for a conic section
MA.G-GPE.B	Use coordinates to prove simple geometric theorems algebraically
MA.G-GPE.B.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
MA.G-GMD	Geometric Measurement and Dimension
MA.G-GMD.A	Explain volume formulas and use them to solve problems
MA.G-GMD.A.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.
MA.G-GMD.A.2	Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
MA.G-GMD.A.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
MA.G-GMD.B	Visualize relationships between two-dimensional and three-dimensional objects
MA.G-GMD.B.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
MA.G-MG	Modeling with Geometry
MA.G-MG.A	Apply geometric concepts in modeling situations
MA.G-MG.A.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
MA.G-MG.A.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

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

- Use the book activities and extensions to give added dimension.
- Watch video on Platonic Solids.
- Food activity: creating cross sections.
- Partner/group work.
- Lesson discovery activities.
- Use problems and activities from book involving modeling problems.
- Provide access to online book
- Provide access to book pages and problems through Canvas and Twitter
- Provide access to review keys

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