Algebra 2 Level A Unit 6

Marking Period	Unit Title	Recommended Instructional Days
2	Circles and Volume	10-15

Domain: Geometry

NJSLS Strand:

Key:

Major Cluster
Supporting Cluster
Additional Cluster

G.C.A.1: Prove that all circles are similar.
G.C.A.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.
G.C.A.4 (+): Construct a tangent line from a point

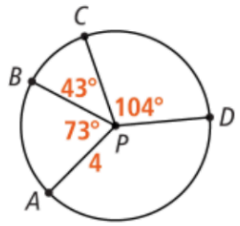
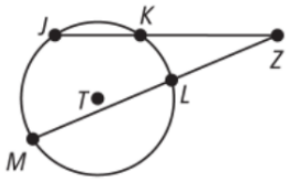
Progress Indicator:
Tests ● Quizzes ● Practice problems for homework ● Online textbook ● Worksheets ● Leveled assessments

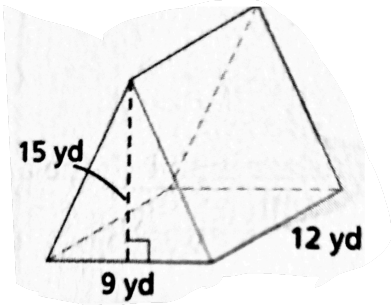
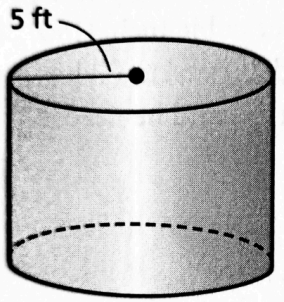
Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

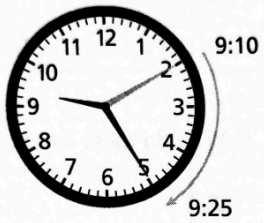
Essential Questions:
How are arc length and sector area related to circumference and area of a circle?
How is a tangent line related to the radius of a circle at the point of tangency?
How are chords related to their central angles and intercepted arcs?
How is the measure of an inscribed angle related to its intercepted arc?
How can you use volume to solve real-world problems?

Activity Description:
Circle Formulas
Central Angles
Intersecting Arcs
Arc Length
Tangent Lines
Inscribed Angles
Calculate Volume of Cones, Cylinders, Spheres, Prisms, and Pyramids
Volume Application Problems

Interdisciplinary Connections: Career Readiness, Life Literacies and Key Skills Content:Design; Engineering; Construction. NJSLS#: G.CO.A.1, G.C.B.5, C.A.2)
(Next Generation Science Standards ETS1-2)
Design Space Cities
Suppose it's 500 years in the future. Space stations the size of small cities are journeying through space. Use trigonometry and the geometry

outside a given circle to the circle. **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 area of a sector. **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. **G.GMD.A. (+):**Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures. **G.GMD.A.3:**Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. **G.GMD.B.4:** Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional		of circles to calculate the measurements of two of these stations, then design, measure and describe a group of three space cities. **Example Tasks:** **Task 1:** **What is the length of $\overline{AD}$? Express the answer in terms of π.**  **Answer:** $\frac{28}{9}\pi$ **Task 2:** **If $m\overset{\frown}{JK} = 65$, $m\overset{\frown}{JM} = 87$, and $m\overset{\frown}{LM} = 167$, what is $m\angle Z$?**  **Answer:** 23

objects generated by rotations of two-dimensional objects. **G.MG.A.1:** Use geometric shapes, their measures, and their properties to describe objects. **G.MG.A.2:** Apply properties of density based on area and volume in modeling situations		**Task 3:** Find the volume of the prism.  **Answer:** $810\ yd^3$ **At the end of each topic please review the Assessment Practice and Performance Tasks questions.** **ASSESSMENT PRACTICE** Find the volume of the cylinder.  Ⓐ $40\ ft^3$ Ⓑ $125.6\ ft^3$ Ⓒ $200\ ft^3$ Ⓓ $628\ ft^3$

		Performance Task The minute hand of a circular clock sweeps out an arc as it moves from 9:10 to 9:25.  **A.** What fraction of a complete rotation did the minute hand travel? **B.** A complete rotation of the minute hand corresponds to 360°. What is the degree measure that the minute hand traveled? What angle does this measure represent? **C.** What is the measure of the arc formed on the clock as the minute hand moves from 9:10 to 9:25? Why? **Spot Light On:** **Diversity and Inclusion** Essential Question: What is respect and how can we, as an individual/community express respect for ourselves and others at home or in the classroom? Objective: Students will learn how to appreciate diversity, respect others and their differences and build relationships with mutual respect in school, at home and within the community. EOD artwork and quotes, along with other educational sources, will be used
Mathematics Practices		

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reason of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***
Self- awareness Social Awareness Self- Management Relationship Skills Responsible Decision-Making	Recognizing the importance of self-confidence in handling daily tasks and challenges. Demonstrate an awareness of the expectations for social interactions in a variety of ways. Demonstrate an understanding of the need for mutual respect when viewpoints differ. Recognize the skills needed to establish and achieve personal and educational goals. Utilize positive communication and social skills to interact effectively with others. Develop, implement, and model effective problem solving and critical thinking skills.

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***

Formative Assessments: ● Entry and Exit Slips ● Quizzes ● Self Assessments	**Benchmarks:** ● Chapter Tests ● Projects ● LinkIT! **Summative Assessments:** ● District Assessments ● Standardized Tests

Differentiated Student Access to Content:
Teaching and Learning *Resources/Materials*

Core Resources	Alternate Core Resources *IEP/504/At-Risk/ESL*	ELL Core Resources	Gifted & Talented Core Resources
● Savvas Envision ● Achieve the core ● Khan Academy ● Desmos	● Skill building worksheets ● Math Manipulatives	● Dictionary for native languages ● Videos in their native language.	● Leveled Assessments ● Enrichment worksheets

Supplemental Resources

Technology:
- **Chromebooks, Graphing Calculators, Smartboards**

Other:
- **Zoom and Google Meets, Schoology, Interactive Textbooks**

Differentiated Student Access to Content:
Recommended *Strategies & Techniques*

Core Resources	Alternate Core Resources *IEP/504/At-Risk/ESL*	ELL Core Resources	Gifted & Talented Core
● **Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as**	● **Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method**	● **Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts**	● **Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate**

needed, modify assessments and/or rubrics, repeat	**(repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks.**	**when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.**	**authentic components, propose interest-based extension activities, and connect student to related**

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Creativity and Innovation**	
	Core Ideas:	**With a growth mindset, failure is an important part of success**
	Performance Expectation/s:	**9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).**
	Career Readiness, Life Literacies, & Key Skills Practices	
	Act as a responsible and contributing community member and employee. **Attend to financial well-being.** **Consider the environmental, social and economic impacts of decisions.** **Demonstrate creativity and innovation.** **Utilize critical thinking to make sense of problems and persevere in solving them.** **Model integrity, ethical leadership and effective management.** **Plan education and career paths aligned to personal goals.** **Use technology to enhance productivity, increase collaboration and communicate effectively.** **Work productively in teams while using cultural/global competence.**	

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)									
	Amistad Law: *N.J.S.A. 18A 52:16A-88*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	**X**	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*