Geometry Unit 6: Topic 6
Updated Nov. 2021

Marking Period	Unit Title	Recommended Instructional Days
4	Quadrilaterals and Other Polygons	15-20

Domain:		Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit
NJSLS Strand: ***G.CO.C.11: Prove theorems about parallelograms.*** ***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.*** ***G.SRT.B.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. approximately, focusing on pairs of linear equations in two variables.***	***Progress Indicator:*** ***Tests ● Quizzes ● Practice problems for homework ● Online textbook ● Worksheets ● IXL ● Leveled assessments***	**<u>Essential Questions:</u>** **1. How does the number of sides in convex polygons relate to the sums of the measures of the exterior and interior angles?** **2. How are the diagonals and angle measures related in kites and trapezoids?** **3. What are the relationships of the sides, the angles, and the diagonals of a parallelogram?** **4. Which properties determine whether a quadrilateral is a parallelogram?** **5. What properties of rhombuses, rectangles, and squares differentiate them from other parallelograms?** **<u>Activity Description</u>:** **● The Polygon Angle-Sum Theorems** **● Kites and Trapezoids** **● Properties of Parallelograms** **● Proving a Quadrilateral is a Parallelograms** **● Properties of Special Parallelograms** **● Conditions of Special Parallelograms**

Example Tasks:

Task 1:

Find the sum of the interior angles of the polygon.

$$(n-2)\cdot 180 = x$$
$$(7-2)\cdot 180 = x$$
$$5\cdot 180 = x$$
$$900 = x$$

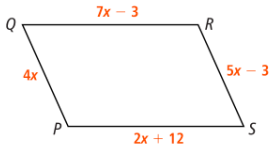
Task 2:

Quadrilateral *PQRS* is a parallelogram.

A. What is the value of *x*?

Note that $\overline{QR} \cong \overline{PS}$ because they are opposite sides of a parallelogram.

$$7x-3 = 2x+12$$
$$5x = 15$$
$$x = 3$$



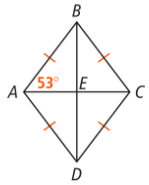
B. What is the length of each side of *PQRS*?

Substitute the solution $x = 3$ from Part A to find the side lengths.

$$PQ = 4x = 4(3) = 12$$
$$QR = 7x - 3 = 7(3) - 3 = 21 - 3 = 18$$
$$RS = 5x - 3 = 5(3) - 3 = 15 - 3 = 12$$
$$PS = 2x + 12 = 2(3) + 12 = 6 + 12 = 18$$

Task 3:

A. Quadrilateral *ABCD* is a rhombus. What is $m\angle ADE$?



$\overline{AC}$ bisects $\angle BAD$, so $m\angle DAC = 53$. $\overline{AC} \perp \overline{BD}$, so $m\angle AED = 90$.

$$m\angle DAE + m\angle AED + m\angle ADE = 180$$
$$53 + 90 + m\angle ADE = 180$$
$$m\angle ADE = 37$$

<u>Interdisciplinary Connections:</u>
Topic 6 Project, enVision STEM: Design a Quadrilateral Lift.
Textbook page 244 and online
Career Readiness, Life Literacies and Key Skills **Content: Engineering; Design. NJSLS#: G.CO.A.2, G.MG.A.1, G.MG.A.3, G.SRT.B.5)**
(Next Generation Science Standards ETS1-2)

Spot Light On:

Seek multiple perspectives and different answers to questions.

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	**Benchmarks:** ● Chapter Tests

• Quizzes • Self Assessments	• Projects **<u>Summative Assessments:</u>** • District Assessments • Midterms • 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**
• Textbooks websites • Achieve the core • Khan Academy • Desmos • IXL	• Skill building worksheets • Math Manipulatives	• Dictionary for native languages • Videos in their native language.	• Leveled Assessments • Enrichment worksheets

Supplemental Resources

Technology:
- **Chromebooks, Graphing Calculators, Online math manipulatives**

Other:
- **Zoom and Google Meets, Google Classroom, Interactive Textbooks, Private Tutoring**

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 needed, modify assessments and/or rubrics, repeat**	• **Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to**	• **Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.**	• **Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related**

	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.		

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*		Holocaust Law: *N.J.S.A. 18A:35-28*		LGBT and Disabilities Law: *N.J.S.A.*	X	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*

	52:16A-88				*18A:35-4.35*				