Trimester:	Unit Title:	Recommended Instructional Days:
1	**Angles and Triangles**	**10 - 13 days**

Domain

Strand:

8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-sum criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Key:

Major Cluster **Supporting Cluster** **Additional Cluster** **Climate Change Opportunity**

Progress Indicators: ◊ Tests ◊ Homework / Classwork ◊ Projects ◊ Formative Assessments ◊ Summative Assessments

Mathematical 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.

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

Essential Questions:
When a transversal intersects two parallel lines, how do we identify congruent angles?

How do we determine angle measures when a transversal intersects two parallel lines?
How do we create and use equations to find missing angle measures of triangles?
How do we use interior and exterior angles of triangles to solve real-life problems?
How do we find the sum of the interior angle measures of a polygon?
What is a regular polygon?
How do we determine if triangles are similar?
How do we use similar triangles to solve real-life problems?

Essential Understandings:
Lines in the same plane that do not intersect are called parallel lines. Lines that intersect at right angles are called perpendicular lines.
Corresponding angles lie on the same side of a transversal in corresponding positions.
When parallel lines are cut by a transversal, the following angle pairs are congruent: corresponding angles, alternate interior angles, alternate exterior angles.
The sum of the interior angles measures of a triangle is 180 degrees.
If one of the interior angles of a triangle is acute, the exterior angle is the obtuse supplement of that acute angle.
The sum of the interior angle measures of a polygon with n sides is found using $S = (n-2)180$.
When two angles in one triangle are congruent to two angles in another triangle, the third angles are also congruent.
Two triangles are similar when two angles in one triangle are congruent to two angles in another triangle.
Indirect measurement can be used to find missing measures when it is difficult to find them directly.

Vocabulary:
- transversal
- interior angles of a polygon
- exterior angles of a polygon
- regular polygon

**Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts. When students encounter a new definition, encourage them to write in their Big Ideas Student Journals. They will revisit these definitions during the Chapter Review.*

Suggested Activity Descriptions:
- STEAM Video: Honeycombs
- Performance Task: Turtle Shells
- Chapter Exploration TB page 103 Exploring Intersections of Lines
- Chapter Explorations TB page 111 Exploring Interior and Exterior Angles of Triangles and Using Parallel Lines and Transversals
- Chapter Exploration TB page 117 Exploring Interior Angles of Polygons
- Chapter Explorations TB page 123 Drawing Triangles Given Two Angle Measures and Using Indirect Measurement
- Big Ideas Math Game Closet: What is the Angle?

- Puzzle Time for each section (teacher resources)
- Enrichment and Extension Worksheets

Interdisciplinary Connections:
Science:

1. Question # 18 TB page 116 *Modeling Real Life:* A tornado is located between city hall and a cell phone tower and is heading towards the cell phone tower…
2. Example # 3 TB page 120 *Modeling Real Life* A cloud system discovered on Saturn is in the approximate shape of a regular hexagon…
3. Question # 23 TB page 122 *Structure:* A molecule can be represented by a polygon with interior angles that each measure 120 degrees…
4. Example # 3 TB page 126 *Modeling Real Life*: You plan to cross a river and want to know how far it is to the other side…
5. Question # 6 TB page 126 Engineers plan to construct an aqueduct to transport water from the top of a ridge to farmland…

Physical Education:

1. Question #32 TB page 110 *Dig Deeper:* The figure shows the angles used to make a shot on an air hockey table…

Language Arts:

1. Open-ended question # 12 TB page 109: Describe two real-life situations that use parallel lines.
2. Vocabulary Question # 4 TB page 113: How many exterior angles does a triangle have at each vertex? Explain.
3. Writing Question # 5 TB page 119: Explain how to find the sum of the interior measures of a polygon.

Geography:

1. Example 3 page 114 *Modeling Real Life:* An airplane leaves Miami and travels around the Bermuda Triangle….
2. Question # 7 page 114: The Historic Triangle in Virginia connects Jamestown, Williamsburg, and Yorktown…
3. Question 19 page 128: *Modeling Real Life:* A map shows the number of steps you must take to get to a treasure…

Spot Light On: Climate Change After completing the Big Ideas Steam Video on Honeycombs, explain how fluctuations on climate and environmental issues have an ill effect on the bee population. Discuss how the declining population of bees can have an effect on the environment and everyday life. What can we do to help increase the bee population?

Social and Emotional Learning: *Competencies*	**Social and Emotional Learning: *Sub-Competencies***
SEL Competencies: • Self-Awareness • Social Awareness • Self-Management • Relationship Skills	• 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.

• Responsible Decision-Making	• Demonstrate an understanding of the need for mutual respect when viewpoints differ. • Identify and apply ways to persevere through alternative methods to achieve 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: • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Big Ideas Student Journals • Homework/Classwork • Teacher Created Assessments • Progress Monitoring Items • Formative Assessment Tips in Big Ideas Teacher Edition	**Benchmarks & Summative Assessments:** • Chapter/Unit Assessments • Standardized Tests • Project-based Assessments • Benchmark 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**
Big Ideas Student Journal, Dynamic Assessment System, iReady, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core, Desmos	Reteach worksheets, Extra Practice worksheets, Math manipulatives, Scaffolding Instructions in each section of textbook, Tutorial Videos, Skills Review Handbook, Skills Trainer	Dictionary for native language, Video tutorial in native language, ELL Support in each section of Big Ideas Teacher's Edition	ST Math Challenge Objectives, G&T tasks, Enrichment and Extension worksheets, Art of Problem Solving, Leveled assessments

Supplemental Resources

Technology:
• Chromebooks • Scientific Calculators • Online math manipulatives
Other:

• Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives

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.	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 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.	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 students to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Planning and Budgeting	
	Core Ideas:	A budget aligned with an individual's financial goals can help prepare for life events.
	Performance Expectation/s:	9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process.
	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*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	**X**	Standards in Action: *Climate Change*