Updated August 2024

Marking Period	Unit Title	Recommended Instructional Days
2	Relationships Within Triangles	15-20

Domain: Algebra, Geometry

NJSLS Strand:

Key:

Major Cluster

Supporting Cluster

Additional Cluster

G.CO.C.9: Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are those exactly equidistant from the segment's endpoints.

G.CO.C.10: Prove theorems about triangles. Theorems include: measures of interior angles of a triangle, sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half

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

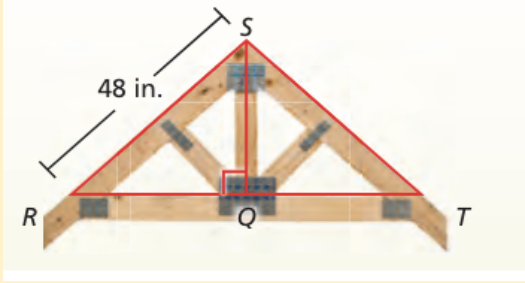
Essential Questions:

1. **What is the relationship between a segment and the points on its perpendicular bisector? Between an angle and the points on its bisector?**
2. **What are the properties of the perpendicular bisectors in a triangle? What are the properties of the angle bisectors in a triangle?**
3. **What are the properties of the median in a triangle? What are the properties of the altitudes in a triangle?**
4. **What are some relationships between the sides and angles of any triangles?**
5. **When two triangles have pairs of congruent sides, how are the third pair of sides and the pair of angles opposite the third pair of sides related?**

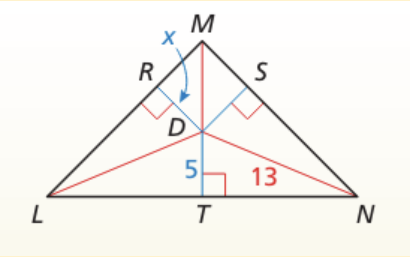
Activity Description:

- **Perpendicular and Angles Bisector**
- **Bisectors of Triangles**
- **Medians and Altitudes of Triangles**
- **The triangle midsegment theorem**
- **Indirect Proof and Inequalities in one triangle**

Interdisciplinary Connections:
Topic 5 Project
Find the Center of Mass

the length; the medians of a triangle meet at a point. ***G.CO.D.12: Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*** ***G.CO.D.13: Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.*** ***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.*** ***G.GPE.B.5: Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).***		**In this project, you and your classmates will find the center of mass for a triangular object using mathematics. You will also find the center of mass for an irregular object through experimentation.** Career Readiness, Life Literacies and Key Skills **Content: Science; Athletics. NJSLS#: G.CO.C.10, G.SRT.B.4** **(Next Generation Science Standards HS-PS2-1, HS-PS2-2)** **Spot Light On:** **Diversity** Students should reflect on and discuss the identities that are most important to them. This activity will help students get to know each other better and allow them to express important parts of their identities that may otherwise not be known. Students should be asked to reflect on the value of their identities by considering which of those is most and least important to them and why that may be. **<u>Example Tasks:</u>** **Task 1:** Is there enough information in the diagram to find ST? If so, find the length. If not, explain why not.  **Task 2:** **Point D is the incenter of △LMN. Find the value of x**

A.REI.B.3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
A.REI.C.6: Solve systems of linear equations algebraically (include using the elimination method) and graphically, focusing on pairs of linear equations in two variables.
A.REI.D.10: Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).



Task 3:

The widest adjustment possible for a wakeboarder's feet on the wakeboard is x = 24 inches. Write an indirect proof that there can be at most two congruent angles of the triangle formed by the wakeboarder's legs and the wakeboard.

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 ● 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 • GeoGebra	• 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, Schoology, 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 retake test for additional**	• **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**

	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 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*