Updated August 2024

Marking Period	Unit Title	Recommended Instructional Days
2	Similarity	12-15

Domain: Geometry

NJSLS Strand:

Key:

Major Cluster
Supporting Cluster
Additional Cluster

G.CO.A.2: Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angles to those that do not (e.g., translation versus horizontal stretch).

G.CO.A.5: Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g. graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

G.CO.C.10: Prove theorems about triangles. Theorems include:

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

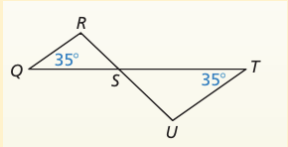
Essential Questions:

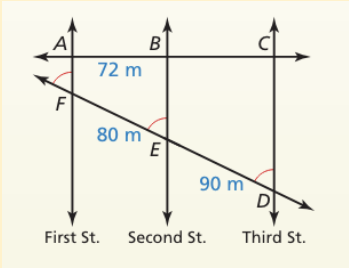
1. **What makes a transformation a similarity transformation? What is the relationship between a preimage and the image resulting from a similarity transformation?**
2. **How do similarity transformations determine the angle and side length conditions necessary for triangle similarity?**
3. **In a right triangle, what is the relationship between the altitude to the hypotenuse, triangle similarity, and the geometric mean?**
4. **When parallel lines intersect two transversals, what are the relationships among the lengths of the segments formed?**

Activity Description:

- **Similar Polygons**
- **Proving Triangles Similarity by AA**
- **Proving Triangle Similarity by SSS and SAS**
- **Proportionality Theorems**

Interdisciplinary Connections:
Topic 7 Project
Design with a 3D printer
An engineer has built a scale model of a part for a rocket engine. Full-size, the part will be mass-produced using 3D printing. You and your classmates will use similarity to scale up the dimensions of the part. Then you'll describe and draw steps for the production of the part.

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 the length; the medians of a triangle meet at a point. ***G.SRT.A.1.A: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.*** ***G.SRT.A.1.B: The dilation of a line segment is longer or shorter in the ratio given by the scale factor.*** ***G.SRT.A.2: Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar, explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.*** ***G.SRT.A.3: Use the properties of similarity transformations to establish AA criterion for two triangles to be similar.*** ***G.SRT.B.4: Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.***		Career Readiness, Life Literacies and Key Skills **Content: Engineering; Design, production. NJSLS#: G.SRT.A.1.B, G.SRT.B.5)** **(Next Generation Science Standards ETS1-2)** **Spot Light On:** **LBGT and Disabilities Law: N.J.S.A 18A:34-4.35** ● Stephen Hawking - Despite living with amyotrophic lateral sclerosis, Stephen Hawking is a world-renowned physicist who is credited with groundbreaking discoveries including quantum theory and general relativity, among others. . **<u>Example Tasks:</u>** **Task 1:** A square piece of cloth with an area of 324 square inches is folded in half twice to form the napkin shown. What is the area of the folded napkin? Explain.  **Task 2:** Show that the triangles are similar and write a similarity statement.  **Task 3:** Find the distance AC between First Street and Third Street.

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).***		
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	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. 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 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 student to related**

NJSLS CAREER READINESS, LIFE LITERACIES & KEY	**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).**

SKILLS	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*	**X**	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*