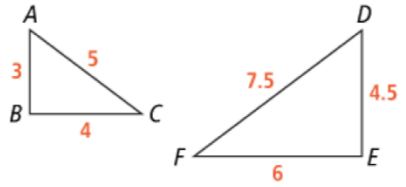
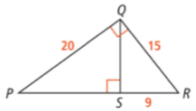
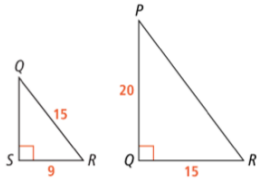
Geometry Unit 7: Topic 7
Updated Nov. 2021

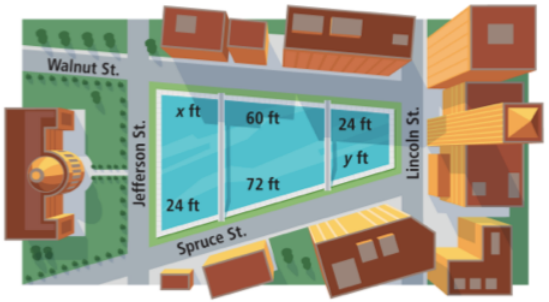
Marking Period	Unit Title	Recommended Instructional Days
3	Similarity	15-20

Domain:		Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit
NJSLS Strand: ***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.*** ***G.CO.A.5: Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure. Specify a sequence of transformations that will carry a given figure onto another.*** ***G.CO.C.10: Prove theorems about triangles.*** ***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***	***Progress Indicator:*** ***Tests ● Quizzes ● Practice problems for homework ● Online textbook ● Worksheets ● IXL ● Leveled assessments***	**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:** **● Similarity Transformations** **● Proving Triangles Similar** **● Similarity in Right Triangles** **● Proportions in Triangles**

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.*** ***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.*** ***G.GPE.B.5:Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.***		**<u>Example Tasks:</u>** **Task 1:** **Are $\triangle ABC$ and $\triangle DEF$ similar?**  Determine whether the ratios of the corresponding side lengths are equal. $\frac{AB}{DE} = \frac{3}{4.5} = \frac{2}{3}$ $\frac{BC}{EF} = \frac{4}{6} = \frac{2}{3}$ $\frac{AC}{DF} = \frac{5}{7.5} = \frac{2}{3}$ The ratios are equal, so the corresponding side lengths are proportional. $\triangle ABC \sim \triangle DEF$ by SSS $\sim$. **Task 2:**

		Given that $\triangle PQR \sim \triangle QSR$, what is QS?  Draw $\triangle PQR$ and $\triangle QSR$. Because $\triangle QSR \sim \triangle PQR$, $\overline{QS}$ corresponds to $\overline{PQ}$, $\overline{SR}$ corresponds to $\overline{QR}$, and $\overline{QR}$ corresponds to $\overline{PR}$.  To find QS, write a proportion using the corresponding legs of $\triangle QSR$ and $\triangle PQR$. $\frac{QS}{PQ} = \frac{SR}{QR}$ $\frac{QS}{20} = \frac{9}{15}$ $QS = \frac{9}{15} \cdot 20$ $QS = 12$ The length of altitude $\overline{QS}$ is 12. **Task 3:**

A reflecting pool is separated by walkways parallel to Lincoln St. and Jefferson St., which are parallel to each other. The city wants to add additional tiling around the pool. How much tiling does x feet represent?



Formulate
Walnut St. and Spruce St. are transversals of Jefferson St., Lincoln St., and the walkways that separate the pool.

Compute
Write an equation with x.

$\frac{x}{60} = \frac{24}{72}$ Apply the Corollary to the Side-Splitter Theorem.

$x = 60\left(\frac{24}{72}\right)$

$x = 20$

Interpret
The amount of tiling represented by x ft is 20 ft.

<u>Interdisciplinary Connections:</u>
Topic 7 Project, enVision STEM: Design with a 3D printer. Textbook page 300 and online
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:

		• 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. .

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:***
<u>Formative Assessments:</u> ● Entry and Exit Slips ● Quizzes ● Self Assessments	**<u>Benchmarks:</u>** ● Chapter Tests ● 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**	● **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*	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*