Trimester:	Unit Title:	Recommended Instructional Days:
1	**Transformations**	**18 - 20 days**

Domain

Strand:

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:
(a) Lines are transformed to lines, and line segments to line segments of the same length.
(b) Angles are transformed to angles of the same measure.
(c). Parallel lines are transformed to parallel lines.

8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

8.G A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

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:
Where do you see the various transformations in the real-world?
How do you describe the properties of translation and their effect on the congruence and orientation of figures?
How do you describe the properties of reflection and their effect on the congruence and orientation of figures?
How do you describe the properties of rotation and their effect on the congruence and orientation of figures?
How can you describe the effect of a translation, rotation, reflection on coordinates using an algebraic representation?
What is the connection between transformations and figures that have the same shape and size?
How do you describe the properties of dilations?
How can you describe the effect of a dilation on coordinates using an algebraic representation?
What is the connection between transformations and the orientations of similar figures?
What are some key things to look for when trying to identify a transformation on a coordinate plane?
What is the difference between the orientation of a figure and the orientation of a figure's vertices?
Which transformations preserve congruence? Orientation?

Essential Understandings:
Two-dimensional figures can be changed by various transformations.
Translations, reflections, and rotations are transformations that preserve the size and shape of the preimage.
Transformations may change the figure's coordinates, orientation and/or size.
Transformations will change certain properties about a figure while preserving others.
If two figures are similar, then there exists a sequence of translations, reflections, rotations, and/or dilations that transforms one figure into the other.

Vocabulary:
- translation
- reflection
- rotation
- rigid motion
- dilation
- similar figures

**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 and Performance Task TB Page 41
- Chapter Exploration TB page 43 Sliding Figures
- Chapter ExplorationTB page 49 Reflecting Figures
- Chapter Exploration TB page 55 Rotating Figures
- Chapter Exploration TB page 63 Transforming Figures
- Chapter Exploration TB page 69 Dilating a Polygon
- Chapter Exploration TB page 77 Transforming Figures
- Chapter Exploration TB page 83 Comparing Similar Figures
- Puzzle Time for each section (teacher resources)
- Enrichment and Extension Worksheets

Interdisciplinary Connections:

Science:

1. Have students discuss various ways they have seen shrinking and stretching in their daily lives. Remind them that they may have seen movies, cartoons, or other entertainment that used this basic principle, as well as read about it in books such as Gulliver's Travels. Ask them what models they have seen, such as toy cars, action figures, and dolls. Then show them a figure, such as a model car or doll (or have them bring one in), and ask them to calculate the scale compared to the real thing. For example, they can compare their own heights to that of the action figure, and measure other dimensions of the figure to see if they are realistic or exaggerated.
2. Ask them to make a conjecture whether the model could realistically exist as an actual person or car, given the dimensions of the toy, and what those measurements would be if enlarged.
3. Example 5 TB page 73 *Modeling Real Life:* A wildlife refuge…
4. Question # 12 TB page 82 *Modeling Real Life* A barrier in the shape of a rectangle is used to retain oil spills…

Social Studies:

1. Throughout history, specific events, such as wars, tragedies, and decisions transformed our country. Different transformations have been used in art, architecture, crafts, and quilts throughout history.

Physical Education:

1. Question # 7 TB page 52 *Dig Deeper:* Hitting a golf ball
2. Question # 7 TB page 80 *Dig Deeper:* A coordinate plane is used to represent a cheerleading formation…

Language Arts:

1. Question # 8 TB page 58 *Different Words, Same Question*
2. Vocabulary Question # 9 TB page 72: How is a dilation different from other transformations?

Spot Light On: Tyler Kelly

Social and Emotional Learning: *Competencies*	**Social and Emotional Learning: *Sub-Competencies***
SEL 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. • 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,	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.

	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(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*	**X**	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*