

Geometry Unit 3: Topic 3 (include Topic 7-1)
Updated Nov. 2021

Marking Period	Unit Title	Recommended Instructional Days
3	Transformations	18-20
Domain:		<p>Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSL-S-CLKS within Unit</p> <p><u>Essential Questions:</u></p> <ol style="list-style-type: none"> How are the properties of reflection used to transform a figure? What are the properties of a translation? What are the properties that identify a rotation? How can rigid motions be classified? How does dilation affect the side lengths and angle measures of a figure? How can you tell whether a figure is symmetrical? <p><u>Activity Description:</u></p> <ul style="list-style-type: none"> Reflections Translations Rotations Classifications of rigid motions Dilation (Topic 7-1) Symmetry
<p><i>NJSLS Strand:</i> <i>G.CO.A.2: Represent transformations in the plane using 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 angle to those that do not.</i> <i>G.CO.A.3: Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.</i> <i>G.CO.A.4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and segments.</i> <i>G.CO.A.5: Given a geometric figure and a rotation, reflections, or translation, draw the transformed figure. Specify a sequence of transformations that will carry a given figure onto another.</i> <i>G.CO.B.6: Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a</i></p>	<p><i>Progress Indicator:</i> <i>Tests • Quizzes • Practice problems for homework • Online textbook • Worksheets • IXL • Leveled assessments</i></p>	

given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

G.SRT.A.1: Verify experimentally the properties of dilations given by a center and a scale factor.

G.SRT.A1a: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves the line passing through the center unchanged.

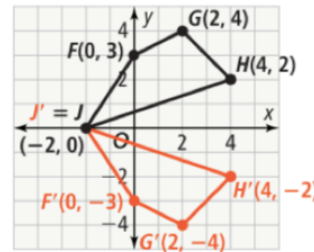
G.SRT.A1b: The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

Example Tasks:

Task 1:

Quadrilateral $FGHJ$ has coordinates $F(0, 3)$, $G(2, 4)$, $H(4, 2)$, $J(-2, 0)$.

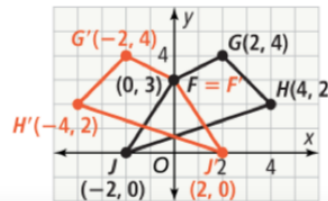
A. Graph and label $FGHJ$ and $R_{x\text{-axis}}(FGHJ)$. What is a general rule for reflecting a point across the x -axis?



The reflection of any point (x, y) across the x -axis is the point $(x, -y)$.

Quadrilateral $FGHJ$ has coordinates $F(0, 3)$, $G(2, 4)$, $H(4, 2)$, $J(-2, 0)$.

B. Graph and label $FGHJ$ and $R_{y\text{-axis}}(FGHJ)$. What is a general rule for reflecting a point across the y -axis?

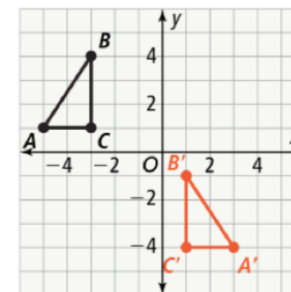


The reflection of any point (x, y) across the y -axis is the point $(-x, y)$.

$$R_{y\text{-axis}}(x, y) = (-x, y)$$

Task 2:

Is there a rigid motion that maps $\triangle ABC$ to $\triangle A'B'C'$?



Observe that $m\angle A = m\angle A'$, $m\angle B = m\angle B'$,
and $m\angle C = m\angle C'$.

Also, $AB = A'B'$, $AC = A'C'$, and $BC = B'C'$.

Length and angle measure are preserved, so the
transformation is a rigid motion.

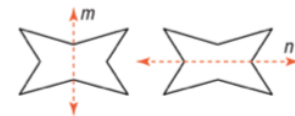
Task 3:

What transformations can be used to map the figure onto itself? Why can some figures be mapped onto themselves?



A figure has symmetry if a rigid motion can map the figure onto itself.

Reflectional symmetry is a symmetry for which a reflection maps the figure onto itself. The line of reflection for a reflection symmetry is called the line of symmetry.



The reflections R_m and R_n map the figure onto itself. Observe that lines m and n both divide the figure into two pieces with the same size and shape.

A figure has **rotational symmetry** if its image is mapped onto the preimage after a rotation of less than 360° .



The rotation $r_{(180^\circ, P)}$ maps the figure onto itself.

Interdisciplinary Connections:

Topic 3 Project, enVision STEM: Create an Animation. Textbook page 104 and online

Career Readiness, Life Literacies and Key Skills **Content: Design.**

NJSLS#: G.CO.A.2, G.CO.A.4, G.CO.A.5, G.CO.B.6)

(Next Generation Science Standards ETS1-2)

Spot Light On:

- Dr. Jessica Esquivel- Physicist, Data Analyst, Science and Communicator

<ol style="list-style-type: none"> 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: <i>Competencies</i>	Social and Emotional Learning: <i>Sub-Competencies</i>	
<p>Self- awareness</p> <p>Social Awareness</p> <p>Self- Management</p> <p>Relationship Skills</p> <p>Responsible Decision-Making</p>	<p>Recognizing the importance of self-confidence in handling daily tasks and challenges.</p> <p>Demonstrate an awareness of the expectations for social interactions in a variety of ways.</p> <p>Demonstrate an understanding of the need for mutual respect when viewpoints differ.</p> <p>Recognize the skills needed to establish and achieve personal and educational goals.</p> <p>Utilize positive communication and social skills to interact effectively with others.</p> <p>Develop, implement, and model effective problem solving and critical thinking skills.</p>	
Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i>		Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i>
Formative Assessments: <ul style="list-style-type: none"> ● Entry and Exit Slips 		Benchmarks: <ul style="list-style-type: none"> ● Chapter Tests

<ul style="list-style-type: none"> Quizzes Self Assessments 		<ul style="list-style-type: none"> Projects <p>Summative Assessments:</p> <ul style="list-style-type: none"> District Assessments Midterms Standardized Tests 	
Differentiated Student Access to Content: Teaching and Learning Resources/Materials			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core Resources
<ul style="list-style-type: none"> Textbooks websites Achieve the core Khan Academy Desmos IXL 	<ul style="list-style-type: none"> Skill building worksheets Math Manipulatives 	<ul style="list-style-type: none"> Dictionary for native languages Videos in their native language. 	<ul style="list-style-type: none"> Leveled Assessments Enrichment worksheets
Supplemental Resources			
Technology: <ul style="list-style-type: none"> Chromebooks, Graphing Calculators, Online math manipulatives Other: <ul style="list-style-type: none"> Zoom and Google Meets, Google Classroom, Interactive Textbooks, Private Tutoring 			
Differentiated Student Access to Content: Recommended Strategies & Techniques			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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

	<p>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.</p>		
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<p>NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS</p>	<p>Disciplinary Concept: Creativity and Innovation</p>		
	<p><i>Core Ideas:</i></p>	<p>With a growth mindset, failure is an important part of success</p>	
	<p><i>Performance Expectation/s:</i></p>	<p>9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).</p>	
	<p>Career Readiness, Life Literacies, & Key Skills Practices</p>		
	<p>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.</p>		

New Jersey Legislative Statutes and Administrative Code
(place an "X" before each law/statute if/when present within the curriculum map)

x	Amistad Law: <i>N.J.S.A. 18A</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>	X	LGBT and Disabilities Law: <i>N.J.S.A.</i>	x	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>		Standards in Action: <i>Climate Change</i>
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	<i>52:16A-88</i>				<i>18A:35-4.35</i>				
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