

## GRADE 8 UNIT 1 – GEOMETRY

<p><b>Established Goals:</b> Standards</p> <p><b>8.G.1:</b> Verify experimentally the properties of rotations, reflections, and translations.</p> <p>a. Lines are taken to lines, and line segments to line segments of the same length.</p> <p>b. Angles are taken to angles of the same measure.</p> <p>c. Parallel lines are taken to parallel</p> <p><b>8.G.2:</b> 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.</p> <p><b>8.G.3:</b> Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</p> <p><b>8.G.4:</b> 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.</p> <p><b>8.G.5:</b> Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of</i></p>	<b>Transfer</b>	
	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> <li>• verify by measuring and comparing lengths, angle measures, and parallelism of a figure and its image- that after a figure has been translated, reflected, or rotated, corresponding lines and line segments remain the same length, corresponding angles have the same measure, and corresponding parallel lines remain parallel.</li> <li>• informally prove that the sum of any triangle’s interior angles will have the same measure as a straight angle.</li> <li>• informally prove that the sum of any polygon’s exterior angles will be 360 degrees.</li> <li>• make conjectures regarding the relationships and measurements of the angles created when two parallel lines are cut by a transversal (8.G.5)</li> </ul>	
	<b>Meaning</b>	
	<b>ENDURING UNDERSTANDING</b>	<b>ESSENTIAL QUESTIONS</b>

- Use two-dimensional figure is congruent to another if the second can be obtained by a series of transformations.
- Transformations of a two-dimensional figure on the coordinate plane will involve a change in coordinates.
- Dilation is a transformation that changes the size of a figure, but not the shape.
- If the second figure can be obtained from the first by a sequence of transformations, they are similar.
- Use informal arguments to establish facts about the angle sum and exterior angles of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle relationship used to identify similar triangles.

- How can you verify experimentally and apply the properties of transformations to prove that two- dimensional figures are congruent?
- How can you describe the effect of transformations on two-dimensional figures using coordinates?
- What is dilation and how does this transformation affect a figure in the coordinate plane?
- How can you determine if a two-dimensional figure is similar to another a transformation?
- How can you justify facts about the angle sum and exterior angles of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle relationship used to identify similar triangles?

<i>transversals why this is so.</i>	Acquisition	
	KNOWLEDGE	SKILLS
	<i>Students will know how to...</i>	<i>Students will be skilled at...</i>
	<ul style="list-style-type: none"> <li>graph and describe transformations on a coordinate plane.</li> <li>identify similar figures.</li> <li>make inferences regarding the relationships and measurements of the angles created when two parallel lines are cut by a transversal</li> </ul>	<ul style="list-style-type: none"> <li>graph transformations (translations, reflections, rotations, and dilations) on a coordinate plane.</li> <li>describe transformations (translations, reflections, rotations, and dilations) on a coordinate plane.</li> <li>identify similar figures using proportions.</li> <li>find the missing measurements in similar figures by writing and solving a proportion.</li> <li>use angle relationships to determine angle measures.</li> </ul>

Vocabulary	Instruction and Pacing	
Coordinate Plane Axes Origin Quadrant Horizontal Vertical Translation Reflection Rotation Dilation Proportion Similar Figures Complementary Angles Supplementary Angles Vertical Angles Adjacent Angles Corresponding Angles	<b>Pretest</b>	<b>1 day</b>
	<b>Transformations</b>	<b>2 weeks</b>
	<b>Similar Figures and Proportions</b>	<b>1 week</b>
	<b>Angles</b>	<b>1 week</b>

Alternate Interior Angles Alternate Exterior Angles		
<b>Resources</b>		
<ul style="list-style-type: none"> <li>• <i>Course 3</i> Chapter 3: Lessons 6, 7, 8; Chapter 4: Lessons 5, 6, 7; Chapter 7: Lessons 1, 2, 3, 4, 5</li> <li>• Manipulatives:             <ul style="list-style-type: none"> <li>○ Protractor</li> <li>○ Graph Paper</li> </ul> </li> <li>• Study Island</li> <li>• <a href="http://phschool.com">http://phschool.com</a></li> <li>• <a href="https://www.pearsonsuccessnet.com">https://www.pearsonsuccessnet.com</a></li> <li>• Buckle Down</li> <li>• Games/Centers</li> </ul>		
<b>Differentiation and Accommodations</b>		
Provide graphic organizers Provide additional examples and opportunities for additional problems for repetition Provide tutoring opportunities Provide retesting opportunities after remediation (up to teacher and district discretion) Teach for mastery not test Teaching concepts in different modalities Adjust pace and homework assignments		
<b>ELL Modifications</b> <ul style="list-style-type: none"> <li>•</li> </ul>		
<b>21<sup>st</sup> Century Skills</b>	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy	
<b>Instructional Strategies</b>	Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson: <ul style="list-style-type: none"> <li>• Communicating with students</li> <li>• Using questioning and discussion techniques</li> <li>• Engaging students in learning</li> <li>• Using assessment in instruction</li> <li>• Demonstrating Flexibility and Responsiveness</li> </ul>	
<b>Interdisciplinary</b>		

Connections	
Common Misconceptions	Proper Conceptions
Complementary angles have a sum of 90 degrees, not 180 degrees.	Complementary angles have a sum of 90 degrees.
Supplementary angles have a sum of 180 degrees, not 90 degrees.	Supplementary angles have a sum of 180 degrees.

### Performance Task

$\triangle ABC$  has coordinates  $A(1,2)$ ,  $B(2, 5)$ , and  $C(3, 1)$ .

- On a coordinate plane, graph  $\triangle ABC$  and its image after a translation 6 units to the left.
- On the same coordinate plane, graph the image of  $\triangle A'B'C'$  after a reflection over the x-axis.
- On the same coordinate plane, graph the image of  $\triangle A''B''C''$  after a rotation of  $90^\circ$  about the origin.
- Explain the difference between a translation, a reflection, and a rotation.

Rubric : When used as a quiz grade (based on 100%), each bullet would be worth 25 points for a correct answer.

# ASSESSMENTS

## Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

## Suggested Summative Assessment

Grade level developed Unit/Envisions Topic Tests

Ed-Connect Express Tests /State Unit Benchmark Assessment/Performance Task

