Grade 8 Math Unit 1

Canterbury Public Schools

Subject	Math
Grade Level	8
Unit Title	**Rigid Transformations and Congruence**
Unit Goals	1. **Define and Identify Transformations**: Understand, define, and identify translations, rotations, and reflections, and perform sequences of these moves. 2. **Understand Rigid Transformations**: Recognize that rigid transformations (reflections, rotations, translations) preserve distance and angle measures (i.e., they do not change the size or shape of the figure). 3. **Apply Transformations on/off Coordinate Planes**: Draw and describe transformations of figures both on a square grid and on the coordinate plane. 4. **Understand and Prove Congruence**: Define congruence in terms of rigid transformations and use them to determine if two figures are congruent. 5. **Identify Corresponding Parts**: Use the terms "corresponding sides" and "corresponding angles" to describe the relationship between a figure and its image. 6. **Justify Angle Relationships**: Use rigid transformations to justify that the sum of the interior angles in a triangle is 180 degrees.
Pacing (# of weeks)	4 - 6 weeks
Standards	8.G.A.1, 8.G.A.3, 8.G.A.1.c,8.G.A.2, 8.G.B.6
Content/Conceptual Knowledge (know)	The difference between translations, rotations, and reflections Vocabulary related to geometry of shapes That if you have a pair of vertical angles and know the angle measure of one of them, I can find the angle measure of the other Lengths and angle measures are preserved under any rigid transformation
Skills (be able to do)	● Differentiate between translations, reflections, and rotations. ● Draw images of figures under rotation, reflection, and translation, both on and off grid paper. ● Apply transformations to polygons using vertex coordinates (x,y) in the coordinate plane. ● Describe a sequence of transformations (e.g., "rotate 90 degrees then translate") that moves one figure onto another. ● Identify corresponding sides and angles before and after a transformation. ● Understand that rigid transformations preserve side lengths and angle measures. ● Use rigid transformations to determine if two figures are congruent.

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Find unknown angle measures in triangles and when parallel lines are cut by a transversal.
Identify line symmetry and rotational symmetry in figures.

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<tr><td>Essential Questions</td><td>How are transformations, translation and rotations used to manipulate figures?
How do you use points on a grid to find coordinates?
How do you draw shapes using coordinates?
How do you determine congruence?
How do you calculate angles using alternate interior, vertical and supplementary angles?
How can you find out the missing angle of a triangle if you know two of the angles?</td></tr>
<tr><td>Enduring Understandings</td><td>Rigid transformations produce congruent figures.
Transformations are a tool to prove two figures are congruent.
When a figure is transformed using a rigid transformation or a series of rigid transformations, corresponding side lengths and angle measures are equal.
A rotation by 180 degrees about a point of two intersecting lines moves each angle to the angle that is vertical to it.
Transformations can be used to prove congruence of angle measures in a set of parallel lines cut by a transversal.
The sum of angles in a triangle is 180 degrees.</td></tr>
<tr><td>Vocabulary</td><td>Vertex, clockwise, counterclockwise, reflection, rotation, translation, image sequence of transformations, transformation, corresponding rigid transformation, corresponding, vertical angles,congruent, alternate interior angles, transversal, tessellation</td></tr>
<tr><td>Common Learning Experiences</td><td>Use tracing paper to transform figures in the coordinate plane.
Draw and describe translations, rotations, and reflections
Coordinate Moves, label rotated images, label reflected images
Draw and label images under rigid transformations and then describe properties of composite figure created by the images
Draw and label rotations of 180 degrees of a line segment from centers of the midpoint, a point on the segment, and a point not on the line.
Draw and label rigid transformation of lines and parallel lines and explain the relationship</td></tr>
<tr><td>Assessments</td><td>Assessment Map
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<tr><th>Type</th><th>Level</th><th>Assessment Detail</th></tr>
<tr><td>Practice</td><td>Knowledge</td><td>Classwork & Homework</td></tr>
<tr><td>Formative</td><td>Skill</td><td>Daily Cool Downs</td></tr>
<tr><td>Summative</td><td>Product</td><td>Unit Checkpoints & Tests</td></tr>
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Student Resources	Tracing paper, graph paper, colored pencils, scissors, ruler, protractor, index cards straightedge(geometry kits)
Teacher Resources	Manual and geometry kits