Grade 8 Math Unit 2

Canterbury Public Schools

Subject	Math
Grade Level	8
Unit Title	**Dilations, Similarity, and Introducing Slope**
Unit Goals	1. **Understand and Apply Dilations**: Define and perform dilations on and off the coordinate plane using a center and a scale factor. 2. **Analyze Scaled Figures**: Recognize that dilations preserve angle measures but multiply side lengths by the scale factor. 3. **Define Similarity**: Determine if two figures are similar by identifying a sequence of rigid transformations (translations, rotations, reflections) and dilations that map one to the other. 4. **Understand Similarity and Slope**: Use similar triangles to show that the slope is the same between any two distinct points on a non-vertical line. 5. **Create Linear Equations**: Use slope and y-intercept to write linear equations.
Pacing (# of weeks)	3 - 4 weeks
Standards	8.G.A.3, 8.G.A.4,8.EE.B.5,8.F.B.4
Content/Conceptual Knowledge (know)	Definition of dilations and scale factor Similar figures and proportional side lengths Slope as a unit rate
Skills (be able to do)	Dilations: ● Create scaled copies of figures using a center point and a scale factor (both on and off the coordinate plane). ● Determine the scale factor (positive numbers, fractions, or decimals) that maps an original figure to a new image. ● Recognize that angle measures are preserved, but side lengths are multiplied by the scale factor. ● Know that the image of a circle is a circle and the image of a line is a line parallel to the original. Similarity: ● Understand that two figures are similar if one can be transformed into the other using rigid transformations (translations, rotations, reflections) and/or dilations. ● Use the definition of similarity to argue whether two figures are similar or not. ● Use the terms "corresponding sides" and "corresponding angles" to describe similarities. Introducing Slope

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Define slope as the constant rate of change for a line and understand it in terms of "slope triangles".
Find the slope of a line passing through two points by calculating the vertical and horizontal change.
Draw slope triangles on a line to show that any two distinct points on a line determine the same slope.
Determine the equation of a line using its slope and points, particularly focusing on lines passing through the origin.

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<tr><td>Essential Questions</td><td>How can two distinct points on a line determine slope?
How do dilations change figures while preserving shape?
What does slope tell us about a relationship?</td></tr>
<tr><td>Enduring Understandings</td><td>Angle measures in similar figures are preserved, which can be used to justify that two triangles are similar if they share two or three angle measures.
The quotients of corresponding side lengths in similar figures are equivalent.
Multiplying all side lengths of a figure by the same scale factor produces a similar figure.
Similar figures maintain proportional relationships.
The triangle created by the vertical and horizontal distances between two points on a line have equivalent ratios.</td></tr>
<tr><td>Vocabulary</td><td>Dilation, similar, slope, scale factor, similar figures unit rate</td></tr>
<tr><td>Common Learning Experiences</td><td>Classroom observations related to dilations, circles and polygons, observations about side lengths in similar triangles
Coordinate plane investigations
Use visual models</td></tr>
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<tr><td>Student Resources</td><td>Graph paper coordinate grids</td></tr>
<tr><td>Teacher Resources</td><td>Guide,</td></tr>
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