Core Content

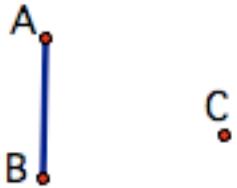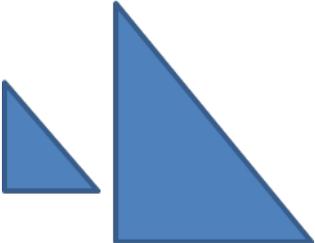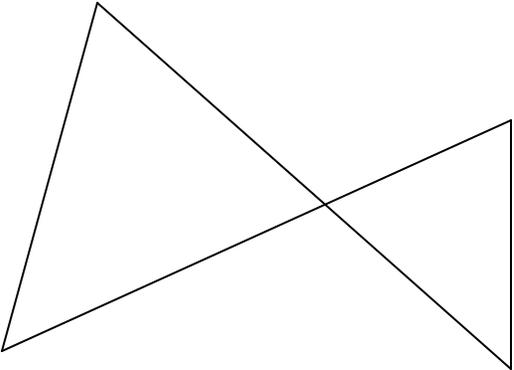| |
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| **Cluster Title: Understand similarity in terms of similarity transformations.** |
| **Standard G.SRT.1:** Verify experimentally the properties of dilations given by a center and a scale factor.
    a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
    b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor. |
| **Concepts and Skills to Master** |
| • Given a line segment, a point not on the line segment, and a dilation factor, construct a dilation of the original segment.
• Recognize that the length of the resulting image is the length of the original segment multiplied by the scale factor and that the original and dilated image are parallel to each other. |

Supports for Teachers

Critical Background Knowledge	
• Describe the effect of dilations on two-dimensional figures using coordinates (8.G.3). • Reason using proportions.	
Academic Vocabulary	
dilation, center of dilation, scale factor, similarity, transformation	
Suggested Instructional Strategies	**Resources**
• Draw analogy of dilation to zoom-in or zoom-out of a camera, a document camera, an iPad, or using geometry software programs.	National Library of Virtual Manipulatives: Transformations – Dilation
Sample Formative Assessment Tasks	
Skill-Based Task: Create a dilation of segment *AB* through *C* with a scale factor of 2 to create segment *EF*. Find the lengths of *EF*, *AC*, *BC*, *CE*, and *CF*.	**Problem Task:** Locate the center of dilation and scale factor in the following pair of triangles.

Core Content

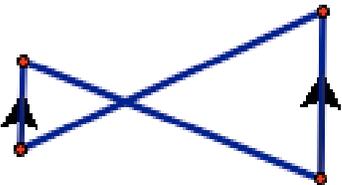| Cluster Title: Understand similarity in terms of similarity transformations. |
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| **Standard G.SRT.2:** Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain, using similarity transformations, the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. |
| **Concepts and Skills to Master** |
| • Decide whether two figures are similar using properties of transformations.
• Understand that in similar triangles corresponding sides are proportional and corresponding angles are congruent. |

Supports for Teachers

Critical Background Knowledge	
• Understand similarity as a sequence of transformations (8.G.4).	
Academic Vocabulary	
similarity, transformation, corresponding parts, $\cong$, $\sim$	
Suggested Instructional Strategies	**Resources**
• Give students pairs of triangles, some of which are similar and some of which are not. Have students verify or disprove similarity using transformations and the definition of similarity. • Use geometry software to explore properties of similarity.	
Sample Formative Assessment Tasks	
Skill-Based Task: Are the triangles below similar? How do you know? 	**Problem Task:** Under what conditions do two lines intersected by two transversals form similar triangles?

II.5.G.SRT.2

Core Content

Cluster Title: Understand similarity in terms of similarity transformations.
Standard G.SRT.3: Use the properties of similarity transformations to establish the *AA* criterion for two triangles to be similar.
Concepts and Skills to Master
• Prove that if two angles of one triangle are congruent to two angles of another triangle, the triangles are similar (*AA*) using the properties of similarity transformations.

Supports for Teachers

Critical Background Knowledge
• The sum of the measures of the angles in a triangle is 180 degrees (8.G.5).
• If two angles of a triangle are congruent to two corresponding angles of a second triangle, then the third pair of corresponding angles must be congruent.
Academic Vocabulary
similarity, transformation, *AA*

Suggested Instructional Strategies	Resources
• Given two different-sized triangle cutouts with two corresponding angles congruent, allow the students to show that the third angle is congruent, and find a dilation that produced the two triangles.	

Sample Formative Assessment Tasks	
Skill-Based Task: Determine whether the two triangles are congruent. Justify your answer.	**Problem Task:** Write an argument to justify that the *AA* criterion for two triangles guarantees similarity.