Common Core Standards - Resource Page

The resources below have been created to assist teachers' understanding and to aid instruction of this standard.

Domain	Standard: G.CO.4 - Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
Congruence **Experiment with transformations in the plane**	Questions to Focus Learning How do you draw the image of a figure under a reflection, rotation, and translation? What mathematical definitions do we use to rotate, reflect, and/or translate so that we can transform figures? Rotations, reflections, and translations can be developed using mathematical definitions of general geometric terms. Student Friendly Objectives *Knowledge Targets* I can define rotations in terms of angles and circles. I can define reflections in terms of lines, line segments, and perpendicular lines. I can define translations in terms of parallel lines, line segments, and vectors. *Reasoning Targets* I can develop the definition of rotations in terms of angles and circles. I can develop the definition of reflections in terms of lines, line segments, and perpendicular lines. I can develop the definition of translations in terms of parallel lines, line segments, and vectors. I can describe translations and rotations in terms of reflections. Vocabulary angle of rotation center of rotation initial point locus reflection rotation terminal point translation vector

Teacher Tips

Build on student experience with rigid motions from earlier grades. Point out the basis of rigid motions in geometric concepts, e.g., translations move points a specified distance along a line parallel to a specified line; rotations move objects along a circular arc with a specified center through a specified angle.

The reasoning targets should be utilized to develop the knowledge targets.

Students should be taught notation specific to transformations. For example:

T_{PQ} represents a translation in the direction from P to Q the length PQ. (In the notation, PQ will have a vector symbol over it.)
R_m represents a reflection across line m
$R_{P,90}$ represents a rotation about point P of 90 degrees.

Vertical Progression

G.CO.5 - Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
G.CO.6 - Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
G.CO.7 - Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
G.CO.8 - Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

The above information and more can be accessed for free on the Wiki-Teacher website.
Direct link for this standard: G.CO.4