

Unit Guide

The Parameters of Transformational Geometry

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Geometry is a math topic that is full of applications that can make it accessible to all students. Unfortunately, when we follow a textbook, we take away much of the excitement that could draw them in. Geometric transformations are found in nature – flowers, butterflies, and reflections in still lakes, in music, art, and even car hubcaps. Armed with a greater appreciation and understanding of transformations, my objective is to have students apply knowledge of geometric transformations to what they see around them. Students will use technology (Geometer's Sketchpad, interactive whiteboard) to investigate how the parameters of transformations affect the image created in terms of position, orientation and size. The specific transformation parameters that are addressed in this unit are 1) reflection lines can be anywhere in the plane and is the perpendicular bisector of the line segment connecting a pre-image to its image, 2) the center of a rotation can be anywhere (not only the origin) and is equidistant from each pre-image and corresponding image point, 3) translations are defined by a vector with magnitude and direction, 4) dilations have a center and scale factor, and 5) the composition of transformations can be defined as a single transformation.