

Grade 9 - Unit 7 Similarity and Transformations

G04 Students will be expected to demonstrate an understanding of line and rotation symmetry.

Performance Indicators

- G04.01** Classify a given set of 2-D shapes or designs according to the number of lines of symmetry.
- G04.02** Complete a 2-D shape or design, given one half of the shape or design and a line of symmetry.
- G04.03** Determine if a given 2-D shape or design has rotation symmetry about the point at its centre, and if it does, state the order and angle of rotation.
- G04.04** Rotate a given 2-D shape about a vertex, and draw the resulting image.
- G04.05** Identify the type of symmetry that arises from a given transformation on a Cartesian plane.
- G04.06** Complete, concretely or pictorially, a given transformation of a 2-D shape on a Cartesian plane, record the coordinates, and describe the type of symmetry that results.
- G04.07** Identify and describe the types of symmetry created in a given piece of artwork.
- G04.08** Determine whether or not two given 2-D shapes on a Cartesian plane are related by either rotation or line symmetry.
- G04.09** Draw, on a Cartesian plane, the translation image of a given shape using a given translation rule such as R_2 , U_3 , or $\rightarrow\rightarrow$, $\uparrow\uparrow$; label each vertex and its corresponding ordered pair; and describe why the translation does not result in line or rotation symmetry.
- G04.10** Create or provide a piece of artwork that demonstrates line and rotation symmetry, and identify the line(s) of symmetry and the order and angle of rotation.

Limited	Developing	Competent	In-Depth
<p>Student can sort examples and non-examples of shapes with reflective symmetry.</p> <p>Student can sort examples and non-examples of shapes with order of rotation greater than 1.</p> <p>Student can complete a shape or design with line symmetry using concrete materials such as square tiles, pattern blocks, a Mira, folded paper, etc.</p>	<p>Student can determine the number of lines of symmetry for a given set of shapes such as pattern block pieces.</p> <p>Student can determine the order of symmetry for a given set of shapes such as pattern block pieces.</p> <p>Student can complete a 2-D shape or design, given one half of the shape or design and a line of symmetry.</p> <p>Student can trace a shape and then turn the tracing over the original shape around a pencil point to see whether it fits over itself.</p> <p>Student can determine whether or not two given 2-D shapes on a Cartesian plane are related by either rotation or line symmetry.</p> <p>Student can identify the symmetries found in a given piece of artwork.</p>	<p>Student can identify shapes that have reflective, or line symmetry, and determine the number of lines of symmetry.</p> <p>Student can identify shapes that have rotational symmetry and determine the order and angle of rotation.</p> <p>Student can draw, with and without a coordinate plane, the reflection of a shape and label corresponding vertices.</p> <p>Student can draw, with and without a coordinate plane, the rotation of a shape.</p> <p>Student can draw the combined shape of an object and its resulting image after a transformation and identify its symmetries.</p> <p>Student can create or provide a piece of artwork that demonstrates line and rotation symmetry.</p>	<p>Student can explain why the translation of a shape and its resulting image cannot be duplicated with line or rotation symmetry.</p> <p>Student can create a piece of artwork that demonstrates line and rotation symmetry, and describe how my art incorporates these features.</p>