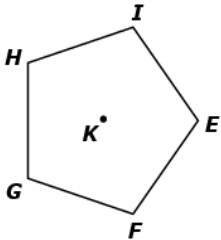


<p>MAFS.912.G-CO.1.5</p> <p>Also assesses MAFS.912.G-CO.1.3</p>	<p>Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.</p> <p>Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.</p>
<p>Item Types</p>	<p>Equation Editor – May require creating an algebraic description for a transformation.</p> <p>GRID – May require constructing a transformed figure or graphing a figure or a line of reflection.</p> <p>Hot Text – May require reordering steps of a transformation.</p> <p>Matching Item – May require choosing transformations that will carry a figure onto another.</p> <p>Multiple Choice – May require selecting a value or an expression from a list.</p> <p>Multiselect – May require selecting responses.</p> <p>Open Response – May require describing rotations and reflections.</p> <p>Table Item – May require completing a table of values for a transformation that will carry a figure onto another figure.</p>
<p>Clarifications</p>	<p>Students will apply two or more transformations to a given figure to draw a transformed figure.</p> <p>Students will specify a sequence of transformations that will carry a figure onto another.</p> <p>Students will describe rotations and reflections that carry a geometric figure onto itself.</p>
<p>Assessment Limits</p>	<p>Items should not require the student to find the distance between points.</p> <p>Items may require the student to be familiar with using the algebraic description $(x, y) \rightarrow (x + a, y + b)$ for a translation, and $(x, y) \rightarrow (kx, ky)$ for a dilation when given the center of dilation. Items may require the student to be familiar with the algebraic description for a 90-degree rotation about the origin, $(x, y) \rightarrow (-y, x)$, for a 180-degree rotation about the origin, $(x, y) \rightarrow (-x, -y)$, and for a 270-degree rotation about the origin, $(x, y) \rightarrow (y, -x)$. Items that use more than one transformation may ask the student to write a series of algebraic descriptions.</p> <p>Items must not use matrices to describe transformations.</p>

	<p>In items in which the line of reflection is given, it must be in slope-intercept form.</p> <p>In items in which the line of reflection is given, any form of a line may be used. If the line is not a vertical line or a horizontal line, then the line of reflection must be graphed as a dotted line.</p>
Stimulus Attributes	<p>Items may be set in a real-world or mathematical context.</p> <p>Items may require the student to provide a sequence of transformations.</p> <p>Items may require the student to determine if an attribute of a figure is the same after a sequence of transformations has been applied.</p>
Response Attributes	<p>Items may require the student to use a function, e.g., $y = k(f(x + a)) + b$, to describe a transformation.</p> <p>Items may require the student to give a line of reflection and/or a degree of rotation that carries a figure onto itself.</p> <p>Items may require the student to draw a figure using a description of a transformation.</p> <p>Items may require the student to graph a figure using a description of a rotation and/or reflection.</p> <p>In items in which the student has to write the line of reflection, any line may be used.</p> <p>Items may require the student to be familiar with slope-intercept form of a line, standard form of a line, and point-slope form of a line.</p> <p>Items may require the student to write a line of reflection that will carry a figure onto itself.</p> <p>Items may require the student to give a degree of rotation that will carry a figure onto itself.</p>
Calculator	Neutral

Sample Item	Item Type
<p data-bbox="1049 233 1187 260">Multiselect</p> <p data-bbox="199 306 727 333">Regular pentagon $EFGHI$ with center K is shown.</p>  <p data-bbox="199 617 938 644">Select all the transformations that carry pentagon $EFGHI$ onto itself.</p> <ul data-bbox="199 674 1328 974" style="list-style-type: none"><input type="checkbox"/> a reflection across line EK, a 180° counterclockwise rotation about point K, and a reflection across a vertical line through point K<input type="checkbox"/> a 90° counterclockwise rotation about point E, a reflection across line FG, and a vertical translation<input type="checkbox"/> a reflection across line FI, a reflection across line GH, and a 180° clockwise rotation about point K<input type="checkbox"/> a reflection across a vertical line through point K, a 180° clockwise rotation about point K, and a reflection across line EK<input type="checkbox"/> a 180° clockwise rotation about point E, a reflection across a vertical line through point E, and a reflection across a horizontal line through point E	