

## Geometric Transformations

### 1.1 Explore building blocks of geometry

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
<b>Definitions of lines and angles (G.CO.1)</b>	<p>Can extend thinking beyond the standard, including tasks that may involve one of the following:</p> <ul style="list-style-type: none"> <li>• Designing</li> <li>•Connecting</li> <li>•Synthesizing</li> <li>• Applying</li> <li>• Justifying</li> <li>• Critiquing</li> <li>• Analyzing</li> <li>• Creating</li> <li>• Proving</li> </ul>	<p>Describe the following terms using points, lines, distance and circular arcs for <u>all</u> of the following:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular Lines</li> <li>• Parallel Lines</li> <li>• Line Segments</li> </ul>	<p>Describe the following terms using points, lines, distance and circular arcs for <u>4</u> of the following:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular Lines</li> <li>• Parallel Lines</li> <li>• Line Segments</li> </ul>	<p>Describe the following terms using points, lines, distance and circular arcs for <u>2</u> of the following:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular Lines</li> <li>• Parallel Lines</li> <li>• Line Segments</li> </ul>	<p>Little evidence of reasoning or application to solve the problem</p> <p>Does not meet the criteria in a level 1</p>

G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

*This standard may be reassessed in other reporting strands, as concepts are developed and taught.*

## Geometric Transformations

### 2.1 Explore with transformations

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
<b>Represent, describe and compare transformations (G.CO.2, G.CO.5)</b>	<p>Can extend thinking beyond the standard, including tasks that may involve one of the following:</p> <ul style="list-style-type: none"> <li>• Designing</li> <li>• Connecting</li> <li>• Synthesizing</li> <li>• Applying</li> <li>• Justifying</li> <li>• Critiquing</li> <li>• Analyzing</li> <li>• Creating</li> <li>• Proving</li> </ul>	<p>Draw <b>and</b> describe transformations of reflections, rotations, translations, and combinations of these, including mapping a figure onto another.</p> <p>Describe reflections, translations, <b>and rotations</b> as functions that take points on the plane as inputs and give other points as outputs</p> <p><b>Compare</b> transformations that preserve distance and angles to those that do not</p>	<p>Draw <b>or</b> describe transformations of reflections, <b>rotations</b>, translations, <b>and a combination of these</b>, including mapping a figure onto another.</p> <p><b>Describe</b> reflections and translations as functions that take points on the plane as inputs and give other points as outputs</p> <p><b>Describe</b> transformations that preserve distance and angles to those that do not</p>	<p>Draw <b>and</b> describe a singular transformation of reflections and translations, including mapping a figure onto another.</p> <p>Given a function rule for reflections and translations, <b>identify the outputs</b></p> <p><b>Identify</b> transformations that preserve distance and angles to those that do not</p>	<p>Little evidence of reasoning or application to solve the problem</p> <p>Does not meet the criteria in a level 1</p>
<b>Describe symmetry (G.CO.3)</b>		<p>Describe <b>and</b> illustrate rotations and reflections of a rectangle, parallelogram, trapezoid, or regular polygon that carry each figure onto itself.</p>	<p>Describe <b>or</b> illustrate rotations <b>and</b> reflections of a rectangle, parallelogram, trapezoid, or regular polygon that carry each figure onto itself.</p>	<p>Describe <b>or</b> illustrate rotations <b>or</b> reflections of a rectangle, parallelogram, trapezoid, or regular polygon that carry each figure onto itself.</p>	
<b>Develop definitions of transformations (G.CO.4)</b>		<p>Develop the definition <b>of all the terms</b> rotations, reflections and translations in terms of:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular lines</li> <li>• Parallel lines</li> <li>• Line segments.</li> </ul>	<p>Develop the definition <b>for 4 of the terms</b> rotations, reflections and translations in terms of:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular lines</li> <li>• Parallel lines</li> <li>• Line segments.</li> </ul>	<p>Develop the definition <b>for 2 of the terms</b> rotations, reflections and translations in terms of:</p> <ul style="list-style-type: none"> <li>• Angles</li> <li>• Circles</li> <li>• Perpendicular lines</li> <li>• Parallel lines</li> <li>• Line segments.</li> </ul>	

G.CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

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.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

G.CO.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

## Geometric Transformations

### 2.2 Investigate and apply congruence definitions

	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
<p><b>Predict and decide congruency (G.CO.6)</b></p> <p><b>Corresponding sides and angles (G.CO.7)</b></p>	<p>Can extend thinking beyond the standard, including tasks that may involve one of the following:</p> <ul style="list-style-type: none"> <li>• Designing</li> <li>• Connecting</li> <li>• Synthesizing</li> <li>• Applying</li> <li>• Justifying</li> <li>• Critiquing</li> <li>• Analyzing</li> <li>• Creating</li> <li>• Proving</li> </ul>	<p>Use descriptions of rigid motions to <b>predict</b> the effect of a rigid motions on a figure</p> <p>Use the definition of congruence in terms of rigid motions to:</p> <ul style="list-style-type: none"> <li>• decide if two given figures are congruent</li> <li>• <b>prove</b> that corresponding sides are congruent and corresponding angles are congruent in a pair of congruent triangles</li> </ul>	<p>Use descriptions of rigid motions to <b>show</b> the effect of a rigid motions on a figure</p> <p>Use the definition of congruence in terms of rigid motions to:</p> <ul style="list-style-type: none"> <li>• decide if two given figures are congruent</li> <li>• <b>show</b> that corresponding sides are congruent and corresponding angles are congruent in a pair of congruent triangles</li> </ul>	<p>Use descriptions of rigid motions to <b>identify</b> the effect of a rigid motions on a figure</p> <p>Use the definition of congruence in terms of rigid motions to:</p> <ul style="list-style-type: none"> <li>• decide if two given figures are congruent</li> <li>• <b>identify</b> that corresponding sides are congruent and corresponding angles are congruent in a pair of congruent triangles</li> </ul>	<p>Little evidence of reasoning or application to solve the problem</p> <p>Does not meet the criteria in a level 1</p>

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.