

Build on student experience with rigid motions from earlier grades (G.CO.1-5)	
Standard I.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.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment. • Use prior experience with point, line, distance along a line, and distance around a circular arc to define angle, circle, perpendicular line, and line segment. • Demonstrate mathematical notation for each term. 	
Related Standards: Current Course	Related Standards: Future Courses
Most Geometry standards, I.G.CO.12 , I.G.CO.13	II.G.CO.9 , II.G.CO.10 , II.G.CO.11

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> • Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) • Recognize angles as geometric shapes formed wherever two rays share a common endpoint (4.MD.5) • Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) • Include the use of coordinates and absolute value to find horizontal and vertical distances (6.NS.8) • Apply and use the Pythagorean Theorem to find distance (8.G.8)
Academic Vocabulary
angle, circle, perpendicular line, parallel line, line segment, distance, arc
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Build on student experience with rigid motions from earlier grades (G.CO.1-5)	
Standard I.G.CO.2: Represent transformations in the plane using, for example, 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).	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Represent reflections, rotations and translations using a variety of media. • Compare and contrast rigid and non-rigid transformations. • Understand transformations as functions that take points in the plane as inputs and give other points as outputs. 	
Related Standards: Current Course	Related Standards: Future Courses
Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.IF.1 , I.F.IF.2 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , Prove Geometric Theorems

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> • Identify different types of transformations (8.G.1) • Understand definition of function (8.F.1 and I.F.IF.1) • Describe effects of transformations using coordinates (rotations, reflections, translations, and dilations) (8.G.3)
Academic Vocabulary
plane, transformation, reflection, rotation, translation, preserve, function in terms of input and output
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Build on student experience with rigid motions from earlier grades (G.CO.1-5)	
Standard I.G.CO.3: Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Describe and identify lines of symmetry and points of rotation. Describe rotations and reflections which take a rectangle, parallelogram, trapezoid, or regular polygon onto itself. 	
Related Standards: Current Course	Related Standards: Future Courses
Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.IF.1 , I.F.IF.2 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.6

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Understand properties of rectangle, parallelogram, trapezoid, and regular polygons such as angle measures and side lengths (3.G.1) Understand lines of symmetry (4.G.3) Classify two dimensional figures by presence or absence of parallel or perpendicular lines (4.G.2) and other properties (5.G.4) Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3)
Academic Vocabulary
rectangle, parallelogram, trapezoid, regular polygon, rotation, reflection, symmetry
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Build on student experience with rigid motions from earlier grades (G.CO.1-5)	
Standard I.G.CO.4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Use precise definitions of angles, circles, perpendicular lines, parallel lines, and line segments to develop definitions of rotations, reflections, and translations. 	
Related Standards: Current Course	Related Standards: Future Courses
Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.IF.1 , I.F.IF.2 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.6

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Recognize shapes having a given number of angles (2.G.1) and angles are formed wherever two rays share a common endpoint (4.MD.5) Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3) Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
angle, circle, perpendicular lines, parallel lines, line segment, rotation, reflection, translation
Possible curriculum resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Build on student experience with rigid motions from earlier grades (G.CO.1-5)	
<p>Standard I.G.CO.5: Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, for example, graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. Point out the basis of rigid motions in geometric concepts, for example, 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.</p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Draw a transformed figure by performing rotations, reflections, and translations using a variety of methods. • Identify a sequence of transformations that will carry a given figure to another. • Understand and use rigid motions, including recognizing that translations move points a specified distance along a line parallel to a specified line and that rotations move objects along a circular arc with a specified center through a specified angle. 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.IF.1 , I.F.IF.2 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.6

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> • Recognize shapes having a given number of angles (2.G.1) and angles are formed wherever two rays share a common endpoint (4.MD.5) • Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) • Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) • Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) • Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3) • Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
rotation, reflection, translation
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Understand congruence in terms of rigid motions. Rigid motions are at the foundation of the definition of congruence. Reason from the basic properties of rigid motions (that they preserve distance and angle), which are assumed without proof. Rigid motions and their assumed properties	
Standard I.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 whether they are congruent.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Transform figures using geometric descriptions of rigid motions. • Predict the effect of rotating, reflecting or translating a given figure using prior experience with rigid motions. • Justify the congruence of two figures using properties of rigid motions. 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.6

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> • Recognize shapes having a given number of angles (2.G.1) and angles are formed wherever two rays share a common endpoint (4.MD.5) • Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) • Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) • Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) • Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3) • Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
rigid motion, congruent, rotate, translate, reflect
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Understand congruence in terms of rigid motions. Rigid motions are at the foundation of the definition of congruence. Reason from the basic properties of rigid motions (that they preserve distance and angle), which are assumed without proof. Rigid motions and their assumed properties	
Standard I.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.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Identify corresponding parts of two triangles. Show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent (CPCTC). 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.4 , II.G.GPE.6 , III.F.TF standards.

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> Identify corresponding parts of geometric figures (7.G.1 and 7.G.2) Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3) Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
if and only if (iff), corresponding, rigid motion, congruent
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Understand congruence in terms of rigid motions. Rigid motions are at the foundation of the definition of congruence. Reason from the basic properties of rigid motions (that they preserve distance and angle), which are assumed without proof. Rigid motions and their assumed properties can be used to establish the usual triangle congruence criteria, which can then be used to prove other	
Standard I.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.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Identify the minimum conditions necessary for triangle congruence (ASA, SAS, and SSS). • Understand, explain, and demonstrate why ASA, SAS, or SSS are sufficient to show congruence. • Understand, explain, and demonstrate why SSA and AAA are not sufficient to show congruence. • Explain the connection between ASA and AAS congruence theorems. 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.GPE.4 , II.G.GPE.6 , III.F.TF standards

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> • Identify corresponding parts of geometric figures (7.G.1 and 7.G.2) • Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) • Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) • Observe orientation of a figure is preserved with rotations and translations, but not with reflections (8.G.3) • Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1) • Use 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 (I.G.CO.7)
Academic Vocabulary
ASA, SAS, SSS, AAA, SSA, included angle, included side, corresponding parts
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Make geometric constructions (G.CO.12-13)	
Standard I.G.CO.12: Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Emphasize the ability to formalize and defend how these constructions result in the desired objects. For example, copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Perform the following constructions using a variety of tools and methods: copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line. • Explain why these constructions result in the desired objects. • Modify an already created construction to build other constructions. Recognize that constructions develop from one another. 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , II.G.SRT.1 , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.SRT.8 , II.G.C.1 , II.G.GPE.4 , II.G.GPE.6 , III.F.TF standards

Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> • Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) • Draw (using various media) geometric shapes with given conditions (7.G.2) • Draw polygons in coordinate plane (6.G.3) • Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) • Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) • Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
segment, angle, bisect, perpendicular, parallel, construction
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537

Make geometric constructions (G.CO.12-13)	
Standard I.G.CO.13: Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Construct an equilateral triangle, a square, and a regular hexagon each inscribed in a circle. Modify an already created construction to build other constructions. Recognize that constructions develop from one another. 	
Related Standards: Current Course	Related Standards: Future Courses
All Geometry congruence standards (G.CO), I.G.GPE.4 , I.G.GPE.5 , I.G.GPE.7 , I.F.BF.3	II.G.CO.9 , II.G.CO.10 , II.G.CO.11 , All circle standards II.G.C , II.G.GPE.1 , II.G.GPE.4 , II.G.GPE.6

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Understand the properties of regular polygons. Construct congruent segments and perpendicular lines. Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines (4.G.1) Draw (using various media) geometric shapes with given conditions (7.G.2) Draw polygons in coordinate plane (6.G.3) Verify experimentally the properties of rigid transformations, showing that lines are taken to lines, line segments are taken to line segments, angles are taken to angles, and parallel lines are taken to parallel lines (8.G.1 a, b, c) Describe a sequence of rotations, reflections, and translations that exhibits congruence between two figures (8.G.2) Know precise definitions and properties of angles, circles, perpendicular lines, parallel lines, and line segments (I.G.CO.1)
Academic Vocabulary
equilateral triangle, square, regular hexagon, inscribed, construction
Resources
Curriculum Resources : http://www.uen.org/core/core.do?courseNum=5620#71537