

BVSD January 2012 (Colorado Academic Standards December 2010)			
Content Area: Mathematics			
4. Shape, Dimension, and Geometric Relationships			
Grade Level Expectation: HIGH SCHOOL			
Concepts and skills students master:			
1. Objects in the plane can be transformed, and those transformations can be described and analyzed mathematically.			
Evidence Outcomes	2012 BVSD Course	2009 BVSD Course name	Notes
a. Experiment with transformations in the plane. (CCSS: G-CO)			
i. State 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. (CCSS: G-CO.1)	Geometry	Geometry	
ii. Represent transformations in the plane using ¹ appropriate tools. (CCSS: G-CO.2)	Geometry	Geometry	¹ e.g., Transparencies and geometry software. (CCSS: G-CO.2)
iii. Describe transformations as functions that take points in the plane as inputs and give other points as outputs. (CCSS: G-CO.2)	Geometry	Geometry	
iv. Compare transformations that preserve distance and angle to those that do not. ² (CCSS: G-CO.2)	Geometry	Geometry	² e.g., Translation versus horizontal stretch. (CCSS: G-CO.2)
v. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself. (CCSS: G-CO.3)	Geometry	Geometry	
vi. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. (CCSS: G-CO.4)	Geometry	Geometry	
vii. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using appropriate tools. ³ (CCSS: G-CO.5)	Geometry	Geometry	³ e.g., Graph paper, tracing paper, or geometry software. (CCSS: G-CO.5)
viii. Specify a sequence of transformations that will carry a given figure onto another. (CCSS: G-CO.5)	Geometry	Geometry	
b. Understand congruence in terms of rigid motions. (CCSS: G-CO)			
i. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. (CCSS: G-CO.6)	Geometry	Geometry	
ii. Given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent. (CCSS: G-CO.6)	Geometry	Geometry	
iii. 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. (CCSS: G-CO.7)	Geometry	Geometry	

Boulder Valley School District
High School Standards Course Transition Document

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iv.	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. (CCSS: G-CO.8)	Geometry	Geometry	
c. Prove geometric theorems. (CCSS: G-CO)				
i.	Prove theorems about lines and angles. ⁴ (CCSS: G-CO.9)	Geometry	Geometry	⁴ Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints. (CCSS: G-CO.9)
ii.	Prove theorems about triangles. ⁵ (CCSS: G-CO.10)	Geometry	Geometry	⁵ Theorems include: measures of interior angles of a triangle sum to 180° ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. (CCSS: G-CO.10)
iii.	Prove theorems about parallelograms. ⁶ (CCSS: G-CO.11)	Geometry	Geometry	⁶ Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals. (CCSS: G-CO.11)
d. Make geometric constructions. (CCSS: G-CO)				
i.	Make formal geometric constructions ⁷ with a variety of tools and methods. ⁸ (CCSS: G-CO.12)	Geometry	Geometry	⁷ 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. (CCSS: G-CO.12) ⁸ Compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc. (CCSS: G-CO.12)
ii.	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle. (CCSS: G-CO.13)	Geometry	Geometry	