



National Center and State Collaborative

Mathematics Instructional Families – Geometry

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The National Center and State Collaborative (NCSC) is applying the lessons learned from the past decade of research on alternate assessments based on alternate achievement standards (AA-AAS) to develop a multi-state comprehensive assessment system for students with significant cognitive disabilities. The project draws on a strong research base to develop an AA-AAS that is built from the ground up on powerful validity arguments linked to clear learning outcomes and defensible assessment results, to complement the work of the Race to the Top Common State Assessment Program (RTTA) consortia.

Our long-term goal is to ensure that students with significant cognitive disabilities achieve increasingly higher academic outcomes and leave high school ready for post-secondary options. A well-designed summative assessment alone is insufficient to achieve that goal. Thus, NCSC is developing a full system intended to support educators, which includes formative assessment tools and strategies, professional development on appropriate interim uses of data for progress monitoring, and management systems to ease the burdens of administration and documentation. All partners share a commitment to the research-to-practice focus of the project and the development of a comprehensive model of curriculum, instruction, assessment, and supportive professional development. These supports will improve the alignment of the entire system and strengthen the validity of inferences of the system of assessments.



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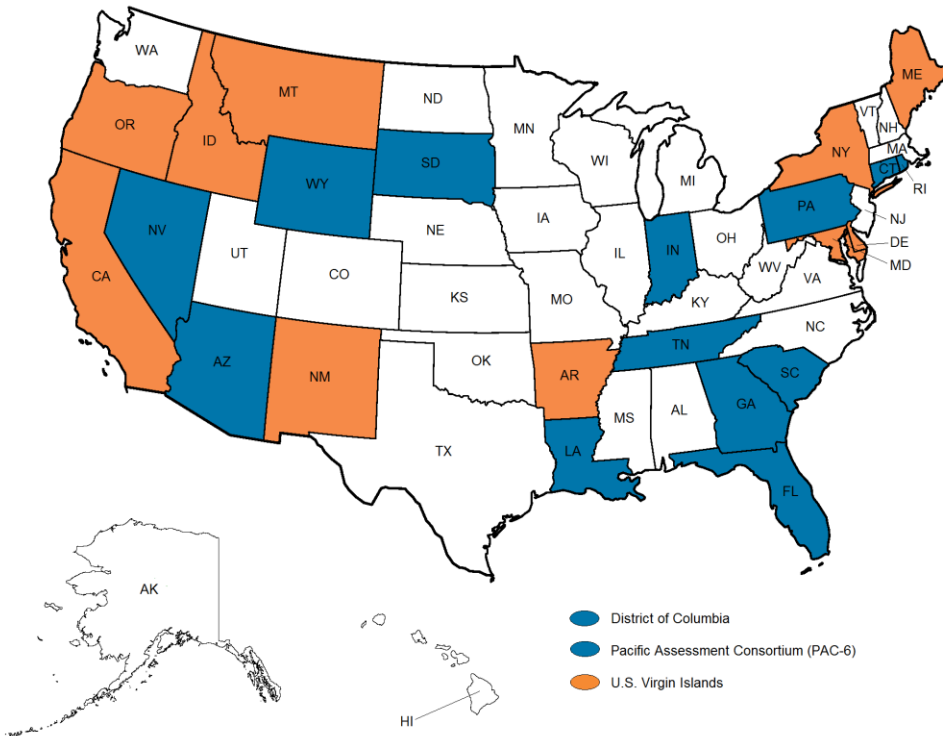
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NCSC is a collaborative of 16 states and five organizations.

The states include (shown in blue on map): Arizona, Connecticut, District of Columbia, Florida, Georgia, Indiana, Louisiana, Nevada, Pacific Assessment Consortium (PAC-6)¹, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, and Wyoming.

Tier II states are partners in curriculum, instruction, and professional development implementation but are not part of the assessment development work. They are (shown in orange on map): Arkansas, California, Delaware, Idaho, Maine, Maryland, Montana, New Mexico, New York, Oregon, and U.S. Virgin Islands.



*Core partner states are blue in color and Tier II states are orange in color.

¹ The Pacific Assessment Consortium (including the entities of American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Republic of Palau, and Republic of the Marshall Islands) partner with NCSC as one state, led by the University of Guam Center for Excellence in Developmental Disabilities Education, Research, and Service (CEDDERS).



National Center and State Collaborative

The five partner organizations include: The National Center on Educational Outcomes (NCEO) at the University of Minnesota, The National Center for the Improvement of Educational Assessment (Center for Assessment), The University of North Carolina at Charlotte, The University of Kentucky, and edCount, LLC.



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View of Learning Targets and Families across Grades

View of Learning Targets, Families, and CCCs by Grade-band

Overview of CCCs: Geometry

(K-4) Elementary School Learning Targets

E.GM-1 Recognize that two-and three-dimensional shapes have particular attributes:

- Describe and compare objects and figures based on reasoning and the properties and attributes of the shapes;
- Compose, decompose, and draw figures based on spatial reasoning and the properties and attributes of the shapes;
- Apply concepts of symmetry.

Recognizing, Describing, Naming and Classifying		Constructing/Building		Geometric Problems		Transforming and Graphing			
K		Grade 1		Grade 2		Grade 3		Grade 4	
K.GM.1a1 Recognize two-dimensional shapes (e.g., circle, square, triangle, rectangle) regardless of orientation or size K.G.2		1.GM.1b1 Identify shapes as two-dimensional (lying flat) or three-dimensional (solid) K.G.3		2.GM.1a4 Identify two-dimensional shapes such as rhombus, pentagons, hexagons, octagon, ovals, equilateral, isosceles, and scalene triangles 2.G.1		3.GM.1h1 Identify shared attributes of shapes 3.G.1		4.GM.1j1 Recognize a point, line and line segment, rays in two-dimensional figures 4.G.1	
K.GM.1a2 Recognize two-dimensional shapes in environment regardless of orientation or size K.G.1		1.GM.1b2 Distinguish two-dimensional shapes based upon their defining attributes (i.e., size, corners, and points) 1.G.1		2.GM.1b3 Distinguish two- or three-dimensional shapes based upon their attributes (i.e., #of sides, equal or different lengths of sides, # of faces, # of corners) 2.G.1		3.GM.1i1 Partition rectangles into equal parts with equal area 3.G.2		4.GM.1j2 Recognize perpendicular and parallel lines in two-dimensional figures 4.G.1	
K.GM.1a3 Use spatial language (e.g., above, below, etc.) to describe two-dimensional shapes K.G.1		1.GM.1c2 Compose two- and three-- dimensional shapes 1.G.3		2.GM.1d1 Compose three-dimensional shapes 1.G.2				4.GM.1j3 Recognize an angle in two-dimensional figures 4.G.1	
K.GM.1c1 Compose a larger shape from smaller shapes K.G.6		1.GM.1f1 Partition circles and rectangles into two equal parts 1.G.3		2.GM.1e1 Draw two-dimensional shapes with specific attributes 2.G.1				4.GM.1h2 Classify two-dimensional shapes based on attributes (# of angles) 4.G.2	
				2.GM.1f2 Partition circles and rectangles into 2 and 4 equal parts 2.G.3				4.GM.1j4 Categorize angles as right, acute, or obtuse 4.G.2	

(K-4) Elementary School Learning Targets

E.GM-1 Recognize that two-and three-dimensional shapes have particular attributes:

- Describe and compare objects and figures based on reasoning and the properties and attributes of the shapes;
- Compose, decompose, and draw figures based on spatial reasoning and the properties and attributes of the shapes;
- Apply concepts of symmetry.

Recognizing, Describing, Naming and Classifying	Constructing/Building	Geometric Problems	Transforming and Graphing	
K	Grade 1	Grade 2	Grade 3	Grade 4
		2.GM.1f3 Label a partitioned shape (e.g., one whole rectangle was separated into 2 halves, one whole circle was separated into three thirds) 2.G.3		4.GM.1k1 Recognize a line of symmetry in a figure 4.G.3

Overview of CCCs: Geometry

(5-8) Middle School Learning Targets			
M.GM-1 Apply reasoning using properties of two- and three-dimensional shapes to analyze, represent, and model geometric relationships: <ul style="list-style-type: none"> Classify objects based on attributes and properties and solve problems using geometric relationships and properties; Decompose figures into new figures and construct figures with given conditions; Apply concepts of parallel and perpendicular. 			
Recognizing, Describing, Naming and Classifying	Constructing/Establishing a Figure	Geometric Problems	Transforming and Graphing
Grade 5	Grade 6	Grade 7	Grade 8
5.GM.1j1 Recognize parallel and perpendicular lines within the context of two-dimensional figures 4.G.1	6.GM.1d1 Find area of quadrilaterals 6.G.1	7.GM.1h1 Add the area of each face of a prism to find surface area of three-dimensional objects 7.G.6	8.GM.1g1 Recognize congruent and similar figures 8.G.4
5.GM.1a1 Recognize properties of simple plane figures 5.G.3	6.GM.1d2 Find area of triangles 6.G.1	7.GM.1h2 Find the surface area of three-dimensional figures using nets of rectangles or triangles 6.G.4	8.GM.1i1 Identify supplementary angles 7.G.5
5.GM.1b1 Distinguish plane figures by their properties 5.G.4	6.GM.1c4 Locate points on a graph 5.G.1	7.GM.1h3 Find area of plane figures and surface area of solid figures (quadrilaterals) 7.G.6	8.GM.1i2 Identify complimentary angles 7.G.5
5.GM.1c1 Locate the x and y axis on a graph 5.G.1	6.GM.1c5 Use ordered pairs to graph given points 5.G.1	7.GM.1h4 Find area of an equilateral, isosceles, and scalene triangle 7.G.6	8.GM.1i3 Identify adjacent angles 7.G.5
5.GM.1c2 Locate points on a graph 5.G.1	6.GM.1c6 Find coordinate values of points in the context of a situation 5.G.2		8.GM.1i4 Use angle relationships to find the value of a missing angle 7.G.5 8.G.5
5.GM.1c3 Use ordered pairs to graph given points 5.G.1	6.GM.1c7 Use coordinate points to draw polygons 6.G.3		8.GM.1j1 Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem) 8.G.7

(5-8) Middle School Learning Targets

M.GM-1 Apply reasoning using properties of two- and three-dimensional shapes to analyze, represent, and model geometric relationships:

- Classify objects based on attributes and properties and solve problems using geometric relationships and properties;
- Decompose figures into new figures and construct figures with given conditions;
- Apply concepts of parallel and perpendicular.

Recognizing, Describing, Naming and Classifying	Constructing/Establishing a Figure	Geometric Problems	Transforming and Graphing
Grade 5	Grade 6	Grade 7	Grade 8
	6.GM.1c8 Use coordinate points to find the side lengths of polygons that are horizontal or vertical 6.G.3		8.GM.1j2 Find the missing side lengths of a two-dimensional right triangle (Pythagorean Theorem) 8.G.7
			8.GM.1f1 Recognize a rotation, reflection, or translation of a figure 8.G.1
			8.GM.1f2 Identify a rotation, reflection, or translation of a plane figure when given coordinates 8.G.3

Overview of CCCs: Geometry

(9-12) High School Learning Targets		
<p>H.GM-1 Explain solutions using geometric attributes and relationships in diverse contexts:</p> <ul style="list-style-type: none"> Extend understanding of congruence and similarity working with complex figures and situations; Solve problems involving quadrilaterals and triangles; Perform geometric constructions and use informal proofs to describe relationships and transformations. 		
Recognizing, Describing, Naming and Classifying	Constructing/Building	Transforming and Graphing
HS		
<p>H.GM.1b1 Use definitions to demonstrate congruency and similarity in figures G.CO.7 G.SRT.2 8.G.2</p>		
<p>H.ME.2b2 Determine if 2 figures are similar G.SRT.2</p>		
<p>H.ME.2b3 Describe or select why two figures are or are not similar G.SRT.2</p>		
<p>H.GM.1e1 Make formal geometric constructions with a variety of tools and methods G.CO.12</p>		
<p>H.GM.1a1 Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem) 8.G.7</p>		
<p>H.GM.1a2 Find the missing side lengths of a two-dimensional right triangle (Pythagorean Theorem) N.Q.1</p>		
<p>H.GM.1c1 Construct, draw or recognize a figure after its rotation, reflection, or translation G.CO.3</p>		
<p>H.GM.1d1 Use the reflections, rotations, or translations in the coordinate plane to solve problems with right angles 8.G.1</p>		

View by Instructional Families and CCSS Domains

Instructional Families: Geometry

CCSS Domain Name: Geometry

Recognizing, Describing, Naming and Classifying	Constructing - Building	Constructing - Establishing a Figure	Geometric Problems	Transforming and Graphing
K.GM.1a1 Recognize two-dimensional shapes (e.g., circle, square, triangle, rectangle) regardless of orientation or size <i>K.G.2</i>	K.GM.1c1 Compose a larger shape from smaller shapes <i>K.G.6</i>	8.GM.1i4 Use angle relationships to find the value of a missing angle <i>7.G.5</i> <i>8.G.5</i>	1.GM.1f1 Partition circles and rectangles into two equal parts <i>1.G.3</i>	4.GM.1k1 Recognize a line of symmetry in a figure <i>4.G.3</i>
K.GM.1a2 Recognize two-dimensional shapes in environment regardless of orientation of size <i>K.G.1</i>	1.GM.1c2 Compose two- and three-- dimensional shapes	8.GM.1j1 Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem) <i>8.G.7</i>	2.GM.1f2 Partition circles and rectangles into 2 and 4 equal parts <i>2.G.3</i>	5.GM.1c1 Locate the x and y axis on a graph <i>5.G.1</i>
K.GM.1a3 Use spatial language (e.g., above, below, etc.) to describe two-dimensional shapes <i>K.G.1</i>	2.GM.1d1 Compose three-dimensional shapes <i>1.G.2</i>	8.GM.1j2 Find the missing side lengths of a two-dimensional right triangle (Pythagorean Theorem) <i>8.G.7</i>	2. GM.1f3 Label a partitioned shape (e.g., one whole rectangle was separated into 2 halves, one whole circle was separated into three thirds) <i>2.G.3</i>	5.GM.1c2 Locate points on a graph <i>5.G.1</i>
	2.GM.1e1 Draw two-dimensional shapes with specific attributes <i>2.G.1</i>			5.GM.1c3 Use ordered pairs to graph given points <i>5.G.1</i>
1.GM.1b1 Identify shapes as two-dimensional (lying flat) or three-dimensional (solid) <i>K.G.3</i>		H.GM.1e1 Make formal geometric constructions with a variety of tools and methods <i>G.CO.12</i>	3.GM.1i1 Partition rectangles into equal parts with equal area <i>3.G.2</i>	6.GM.1c4 Locate points on a graph <i>5.G.1</i>
				6.GM.1c5 Use ordered pairs to graph given points <i>5.G.1</i>
1.GM.1b2 Distinguish two-dimensional shapes based upon their defining attributes (i.e., size, corners, and points) <i>1.G.1</i>		H.GM.1a1 Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem) <i>8.G.7</i>	6.GM.1d1 Find area of quadrilaterals <i>6.G.1</i>	6.GM.1c6 Find coordinate values of points in the context of a situation <i>5.G.2</i>

CCSS Domain Name: Geometry

Recognizing, Describing, Naming and Classifying	Constructing - Building	Constructing - Establishing a Figure	Geometric Problems	Transforming and Graphing
			6.GM.1d2 Find area of triangles 6.G.1	6.GM.1c7 Use coordinate points to draw polygons 6.G.3
2.GM.1a4 Identify two-dimensional shapes such as rhombus, pentagons, hexagons, octagon, ovals, equilateral, isosceles, and scalene triangles 2.G.1		H.GM.1a2 Find the missing side lengths of a two-dimensional right triangle (Pythagorean Theorem) N.Q.1	7.GM.1h1 Add the area of each face of a prism to find surface area of three-dimensional objects 7.G.6	6.GM.1c8 Use coordinate points to find the side lengths of polygons that are horizontal or vertical 6.G.3
2.GM.1b3 Distinguish two- or three- dimensional shapes based upon their attributes (i.e., # of sides, equal or different lengths of sides, # of faces, # of corners) 2.G.1			7.GM.1h2 Find the surface area of three-dimensional figures using nets of rectangles or triangles 6.G.4	8.GM.1f1 Recognize a rotation, reflection, or translation of a figure 8.G.1
3.GM.1h1 Identify shared attributes of shapes 3.G.1			7.GM.1h3 Find area of plane figures and surface area of solid figures (quadrilaterals) 7.G.6	8.GM.1f2 Identify a rotation, reflection, or translation of a plane figure when given coordinates 8.G.3
4.GM.1j1 Recognize a point, line and line segment, rays in two-dimensional figures 4.G.1			7.GM.1h4 Find area of an equilateral, isosceles, and scalene triangle 7.G.6	H.GM.1c1 Construct, draw or recognize a figure after its rotation, reflection, or translation G.CO.3
4.GM.1j2 Recognize perpendicular and parallel lines in two-dimensional figures 4.G.1				H.GM.1d1 Use the reflections, rotations, or translations in the coordinate plane to solve problems with right angles 8.G.1

CCSS Domain Name: Geometry

Recognizing, Describing, Naming and Classifying	Constructing - Building	Constructing - Establishing a Figure	Geometric Problems	Transforming and Graphing
4.GM.1j3 Recognize an angle in two-dimensional figures 4.G.1				
4.GM.1h2 Classify two-dimensional shapes based on attributes (# of angles) 4.G.2				
4.GM.1j4 Categorize angles as right, acute, or obtuse 4.G.2				
5.GM.1j1 Recognize parallel and perpendicular lines within the context of two-dimensional figures 4.G.1				
5.GM.1a1 Recognize properties of simple plane figures 5.G.3				
5.GM.1b1 Distinguish plane figures by their properties 5.G.4				
8.GM.1g1 Recognize congruent and similar figures 8.G.4				
8.GM.1i1 Identify supplementary angles 7.G.5				
8.GM.1i2 Identify complimentary angles 7.G.5				

CCSS Domain Name: Geometry

Recognizing, Describing, Naming and Classifying	Constructing - Building	Constructing - Establishing a Figure	Geometric Problems	Transforming and Graphing
8.GM.1i3 Identify adjacent angles 7.G.5				
H.GM.1b1 Use definitions to demonstrate congruency and similarity in figures G.CO.7 G.SRT.2 8.G.2				
H.ME.2b2 Determine if 2 figures are similar G.SRT.2				
H.ME.2b3 Describe or select why two figures are or are not similar G.SRT.2				