Unpacked South Dakota State Mathematics Standards

Purpose: *In order for students to have the best chance of success, standards, assessment, curriculum resources, and instruction must be aligned in focus, coherence, and rigor. Unpacked standards documents are intended to help align instruction to the focus, coherence, and rigor of the South Dakota State Mathematics Standards. The standards have been organized in clusters as they are not so much built from topics, but rather woven out of progressions. Not all content in a given grade is emphasized equally in the mathematics standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting standards will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.*

<table>
<tr><td colspan="2">Domain: Geometry</td><td>Grade Level: 4</td></tr>
<tr><td colspan="3">4.G.A Cluster: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

This cluster focuses on how learners will identify, describe, and draw points, lines, line segments, rays, angles, and perpendicular and parallel lines and identify these attributes in two-dimensional shapes. Learners will expand their knowledge of properties of two-dimensional objects and the use of them to solve problems using symmetry.</td></tr>
<tr><td colspan="3">**This is an ADDITIONAL cluster. Students should spend the large majority of their time (65-85%) on the major work of the grade. Supporting work and, where appropriate, additional work should be connected to and engage students in the major work of the grade.

4.G.1 - Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4.G.2 - Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize, and identify categories of right, acute, and obtuse triangles.

4.G.3 - Recognize and draw lines of symmetry for two-dimensional figures.</td></tr>
<tr><td colspan="3">Aspects of Rigor: (Conceptual, Procedural, and/or Application)</td></tr>
<tr><td>Conceptual Understanding</td><td>Procedural Fluency</td><td>Application</td></tr>
<tr><td>Understand points, lines, line segments, rays, angles, and perpendicular and parallel lines.
(4.G.1)</td><td>Identify and draw attributes in two-dimensional figures.
(4.G.1)</td><td></td></tr>
<tr><td></td><td>Classify two-dimensional figures based on similar attributes.
(4.G.2)</td><td></td></tr>
<tr><td>Understand symmetry divides an object in half and the two parts match exactly.
(4.G.3)</td><td>Identify lines of symmetry on a variety of shapes.
(4.G.3)</td><td></td></tr>
<tr><td colspan="3">Enacting the Mathematical Practices - Evidence of Students Engaging in the Practices</td></tr>
<tr><td colspan="3">1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.</td></tr>
</table>

4. **Model with mathematics.**
    - Use two-dimensional shapes and spatial reasoning to solve problems involving symmetry
5. **Use appropriate tools strategically.**
    - Draw lines, points, segments, angles, and perpendicular and parallel lines using both technological tools and hands on tools, such as dot paper, geoboards, paper and pencil, to deepen their understanding of geometry.
6. **Attend to precision.**
    - Talk about and use geometric vocabulary to analyze and describe lines, angles, and symmetrical shapes.
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

Vertical and Horizontal Coherence and Learning Progressions

Previous Learning Connections	***Current Learning Connections***	***Future Learning Connections***
Learners recognized attributes of quadrilaterals, including parallel lines and right angles.**(3.G.1)** Learners identified and distinguished between attributes and non-attributes of trapezoids, squares, rectangles, circles, hexagons, rhombuses and parallelograms and had to build and draw shapes that possess these attributes.**(2.G.1)** Learners partitioned shapes into halves.**(2.G.3, 2.G.3)**	Learners recognize angles as geometric figures that form wherever two rays share a common endpoint, and understand concepts of angle measurement.**(4.MD.5)**	Learners understand attributes belong to a category of two-dimensional figures belong to subcategories of that category.**(5.G.3)** Learners classify two-dimensional figures based on properties.**(5.G.4)** Learners understand reflection, rotation, and translation.**(8.G.2)**

Vocabulary *(Key Terms Used by Teachers and Students in this Cluster):*

- Acute angle
- Acute triangle
- Angle
- Line
- Line of symmetry
- Line segment
- Obtuse angle
- Obtuse triangle
- Parallel lines
- Perpendicular lines
- Point
- Ray
- Right angle
- Right triangle
- Symmetry
- Two-dimensional figure
- Intersecting line

Relevance, Explanations, and Examples:

Learners need to develop awareness/vocabulary for points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines, it is more important that they construct examples using these concepts. For example, drawing angles and triangles that are acute, obtuse, and right, will help learners form a deeper understanding of the concepts.

right angle

acute angle

obtuse angle

straight angle

segment

line

ray

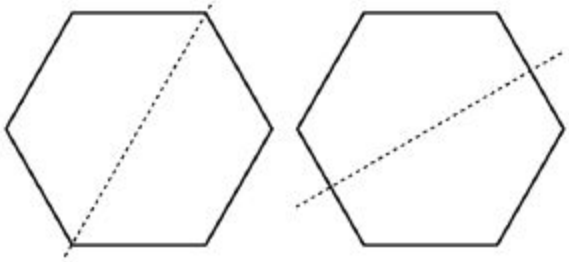
parallel lines

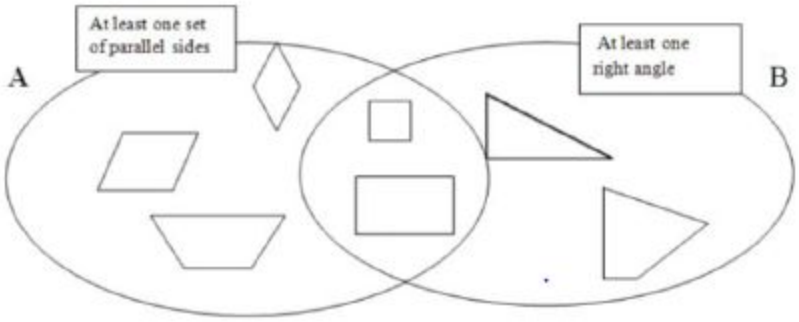
perpendicular lines

intersecting lines

How many acute, obtuse, and right angles are in this shape?

Lines of Symmetry





	Closed shape	4 sides	Opposite sides parallel	Perpendicular line segments	Opposite sides congruent	All sides congruent	Right angle(s)	Acute angle(s)	Obtuse angle(s)
									
									
									
									

Achievement Level Descriptors	
Cluster: **Draw and identify lines and angles, and classify shapes by properties of their lines and angles.**	
Concepts and Procedures	***Level 1:*** Students should be able to draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; recognize a line of symmetry for a familiar two-dimensional figure; and identify right triangles.
	Level 2: Students should be able to identify points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines in two-dimensional figures and recognize all lines of symmetry in unfamiliar two-dimensional figures.
	Level 3: Students should be able to draw lines of symmetry for two-dimensional figures, classify two-dimensional figures based on parallel or perpendicular lines or angles of specified lines, and recognize right triangles as a category.
	Level 4: