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.

Domain: Geometry	Grade Level: 1

1.G.A Cluster: Reason with shapes and their attributes.

Learners describe, draw and classify shapes using defining attributes. They build two and three dimensional shapes and create composite shapes. When working with shapes partitioned into two and four equal parts, learners are able to describe those shapes using words like halves, quarters, and fourths.

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.*

1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

1.G.2 Compose and identify regular and irregular two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) and compose three-dimensional shapes (cubes, spheres, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to master formal names such as "right rectangular prism.")

1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Aspects of Rigor: (Conceptual, Procedural, and/or Application)

Conceptual Understanding	*Procedural Fluency*	*Application*
Understand that defining attributes are always present Understand that non-defining attributes may change **(1.G.1)**		Build and draw shapes that have defining attributes **(1.G.1)**
Notice smaller shapes within a larger shape and understand the part-whole relationship **(1.G.2)**	Identifying two and three dimensional shapes **(1.G.2)**	Compose two and three dimensional shapes Create composite shapes from the two and three dimensional shapes learners compose **(1.G.2)**
Understand equal parts Understand the word halves is used to describe two equal shares that compose	Partition circles and rectangles into two and four equal shares (**1.G.3**)	

the whole (meaning there are two parts and those two parts must be equal in size) Understand the words fourths and quarters are used to describe four equal shares that compose the whole (meaning there are four parts and those four parts must be equal in size) Reason that as the number of equal shares increases, the size of the equal shares decreases **(1.G.3)**		

Enacting the Mathematical Practices - Evidence of Students Engaging in the Practices

1. **Make sense of problems and persevere in solving them.**
   - Use understanding of measurement, congruence, and symmetry to build 2D and 3D composite shapes
   - Recognize created composite shapes as a combination of single shapes
   - Solve shape puzzles
2. **Reason abstractly and quantitatively.**
   - Understanding that the original shape (part) makes a composite shape (whole)
3. **Construct viable arguments and critique the reasoning of others.**
   - Explain reasoning while sorting shapes based on shape attributes
4. **Model with mathematics.**
   - Use manipulatives to build composite shapes
5. **Use appropriate tools strategically.**
   - Use manipulatives to build composite shapes
6. **Attend to precision.**
   - Build and draw shapes
   - Compose and identify regular and irregular two-dimensional shapes
   - Partition shapes into equal parts
   - Strive to use mathematical language when defining, sorting and partitioning shapes
7. **Look for and make use of structure.**
   - Identify similarities and differences based on defining and non-defining attributes
8. **Look for and express regularity in repeated reasoning.**
   - Identify similarities and differences based on defining and non-defining attributes

Vertical and Horizontal Coherence and Learning Progressions

Previous Learning Connections	*Current Learning Connections*	*Future Learning Connections*
Kindergarten learners can name regular shapes (squares, circles, rectangles, triangles, hexagons, cubes, cones, cylinders and spheres) and analyze and compare these shapes using formal and informal language. They can compose simple shapes to form larger shapes **(K.G.1-3)**	First grade learners are telling and writing time to the hour and to the half hour. They continue to think about equality, including the idea of equal shares **(1.MD.3)** When composing and decomposing 2D and 3D shapes, first grade learners focus on what shapes can be used to help create a new shape (composite shape) First grade learners are partitioning circles and rectangles into two and four equal parts (halves, fourths and quarters)	Second grade learners will continue to work with shapes, drawing and analyzing shapes with a given number of angles and faces. They identify triangles, quadrilaterals, hexagons and cubes **(2.G.1)** Second grade learners continue to work on partitioning shapes into equal shares, adding in thirds. They deepen their understanding of part and whole relationship by stating that a whole can be made up of three thirds, four fourths, etc and that the equal shares of identical

		wholes do not have to be the same shape **(2.G.2-3)**

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

- Attributes
- Composite shape
- Two-dimensional shapes (square, rectangle, triangle, trapezoid, half-circles, and quarter-circles)
- Three-dimensional shapes (cubes, spheres, *right rectangular prisms, *right circular cones, *right circular cylinders)
- Half/Halves
- Fourths/Quarters

Relevance, Explanations, and Examples:

NOTE: Shape names with an asterisk (*) listed above in the "Vocabulary" section do not need to be mastered by learners

NOTE: Circles and hexagons are not included in the standards; however, they should be revisited in first grade as they were taught in kindergarten

Defining attributes- attributes that make a shape a shape

Non-defining attributes- attributes that do not matter for naming a shape (ex: color, size, orientation, etc.)

NOTE: The standard uses the language r*egular shape* and *irregular shape*; however, the learners only need to identify the shapes by their names.

2D shape example: Six triangles can be used to make a hexagon (composite shape)
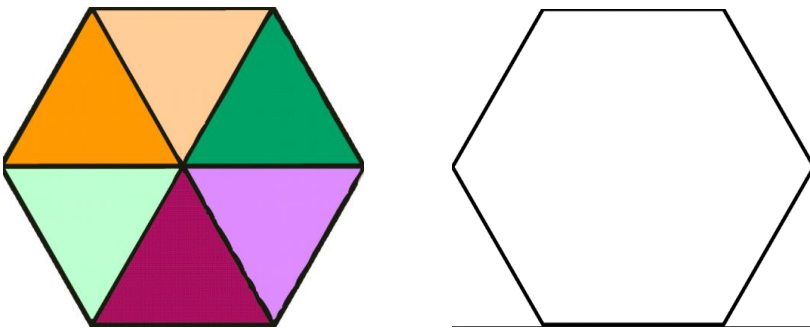
3D shape example: A rectangular prism and a triangular prism create a house (composite shape)