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: 2

2.G.A Cluster: Reason with shapes and attributes.

Learners build understandings of two- and three-dimensional shapes and their properties, and compose and decompose shapes. They develop connections among spatial structures.

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.*

2.G.1 Recognize, identify, and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces; to include triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)

2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.G.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape**.**

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

Conceptual Understanding	*Procedural Fluency*	*Application*
Understand the difference between 2 and 3-dimensional shapes **(2.G.1)** Understand the attributes of and identify shapes by their attributes **(2.G.1)**	List the attributes of 2D and 3D shapes based on defining features **(2.G.1)** Draw shapes with their defining features **(2.G.1)**	
	Partition rectangles into rows and columns **(2.G.2)** Use rows and columns to determine total number of units **(2.G.2)**	
Understand that equal parts is based on equal area, not shape **(2.G.3)** Understand that equal shares can be different shapes within the same whole **(2.G.3)**	Partition a given shape into equal shares **(2.G.3)** Name a share of a given whole and name a given whole as a fraction **(2.G.3)**	

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

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.**
4. **Model with mathematics.**
   - Draw pictures to show specific attributes
   - Partition a given shape into equal shares
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
   - Communicate mathematically by using clear and precise language to describe shapes and their properties
   - Name equal shares using precise language
7. **Look for and make use of structure.**
   - Recognize that arrays are organized in rows and columns
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 reason about shapes. They describe and classify shapes, including drawings, manipulatives and real-world objects, in terms of their geometric attributes **(1.G.1)**. Learners distinguish between defining attributes (sides, vertices) versus non-defining attributes (color, size, orientation) **(1.G.1)**.	Learners apply their knowledge of addition to find the total number of objects arranged in rectangular arrays **(2.OA.4)**.	Learners extend their work with rectangular arrays to the concept of equal groups as multiplication **(3.OA.1)**. Learners build on their foundation of several shape categories to help form relationships among categories and subcategories **(3.G.1)**. Learners will build upon their understanding of fractions to name equal parts using written fraction notation **(3.NF.1, 3.G.2)**.

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

● Two-Dimensional ● Three-Dimensional ● Circle ● Cube ● Hexagon ● Pentagon ● Quadrilateral	● Rectangle ● Square ● Attribute ● Angle ● Face ● Column ● Row	● Partition ● Equal Shares ● Fourths ● Half/Halves ● Thirds ● Whole

Relevance, Explanations, and Examples:

In 2nd grade, learners verbally name fractions, but are not expected to read or to write fraction notation until 3rd grade.

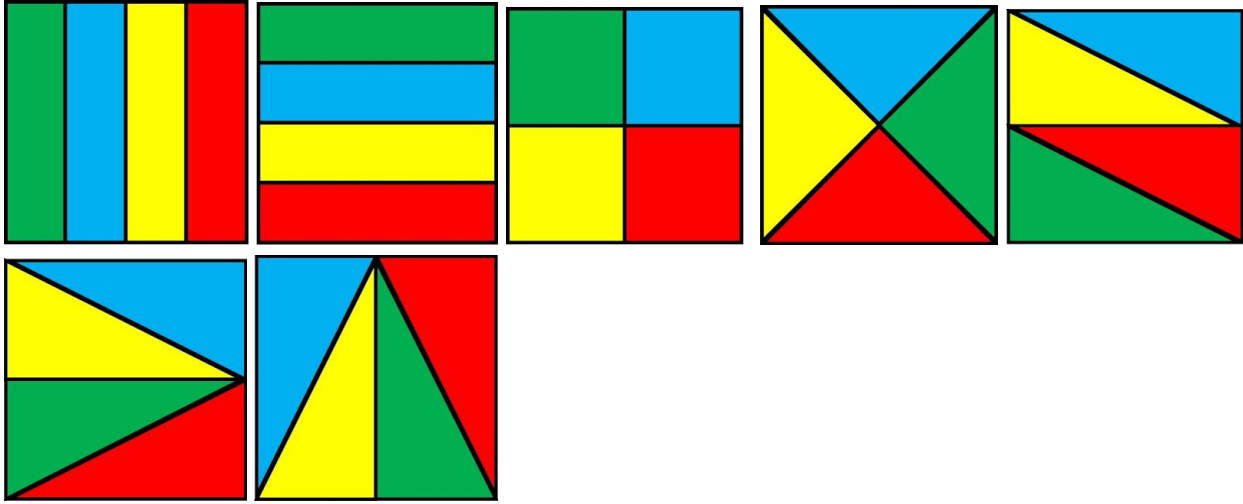Rectangles Partitioned into Fourths:

Image source: http://mathematicsrealm.blogspot.com

One Whole Can Be Named as Two Halves: