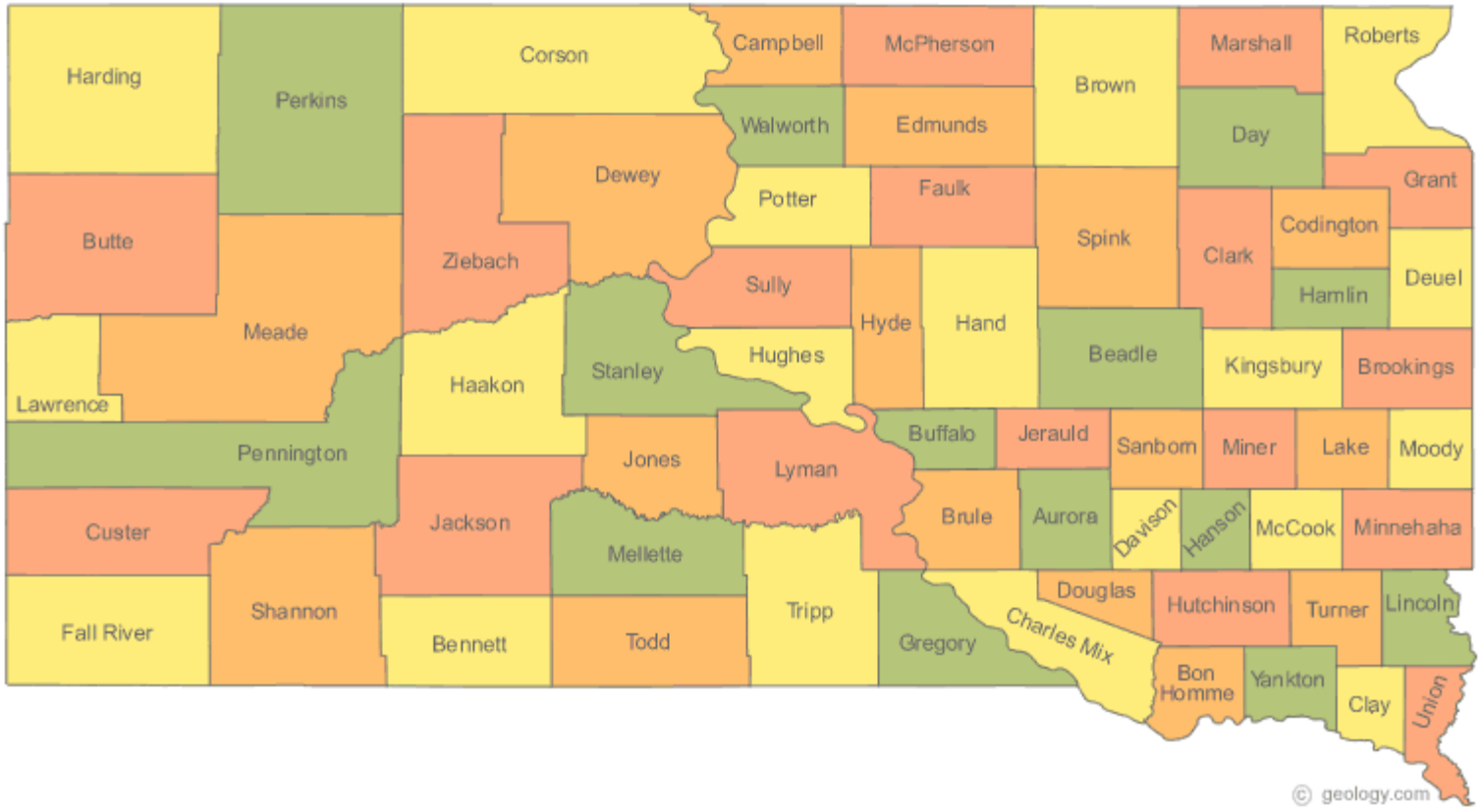
Standards Review Meeting

June 6-7, 2016

Welcome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Davison
Hanson
McCook
Minnehaha
Mellette
Douglas
Hutchinson
Turner
Lincoln
Fall River
Shannon
Tripp
Gregory
Charles Mix
Bennett
Todd
Bon Homme
Yankton
Clay
Union
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Objectives for Today

- Understand the standards review process and its priorities
- Understand and use the Elements of Quality Standards to revise the mathematics standards for South Dakota
- Employ effective strategies to communicate and work with a team

Norms for Today

- Speak with the possibility of being heard and listen with the possibility of being changed.
- Be present, and be your best self.
- Everyone has something to learn. Everyone has expertise to offer.
- We need each other.
- You have the right to ask for help, and the duty to assist.
- Be willing to experience discomfort.
- Expect and accept non-closure.

Participant Role….

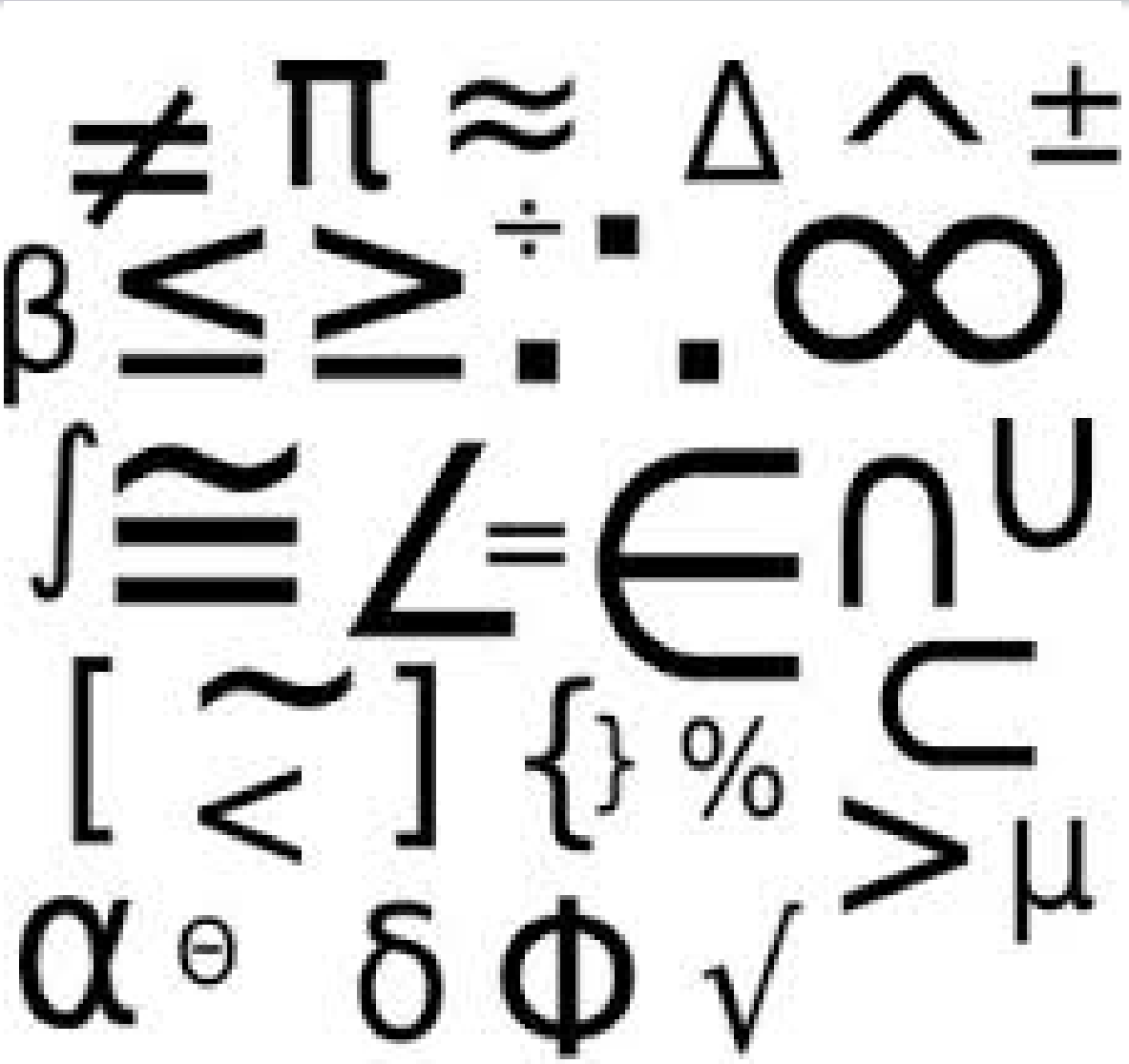
- Actively participate and offer ideas during discussion
- Ensure that every voice is heard
- Use provided resources to inform decisions made about standard revisions

Facilitator Role….

- Facilitate equitable table discussions
- Capture table decisions using provided templates
- Provide updates to all grade level leads after teams are dismissed for the day (4:00 – 5:00)

End of Day Reflection and Feedback -

- What went well today? What progress do you feel good about?
- What suggestion do you have to improve and refine the process?
- What else would you like us to know? What questions do you have?



Share at your table:

- Name and where you are from
- Math symbol and why you chose it
- Relationship to the CCSS
- How you feel about being here today
- Expectations for today

Large Group Meet and Greet:

- Create a group of 2-3 people not at your table
- Name and where you are from
- Relationship to the CCSS
- Work group
- Math symbol and why you chose it


Mental model
Paradigms
Skills
Experiences
You
The World

"A way of seeing is also at the same time, a way of not seeing."

~Elliot Eisner

Standards Review
Summer 2016

English Language Arts Lead: Teresa Berndt

Math Lead: Nicol Reiner


BACKGROUND
INFORMATION

South Dakota Standards Revision and Adoption Timeline

Adopted by State Board of Education Nov. 29, 2010

Content Area	Standards Approved
Common Core Mathematics *	Fall 2010
Common Core English Lang. Arts *	
Health Education *	

Arts, Audio-Video Tech & Communication	Summer 2011
Hospitality and Tourism	
Library *	
Personal Finance *	
STEM	
World Language *	

The review process allows for stakeholders to review the standards and make adjustments to the standards on a 5-7 year rotation.

South Dakota Standards Revision and Adoption Timeline

The following standards are scheduled to be adopted on a five year rotation cycle for Career & Technical Education and seven years for core content.

Standards	Four Public Hearings	Approved by BOE	Capacity Building	Teach to Standards	Assessed
Physical Education	2014	Fall 2014	2014-2015	2015-2016	Local assessments
K-12 Technology	2014 - 2015	Summer 2015	2015-2016	2016-2017	Local assessments
Fine Arts					
Social Studies					
Science					Grades 5, 8, 11: Spring 2018
Foundational Career and Technical Education	2015-2016	Spring 2016	2016-2017	2017-2018	Field Test 2017-2018 Full Implementation 2018-2019
Law Public Safety Corrections and Security Career Cluster					
Informational Technology Career Cluster					
STEM Career Cluster					
Architecture and Construction Career Cluster					
Education and Training Career Cluster					
Agriculture Food and Natural Resources Career Cluster	2016-2017	Spring 2017	2017-2018	2018-2019	Field Test 2018-2019 Full Implementation 2019-2020
Arts, Audio-Video Tech & Communication Career Cluster					
Finance Career Cluster					
Health Science Career Cluster					
Human Services Career Cluster					
Manufacturing Career Cluster					
English Language Arts	2017-2018	Spring 2018	2018-2019	2019-2020	Grades 3-8, 11 in Spring of 2020
Business Management and Administration Career Cluster					Field Test 2019-2020 Full Implementation 2020-2021
Hospitality and Tourism Career Cluster					
Marketing Career Cluster					
Transportation Distribution and Logistics Career Cluster					
Government and Public Administration Career Cluster					
Health Education					Local assessments
Oceti Sakowin Essential Understandings & Standards					
Math			2018-2020	2020-2021	Grades 3-8, 11 in Spring of 2021

Elements of the Review Process

- Initial Review by Standards Review Team
  - Team members are solicited from a variety of backgrounds including k-12 teachers, administrator and/or curriculum directors, instructional coaches, postsecondary personnel, parents, and business & industry.
- Educator Feedback
  - Feedback will be gathered from educators that were not part of the committee
- Final Review
  - A final review by the Standards Review Team
- Four Public Hearings
  - Held in Aberdeen, Pierre, Rapid City, and Sioux Falls
- Approval and adoption by the State Board of Education

Timeline

- June & July 2016
- Initial Review

- August 2016 – April 2017
- Educator Feedback Period

- June 2017
- Final Review

- Sept. 2017 – May 2018
- Public Hearings

Team Composition

- 1 Lead
- 1 Representative from Postsecondary, Administrator, Coach, Curriculum Director, Parent, or Business & Industry
- 3 grade level teachers
- Special education representative in each grade band (k-2, 3-5, 6-8, HS)

South Dakota Content Standards

South Dakota Content Standards

- Define what a student should know or be able to accomplish by the end of a specific time period or grade level or completion of a course
- Build on skills learned in previous years; each standard is not a new event, but an extension of previous learning.
- Represent the knowledge and skills needed to successfully transition to postsecondary education and the workplace
- Allow local districts, schools, and teachers to develop and implement curriculum, content and methodology
- Serve as the basis for state assessment

Standards Connect Across Grades

Math Example

F-IF.B.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*

8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

7.RP.2b Recognize and represent proportional relationships between quantities. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*

5.NF.5b Interpret multiplication as scaling (resizing), by explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

4.NF.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

Standards Connect Within Grades

Standard (Excerpt)	Example
4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, …. Use this principle to generate equivalent fractions.	$\frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$
4.NF.C.5 Express a fraction with denominator 10 as an equivalent with denominator 100…	$\frac{5}{10} \times \frac{10}{10} = \frac{50}{100}$
4.NF.D.6 Use decimal notations for fractions with denominators 10 or 100	$\frac{5}{10} = 0.5$ $\frac{50}{100} = 0.50$

The Structure is the Standards

Math Standards Terminology

Domain - A larger group of related standards formed by putting related clusters under the same heading.

Cluster – A group of related standards.

Standard - A description of what students should understand and be able to do.

Conceptual Category – The largest group of related standards formed by putting related domains under the same heading. *Applies to high school only.*

Math Groupings

K-8 Domains

- Counting & Cardinality (CC)
- Operations & Algebraic Thinking (OA)
- Number & Operation in Base Ten (NBT)
- Number & Operations – Fractions (NF)
- Measurement & Data (MD)
- Geometry (G)
- Ratios & Proportional Relationships (RP)
- The Number System (NS)
- Expressions & Equations (EE)
- Statistics & Probability (SP)
- Functions (F)

High School Conceptual Categories

- Number and Quantity (N)
- Algebra (A)
- Functions (F)
- Modeling (no code)
- Specific modeling standards appear throughout the high school standards and are indicated by a star symbol (★)
- Geometry (G)
- Statistics and Probability (S)

K-8 Sample

Domain

Operations and Algebraic Thinking

Grade and Domain Abbreviation → 4.OA

A. Use the four operations with whole numbers to solve problems. ← Cluster

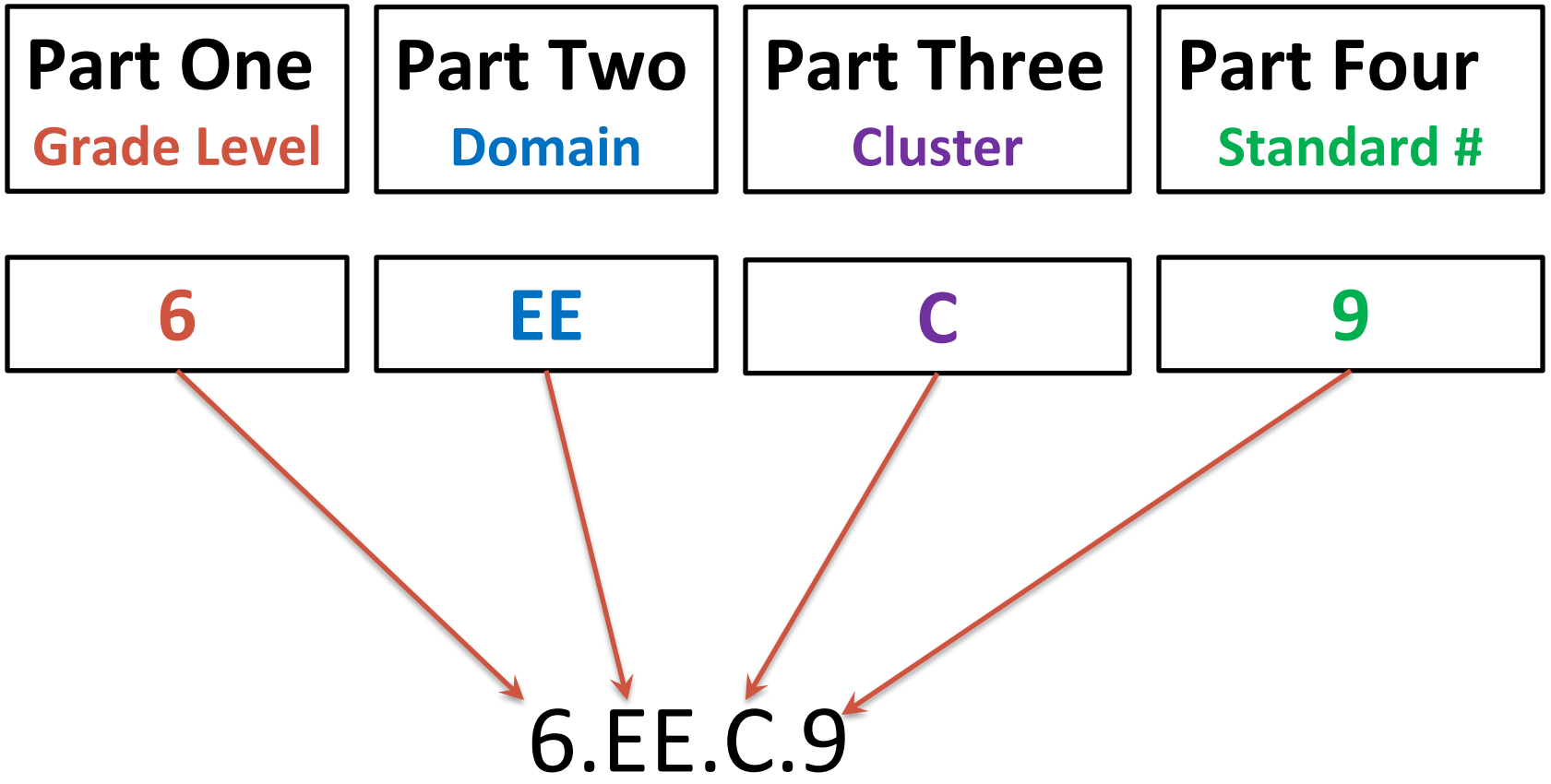
1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[1]
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Standard →

B. Gain familiarity with factors and multiples. ← Cluster

4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

K-8 Code Summary



High School Sample

Domain

Conceptual Category

Algebra

Conceptual Category and Domain Abbreviation

Seeing Structure in Expressions — A-SSE

A. Interpret the structure of expressions. — Cluster

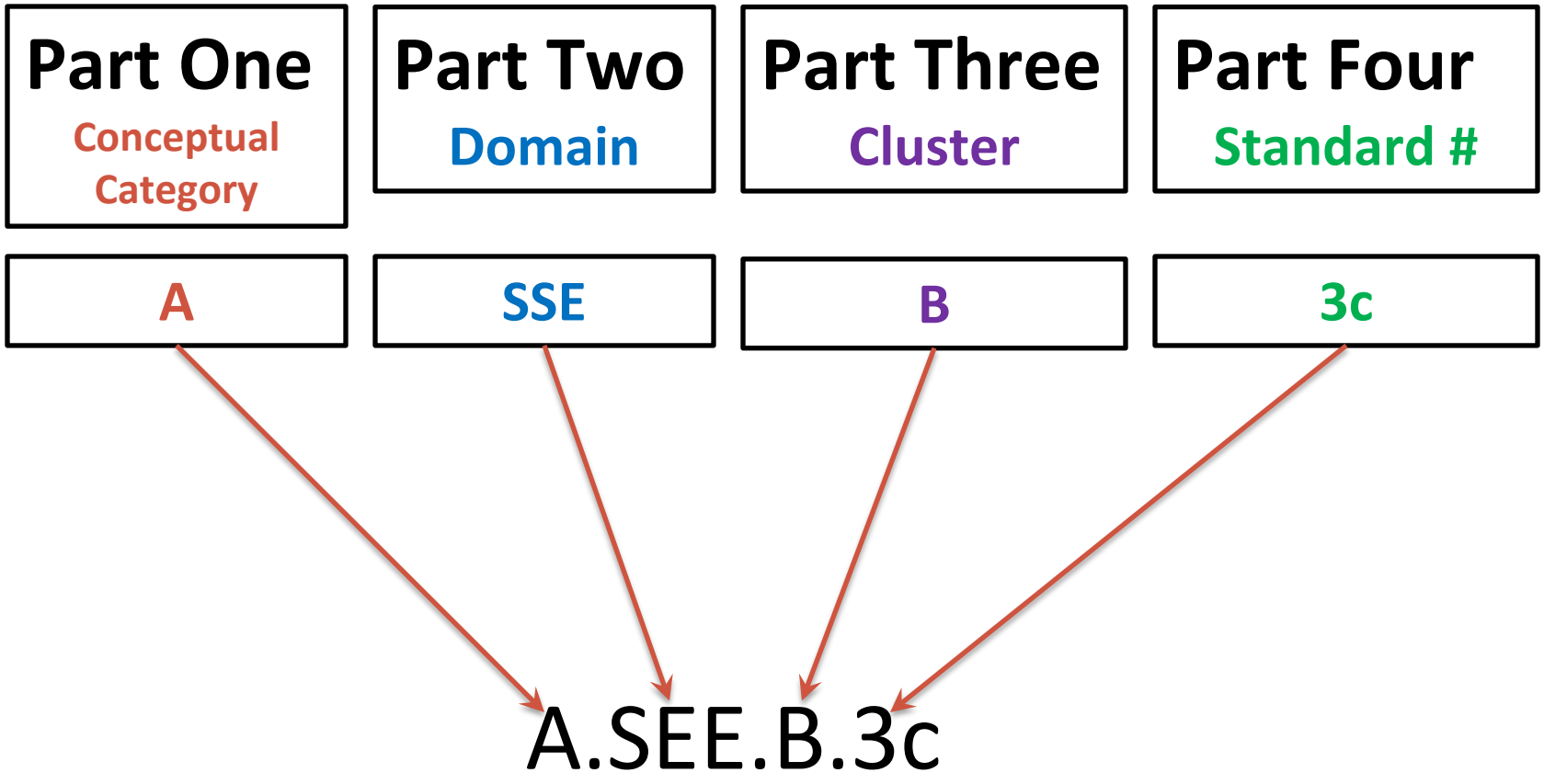
1. Interpret expressions that represent a quantity in terms of its context.★
   a. Interpret parts of an expression, such as terms, factors, and coefficients.
   b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*
2. Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*

B. Write expressions in equivalent forms to solve problems. — Cluster

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★
   a. Factor a quadratic expression to reveal the zeros of the function it defines.
   b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
   c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*

Standards

High School Code Summary



Features of a Quality Standard

Quality Standards Checklist

Sample justifications for making changes

- Improving clarity: Clarified language or removed ambiguous or vague language
- Adding critical content & skill: added critical content or …
- Making connections within grades and across grades
- Removing teacher actions

Key Features of a Quality Standard

Standards Do…	Standards Do NOT…
Identify key knowledge and skills that students should demonstrate by the end of the year (Developmentally appropriate)	• Focus on teacher actions or what teachers should do to teach that content • Require specific instructional strategies, approaches, curricula or text to be used • Omit critical content
Connect learning within and across grades levels or course.	• Include unnecessary repetitive standards • Create contradictions within a grade or within standards in other grades • Create gaps in the progression of learning within and across grades or courses
Use clear language that clarifies for all stakeholders what students should be able to know and do at the end of a particular grade or course. *Keep in mind language in some standards may require more specificity than other standards.	• Use ambiguous or vague language

Quality Standard Criteria 1

- Criteria: Identify key knowledge and skills that students should demonstrate by the end of the year:
  - **Does not require instructional strategies/approach/curriculum/text to be used.**

- **Math: Original Standard**: Multiple or divide to solve word problems involving multiplication comparison, e.g., by using drawings and equations with a symbol for the unknown to represent the problem, distinguishing multiplicative comparison from additive comparison (4.OA.A.2)

Proposed Revision	Issue
Use drawings and equations with a symbol to represent an unknown number to solve word problems involving multiplicative comparison. Distinguish multiplicative comparison from additive comparison	Using drawings and equations to solve such problems is now required of the student.

Quality Standard Criteria 2

- Criteria: Quality standards connect learning within and across the grade levels
  - **Does <u>not</u> create gaps in the progression of learning within or across the grades**

- **Math - Original Standard:** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (5.NBT.B.6)

Proposed Revision	Issue
Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	The mathematical content is not supported by understanding place value, properties of operations and inverse relationships with will create gaps in students' knowledge in 5th grade and beyond.

Quality Standard Criteria 2

- Criteria: Quality standards connect learning within and across the grade levels
  - **Does <u>not</u> create gaps in the progression of learning within or across the grades**

- **Math - Original Standard:** Fluently divide multi-digit numbers using the standard algorithm. (6.NS.B.2)

Proposed Revision	Issue
Replace 5.NBT.B.6 with 6.NS.B.2 5.NBT.B.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculations by using equations, rectangular arrays, and /or models.	The learning progression for division relies on strategies that begin to connect place value, properties of operations, relationship between x and ÷ to the algorithm. - Grade 4 : 1 digit divisors - Grade 5: 2 digit divisors with students illustrating and explaining their understanding. - Grade 6: students master the division algorithm based on understandings from grades 4 and 5

Quality Standard Criteria 3

- Criteria: Use clear language that clarifies for all stakeholders what students should be able to know and do at the end of a particular grade or course.
  - **Does <u>not</u> use ambiguous or vague language.**

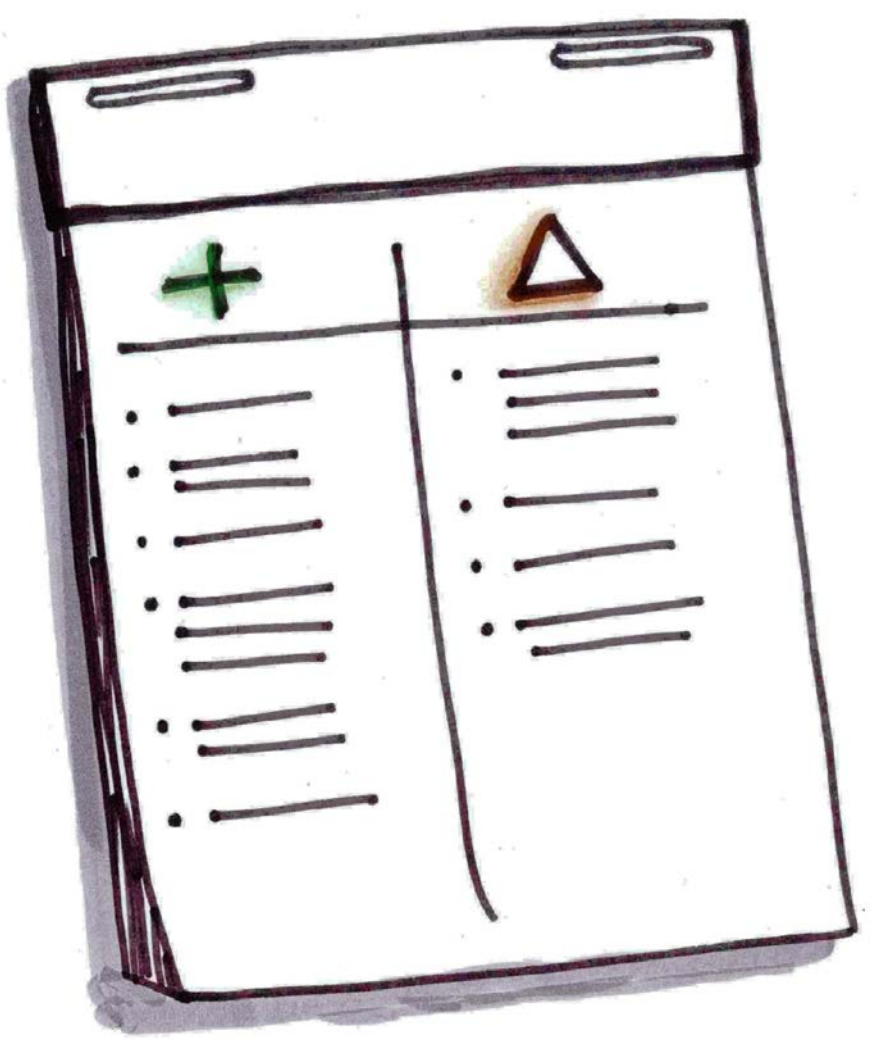
- **Math - Original Standard:** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (A.CED.2 in Algebra I)

Proposed Revision	Issue
Create linear and exponential equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Original standard does not specify which functions should be the focus of Algebra I, and in Algebra I our main functions of focus for this standard are linear and exponential.

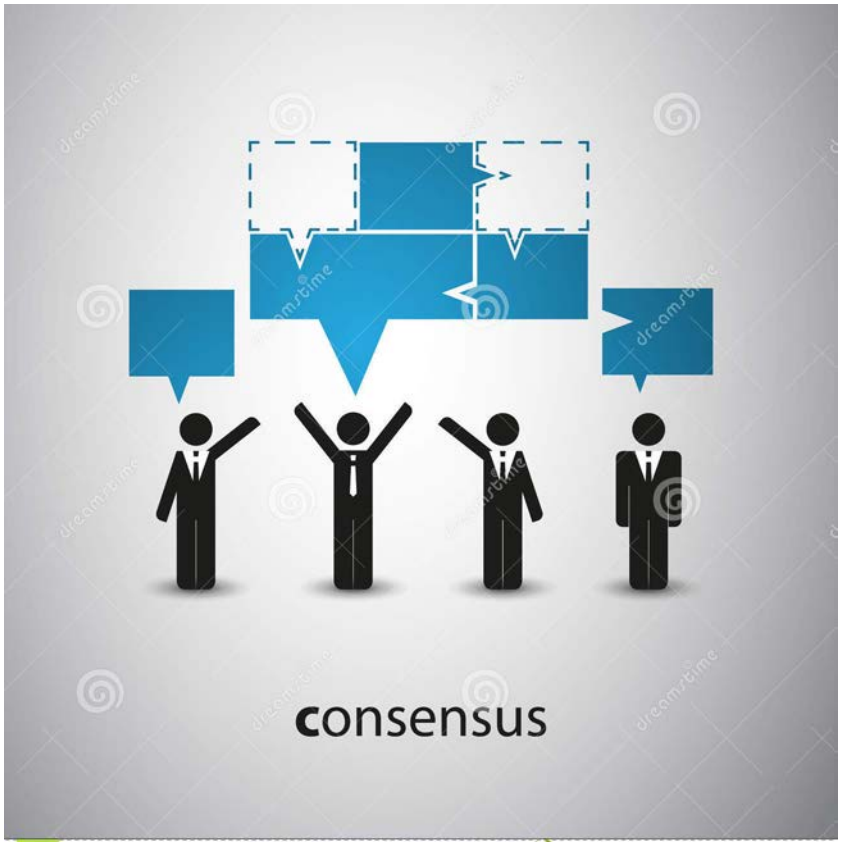
Big Picture

Pluses
(Want to Preserve)

Delta's
(Want to Improve)



Consensus has been achieved when every person involved in the decision can say, "I believe this is the best decision we can arrive at for the organization at this time, and I will support its implementation."



Overview of Review Process

- Use the guidelines for quality standards and other state standards and resources to discuss SD standards one at a time.
- Capture recommendations on Google Excel
- Review a section or set of the standards at a time
- As a large group review the section or set standards for vertical alignment
- Repeat the process

Math Standards Review Order

Math Standard Domain Names

K	1	2	3	4	5	6	7	8	HS
Counting & Cardinality (CC)									
Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Expressions & Equations (EE)	Expressions & Equations (EE)	Expressions & Equations (EE)	Algebra (A)
Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	The Number System (NS)	The Number System (NS)	The Number System (NS)	Number and Quantity (N)
			Number & Operations – Fractions (NF)	Number & Operations – Fractions (NF)	Number & Operations – Fractions (NF)	Ratios & Proportional Relationships (RP)	Ratios & Proportional Relationships (RP)	Functions (F)	Functions (F)
Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Statistics & Probability (SP)	Statistics & Probability (SP)	Statistics & Probability (SP)	Statistics & Probability (S)
Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)

Utilizing Resources

- Each team member
  - open resources for your grade level
  - go to the Coherence Map
- Become familiar with other state standards and available resources

Grade Level Review

- Take a few minutes of silence to individually read the standards that are in the category to be reviewed.
- Mark or note standards that you would like to discuss at your table.
- Use the resources and *Features of Quality Standards* to review the South Dakota standard and justify and explain any changes.
- Share thoughts, come to a consensus, and document proposed changes.

Documentation Rules

- Strike through words the team wants eliminated
- Use red and bold font for additions to the standards
- Identify if the standards will stay the same or has a proposed change
- Identify the type of change
  - Removed, Re-written, broken-up, combined, moved to a different grade level
- Identify the Quality Standards Rule # that was used to justify improvements
- Summarize reason for proposed change
- Open the vertical alignment excel document and make the formatting changes to the appropriate standard.

Questions to Discuss

- Is the edit necessary?
- Does the proposed wording of the revised standard meet the qualities standards guidance?
- Do the proposed edits maintain connections within and across grades? If not, what other standards are impacted?

Vertical Alignment

Vertical Alignment Reminders

- Reflect a logical, consistent order
- Key terminology should be consistent or show a progression
- The rigor (depth of knowledge) across the standards should show a progression

Vertical Alignment Process

- Grade Level Review:
  - Grade level teams will review a section or particular set of standards without making comments to whole group

- Grade Level Discussion:
  - Grade level teams will discuss questions or concerns and table leader will document the team's questions or concerns by inserting a comment on the appropriate cell in the vertical alignment document

- Grade Level Review of Comments, Questions & Recommendations
  - Don’t make any changes at this point in time
- Whole Group Discussion:
  - Discuss the concerns or recommendations, starting with standard from the lowest grade level that has a recommended change. Come to a decision
- Final Decisions
  - After final decisions about proposed revisions are made, make edits and click ‘resolve’ on comment.


REPEAT

Math Standard Domain Names

K	1	2	3	4	5	6	7	8	HS
Counting & Cardinality (CC)									
Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Operations & Algebraic Thinking (OA)	Expressions & Equations (EE)	Expressions & Equations (EE)	Expressions & Equations (EE)	Algebra (A)
Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	Number & Operation in Base Ten (NBT)	The Number System (NS)	The Number System (NS)	The Number System (NS)	Number and Quantity (N)

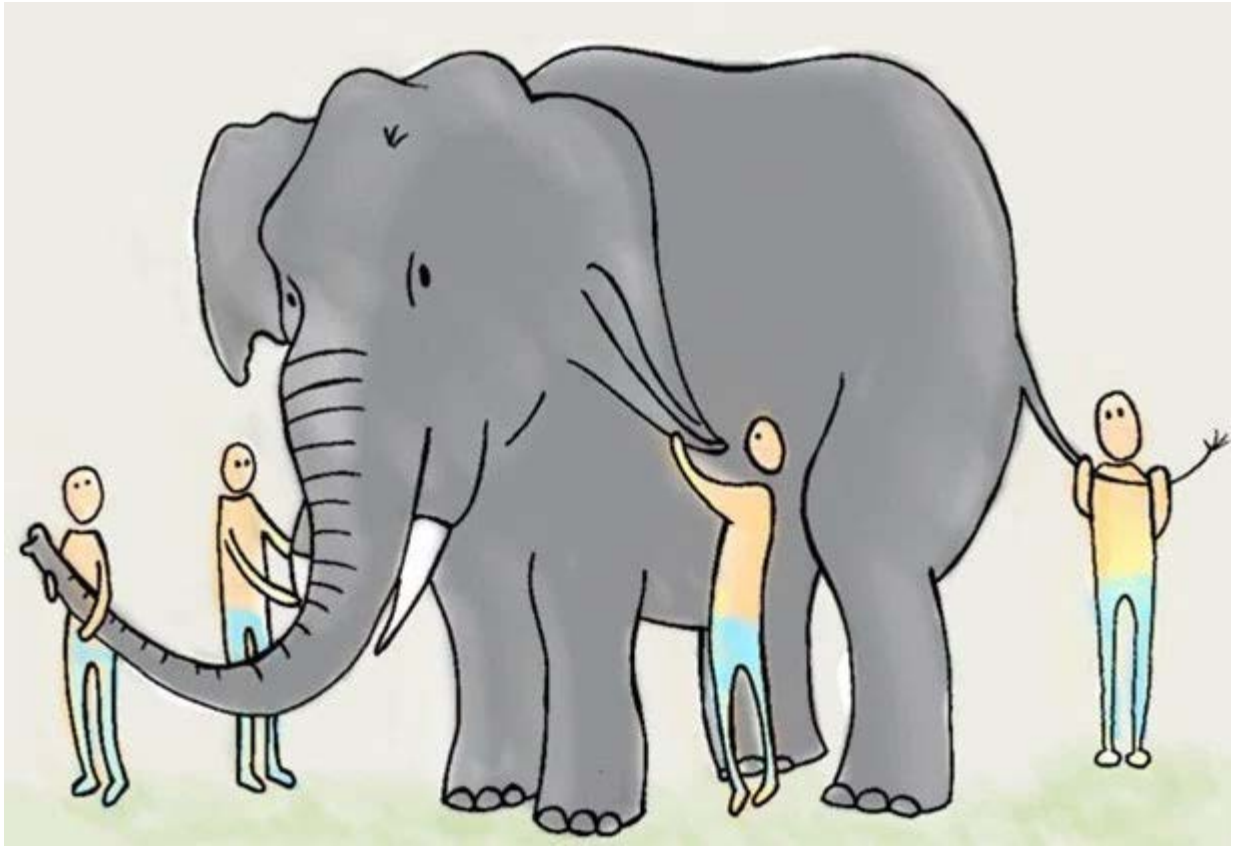
			Number & Operations – Fractions (NF)	Number & Operations – Fractions (NF)	Number & Operations – Fractions (NF)	Ratios & Proportional Relationships (RP)	Ratios & Proportional Relationships (RP)	Functions (F)	Functions (F)
Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Measurement & Data (MD)	Statistics & Probability (SP)	Statistics & Probability (SP)	Statistics & Probability (SP)	Statistics & Probability (S)
Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)	Geometry (G)

- **Curriculum:** the means and materials with which students will interact for the purpose of achieving identified educational outcomes
  - Focus on standards - standards must be established before all else
  - Standards need to consider the needs of all contexts and stakeholders in South Dakota. We are setting expectations for all students across the state.
- **Formatting Standards:** During the 16-17 School Year, the Department will bring a group together to review formatting of the standards (visual look).
- **Editing**: Table leads have access rights to do the editing on the work documents (both grade level and vertical).

Let's practice...

Most people listen in order to respond; good listeners listen in order to understand.

LISTENING SKILLS



End of Day Reflection and Feedback -

- What went well today? What progress do you feel good about?
- What suggestion do you have to improve and refine the process?
- What else would you like us to know? What questions do you have?