

Module 1:

A Closer Look at the Common Core State Standards for Mathematics

Session 3 K–8: Exploring the Domain Progressions in Grades K–8



Session Description

Participants will examine how the content progresses across the grades within a domain.

Expected Outcomes

- Participants will build their understanding of the mathematical concepts within each domain and how they progress across grades.
- Participants will build understanding of the coherence in the standards.
- Participants will discuss how the progressions in the standards can be used to inform teaching and learning.

Agenda

- Introduction (5 minutes)
- Exploring the Domains (35 minutes)
- Whole Group Discussion (15 minutes)
- Reflection (5 minutes)

Time

- 60 minutes

Audience

- Designed to be used with groups of teachers and leaders working in multi-grade teams. Select a relevant domain for the group to explore and make copies of that domain's handout.

Materials

- Domains [PowerPoint Slides](#)
- Domain Handouts (see below)

| Domain* | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------------------------------------------|---|---|---|---|---|---|---|---|---|
| Counting and Cardinality | | | | | | | | | |
| Operations and Algebraic Thinking | | | | | | | | | |
| Number and Operations in Base Ten | | | | | | | | | |
| Number and Operations - Fractions | | | | | | | | | |
| Ratios and Proportional Relationships | | | | | | | | | |
| The Number System | | | | | | | | | |
| Expressions and Equations | | | | | | | | | |
| Functions | | | | | | | | | |
| Geometry | | | | | | | | | |
| Measurement and Data | | | | | | | | | |
| Statistics and Probability | | | | | | | | | |

*These documents were originally published on the Tools for the Common Core Standards web site at <http://commoncoretools.wordpress.com/>

If you are working with K–8 educators, you may consider looking at the following combinations of domains during this session:

- Number and Operations in Base Ten (K–5) and Ratios and Proportional Reasoning (6–7)
 - Number and Operations – Fractions (3–5) and The Number System (6–8)
 - Operations and Algebraic Thinking (K–5) and Geometry (6–8)
 - Geometry (K–5) and Geometry (6–8)
 - Measurement and Data (K–5) and Statistics and Probability (6–8)
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- Domains [Handout B Reflections](#)
 - Chart paper
 - Scissors
 - Markers
 - Tape

Resources/References

- Oregon Common Core State Standards for Mathematics
<http://www.ode.state.or.us/search/page/?id=1527>
- William McCallum, K–8 Standards by Domain
<http://commoncoretools.wordpress.com/tools/>
- Ohio Department of Education
<http://www.ode.state.oh.us/GD/Templates/Pages/ODE/ODEDetail.aspx?page=3&TopicRelationID=1704&ContentID=83475&Content=106870>

Introduction to Exploring Domains in Grades K–8

Introduction (5 minutes)

Slide 1

Say, “In this session, we are going to look more closely at how mathematical ideas progress across the grades by exploring one of the domains.” [Pre-select a domain to explore and make copies of appropriate handouts. See options on page 1.]

Slide 2

Review the expected outcomes for this session.

- Build understanding of the mathematical concepts within each domain and how they progress across grades.
- Build understanding of the coherence in the standards.
- Discuss how the progressions in the standards can be used to inform teaching and learning.

Slide 3

Review (from session 1) OPTIONAL: Use as much of this language as needed from Session 1 of the *Common Core State Standards (CCSS) for Mathematics*.

Richard Elmore identifies a number of core principals as we consider implementing the instructional core, but for this introduction we’ll just identify two principles:

Principle #1: Increases in student learning occur only as a consequence of improvements in the level of content, teachers’ knowledge and skill, and student engagement. These three components need to be thought of as interdependent rather than isolated and independent of each other.

Principle #2: If you change one element of the instructional core, you have to change the other two. We cannot think of implementing the CCSS as just swapping out one set of standards for another. As we increase the rigor of the content, we must focus on using the excellent recent educational research to improve content knowledge and practice and student engagement and ownership of their learning (i.e., NRC: How People Learn; Horizon Research: Elements of Effective Instruction; CCSSO: What is Effective Professional Development).

Slide 4

Review (from session 1) OPTIONAL: Use as much of this language as needed from Session 1 of the *Instructional Core*.

Say, “It is important to remember that the organizational elements that surround the instructional core are critical to the successful implementation of a districtwide improvement strategy.”

“The instructional core does not occur in isolation of these organizational elements, so any implementation strategy would need to take into consideration how these elements impact successful implementation.”

“In time, more information on implementation of the CCSS through an instructional core focus will be developed.”

“The purpose of this session is to better understand the new progressions of the Common Core State Standards for Mathematics, which is intended to help attend to the Teacher-Content interaction described in the instructional core. Future sessions will help deepen a teacher’s understanding of the new content, as well as help teachers understand the new Student-Content interaction (CCSS Standards for Mathematical Practices) and eventually Teacher-Student interactions.”

Slides 5, 6, and 7

Review (from session 1) OPTIONAL: Use as much of this language as needed from Session 1 of the *CCSS initiative*.

Say, “The Common Core State Standards for Mathematics were designed to be focused and coherent. What does this mean? Let’s read several quotes from the standards.”

Read, quotes on slides 5, 6, and 7.

Slide 8

Say, “The Common Core State Standards for each grade level from kindergarten through grade 8 have the same structure. They have critical areas that define the important mathematical ideas for that grade level. Here is a snapshot of the grade 2 critical areas.”

Slide 9

Say, “On the next page of the grade 2 section, you’ll find an overview. This page includes the domains indicated by green arrows. You have “Operations and Algebraic Thinking,” “Number and Operations in Base Ten,” “Measurement and Data,” and “Geometry.” The bullets underneath each domain include the cluster headings or cluster titles for the standards.

Slide 10

Say, “When you turn to the third page of the grade 2 section, you’ll find the standards. They’re organized by domain (green arrow), includes cluster headings or cluster titles (blue circles), and then individual standards (red arrows).

Slide 11

Say, “This table lists the domains for kindergarten through grade 8. We were just looking at Operations and Algebraic Thinking for grade 2. Can you find it on this table? (Point out.) For each domain, the shaded areas indicate the grade levels where it is addressed. Notice that most of the domains span multiple grades at the K–8 level.”

Slide 12

Say, “This table is from the Ohio Department of Education. It includes the domains for K–8; in addition, it has the conceptual categories for high school. This table is organized a bit differently from the one on the previous slide. Instead of just listing each domain, they’ve grouped related domains together. For each “colored row,” they identify how domains at the earlier grades progress and lead to domains at the middle and high school levels. The right side of the chart lists the five conceptual categories for high school: Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability. If you select one conceptual category and move left along the row, you’ll find the domains at the middle and elementary school levels from which this concept builds.”

Exploring the Domains in Grades K–8

Exploring the Domains (35 minutes)

Say, “At your tables in small groups (3–4 members), you are going to explore one of the domains. You will be reading, cutting out, and finding relationships between the standards within this domain.

Slide 13

Explain the task:

- Review the clusters of standards within the domain.
- Start with the lowest grade for which the domain begins and cut out each cluster of standards.
- Start with one cluster and explore how the concept progresses through the grades. How does the concept change and increase in rigor and complexity for the student?
- Identify new concepts that are introduced in subsequent grades and follow them through the years.
- Paste your work on a large sheet of chart paper. Use different colored arrows and lines to show, and words to describe, how each concept or standard progresses from one year to the next. (See examples on page 7.)

Slide 14

Ask each small group to discuss the following questions:

- Where is each of your students in the progression?
- What supports can you use to accelerate learning of students in an effort to bring their understandings and skills to the appropriate level or to go deeper into the content?
- What connections can you find between this domain and the other domains?

Whole Group Discussion

Discussion: (15 minutes)

Facilitate the whole group discussion. Starting with kindergarten or the lowest grade-level explored, ask each group to share highlights from their discussion.

Slide 15

Ask each group to share highlights from their discussion.

- What are your general impressions of how the content progresses from one grade to the next?
- To what extent do the standards in the domain address the concept of coherence?
- What are some common student misconceptions within this domain?
- How would you use the ideas you explored in this session to inform student assessment and your instruction?

Slides 16 and 17

Read each slide, which includes quotes from the Common Core State Standards for Mathematics.

Say, “One of the most exciting aspects of common standards is the opportunity for collaboration across cities, districts, and nationally with other states. When working towards common goals, we can take advantage of the “economies of scale” and devote resources to research student learning and progressions. A number of groups are already working together in other areas. For example, after 2014 most states will be a member of one of two consortia that will share summative assessments. Other organizations are developing curriculum, instructional materials, student task banks, and professional development resources.”

Reflection

Reflection (5 minutes)

Slide 18

Revisit the expected outcomes:

- Build understanding of the mathematical concepts within each domain and how they progress across grades.
- Build understanding of the coherence in the standards.
- Discuss how the progressions in the standards can be used to inform teaching and learning.

Slide 19

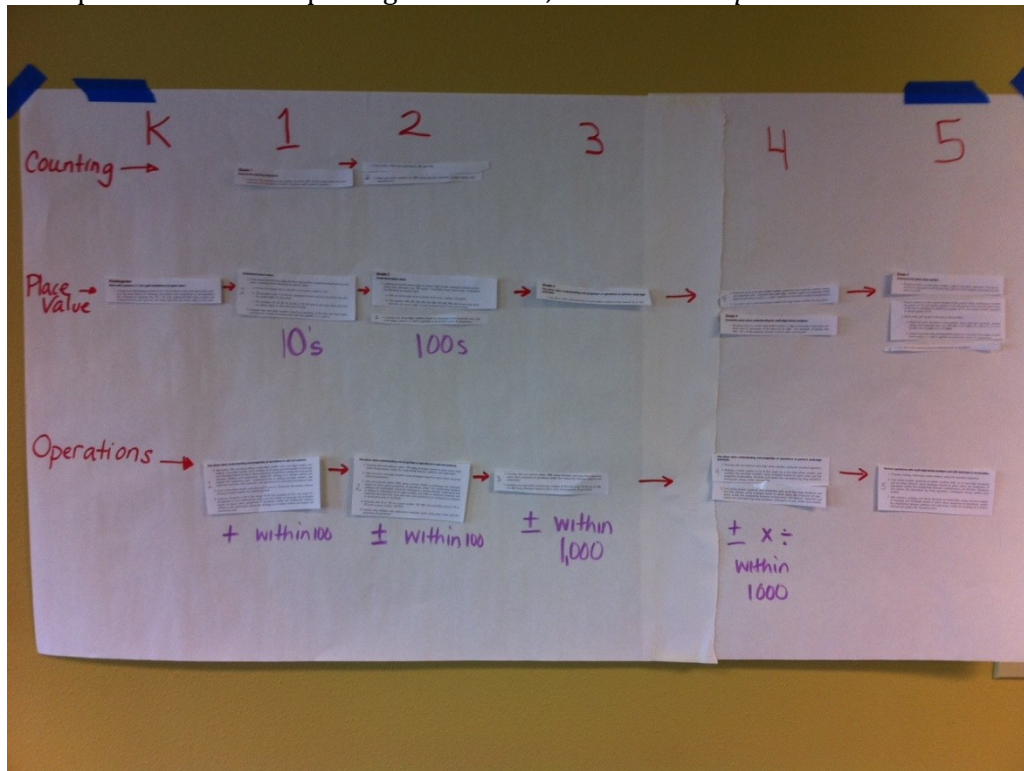
Distribute Domains Handout B

Ask participants to answer the following questions on their Reflection Sheet (handout b):

- Revisit the meaning of “coherence.” To what extent does the domain you explored bring coherence to the standards?
- How will your knowledge of the standards progression in this domain inform your curriculum and guide your instruction?
- What questions do you still have about this domain?
- How has this activity increased your understanding of the instructional core?

Adjourn

Example of K-5 team exploring the domain, *Number and Operations in Base Ten*.



Example of 6-8 team exploring the domain, *Expressions and Equations*.

