

USER'S GUIDE: DEEP DIVE INTO THE MATH SHIFTS FOR THE COMMON CORE STATE STANDARDS

Common Core Shifts for Math

1. **Focus** strongly where the Standards focus
2. **Coherence: Think** across grades and **link** to major topics within grades
3. **Rigor:** In major topics, pursue **conceptual understanding**, procedural skill and **fluency**, and **application** with equal intensity

Deep Dive into the Math Shifts is a 1-3 hour module designed to provide participants that are familiar with the shifts required by the Common Core State Standards (CCSS) for Mathematics a deeper understanding of these shifts. Using this module, participants will take a deep dive into the major work of grades K-8, build a deeper understanding of the coherence of the Standards and have an opportunity to work through sample problems that reflect the “rigor” that is expected by the Standards.

What's In This Module?

1. User's Guide
2. PowerPoint Presentation (35 slides, with User's notes).
3. 3 Hands-on Activities
 - *Focus Activity: Engaging with the Content*
 - *Coherence Activity: Coherence Cards*
 - *User Directions*
 - *Directions for Creating Cards and Template*
 - *Answer Document*
 - *Rigor Activity: Sample Problems*
4. 2 Handouts
 - [Common Core State Standards for Mathematics](#) (*required for the Hands-on Activities*)
 - [Math Shifts](#) and [Major Work of the Grade](#) (*print the document for each grade level for all participants*)
5. 1 Extension Activity
 - Creating problems to meet the focus, coherence and rigor of the Standards
6. Related Research/Readings (4 articles/resources + Discussion Questions)
 - [Publishers' Criteria for Mathematics](#)
 - [The Structure is the Standards](#)
 - [Progression Documents for the Common Core Math Standards](#)
 - [Thinking About Place Value in Grade Two](#)
 - Discussion Questions for Additional Readings
7. Video Resources
8. Web Resources

Using This Module

You are encouraged to customize any or all portions of this module to meet the needs of your audience. These modules are intended to fit into a variety of different professional development settings; below are suggestions for implementation depending on the time available. All times are suggested and can be expanded to incorporate more discussion as needed. Any portions of this module may be modified, reproduced and disseminated without prior permission.

If you have 1 hour...	If you have 2 hours...	If you have 3 hours...
1. Share the PowerPoint presentation (15 min.) and lead the embedded Coherence Activity ¹ (45 min).	1. Share the PowerPoint presentation (15 min.) and lead the three embedded activities: Engaging in the Content (30 min.), Coherence Activity (45 min.) and the Sample Problems (30 min. plus additional time, if available)	1. Share the PowerPoint presentation (15 min.) and lead the three embedded activities: Engaging in the Content (30 min.), Coherence Activity (45 min.) and the Sample Problems (45 min.)
2. If appropriate, assign Engaging with the Content and the Sample Problems for participants to do on their own in order to engage in activities in related to all three shifts.		2. Lead Extension Activity: Creating Problems to meet the Focus, Coherence and Rigor of the Standards. (45 min.)
3. Use the remaining module components (Engaging with the Content, Sample Problems, Extension Activity, Related Readings & Discussion Questions, Additional Videos & Web Resources) as time permits throughout the year (i.e.: in professional learning communities).	2. Use the remaining module components (Extension Activity, Related Readings & Discussion Questions, Additional Videos & Web Resources) as time permits throughout the year (e.g.: in professional learning communities) or as an extension of this PD.	3. Use any of remaining module components (Related Readings & Discussion Questions, Additional Videos & Web Resources) as time permits throughout the year (e.g.: in professional learning communities) or as an extension of this PD.

¹The Coherence Activity was chosen as the preferred activity for the 1 hour module due to the materials involved and benefit of that activity done in a group setting.

Suggested Module Delivery

1. Share the PowerPoint Presentation, including three embedded activities (2 hours)

The presentation provides participants with a closer look at the focus, coherence, and rigor required by the CCSSM. It highlights the two levels of focus in the Standards, the two levels of coherence in the Standards and delves deeper into the concept of rigor. There are three embedded activities that will strengthen the participants understanding of the shifts. Allow for time after each activity for discussion.

- **Shift One Activity: Focus Strongly Where the Standards Focus: Engaging with the Content.** Presenters may choose for participants to engage in the K-2 and 3-5 grade band activities or the 3-5 and 6-8 grade band activities, depending on the grade level of the participants. Each activity allows educators to consider the topics that require focus in each grade band (K-2, 3-5 and 6-8) and think about how this focus will impact their work. This activity includes opportunities for discussion.
- **Shift Two Activity: Coherence: Think across grades; link to major topics within grades: Hands on Coherence Cards Activity.** This activity gets educators involved in uncovering some of the thoughtful progressions and themes woven into the Standards. Participation in this activity makes vivid the concept of coherence across grades and within grades.
- **Shift Three Activity: Rigor: In major topics, pursue conceptual understanding, procedural skill and fluency, and application with equal intensity: Sample Problems.** Participants will solve problems specifically developed to illustrate the key shifts in CCSSM. They will also analyze and evaluate sample problems for their alignment to the Standards and their illustration of the shift of Rigor. The sample problems provided will encourage discussion about conceptual understanding, procedural skill and fluency and application.

2. Lead Extension Activity (45 min.) Creating Problems that meet the Focus, Coherence, and Rigor required by the CCSSM.

Participants use their understanding of focus, coherence, and rigor to create a set of aligned problems to the Common Core in one domain over a particular grade band. Participants may need additional time to finish this extension activity.

3. Share articles for post-reading

The four articles included in Related Readings/Research can be used in professional learning communities (PLCs) or as post-reading for this professional development session. These readings are shared to support teachers' understandings of the intellectual and academic implications of the standards. The articles recommended for this module are:

[Publishers' Criteria for Mathematics.](#) This document is meant to guide purchasing and reviewing decisions, and establish quality criteria for materials used in the classroom. In addition, the Publishers' Criteria can be a guide to review current text books, pacing guides and curriculum maps for alignment to CCSSM.

[The Structure is the Standards.](#) This essay, (also referred to as "The Grecian Urn Essay") found in the Appendix of the Publishers' Criteria for Mathematics, artfully captures the importance of seeing and understanding the structure in the Standards in order to maintain focus and coherence.

[Progression Documents for the Common Core Math Standards.](#) The Progression Documents are a narrative of the Standards and "can explain why standards are sequenced the way they are, point out cognitive difficulties and pedagogical solutions, and give more detail on particularly knotty areas of the mathematics."

[Thinking about Place Value in 2nd Grade.](#) This packet describes the fundamental concepts of the place value standards and offers annotated examples of place value tasks that assess conceptual understanding.

4. Share Video Resources for post-viewing

Additional Video Resources: The first five video resources included below have been created by the Hunt Institute and feature William McCallum and Jason Zimba, two of the lead writers of the Common Core State Standards. The final video features Phil Daro, the third lead writer of the math standards. These videos can be used before, during, or after the presentation. The six chosen videos dive deep into the shifts required by the Standards.

- The Importance of Coherence in Mathematics
<http://www.youtube.com/watch?v=83leur9qy5k&list=UUF0pa3nE3aZafBMT8pqM5PA&index=17&feature=plcp>
- The Importance of Focus in Mathematics
<http://www.youtube.com/watch?v=2rje1NOgHWs&list=UUF0pa3nE3aZafBMT8pqM5PA&index=18&feature=plcp>
- The Importance of Mathematics Progressions
<http://www.youtube.com/watch?v=a-P9KQdhE0U&list=UUF0pa3nE3aZafBMT8pqM5PA&index=24&feature=plcp>

- The Importance of Mathematics Progressions from the Student Perspective
http://www.youtube.com/watch?v=L0wXHkiWj_A&list=UUF0pa3nE3aZaFbMT8pgM5PA&index=25&feature=plcp
- Mathematics Fluency: A Balanced Approach
<http://www.youtube.com/watch?v=ZFUAV00bTwA&list=UUF0pa3nE3aZaFbMT8pgM5PA&index=27&feature=plcp>
- Common Core: Against Answer-getting
<http://vimeo.com/79916037>

5. Share Web Resources

- <http://www.achievethecore.org/>
This site is assembled by Student Achievement Partners to provide free, high-quality resources to educators now doing the hard work of implementing these higher standards.
- <http://www.illustrativemathematics.org/>
“Illustrative Mathematics provides guidance to states, assessment consortia, testing companies, and curriculum developers by illustrating the range and types of mathematical work that students experience in a faithful implementation of the Common Core State Standards, and by publishing other tools that support implementation of the standards.”
- <http://pta.org/parents/content.cfm?ItemNumber=2583&RDtoken=51120&userID>
The PTA’s Parents’ Guide to Student Success (in English and Spanish) was developed in response to the Common Core State Standards. The Guide includes key items that children should be learning and activities that parents can do at home to support their child’s learning.
- <http://commoncoretools.me/>
News about tools that are being developed to support implementation of the Common Core State Standards for Mathematics.
- <http://www.corestandards.org/>
The website that hosts the complete CCSS documents as well as a collection of resources.
- <http://www.parcconline.org/>
The website of the PARCC (Partnership for Assessment of Readiness for College and Career) Consortium.
- <http://www.parcconline.org/samples/item-task-prototypes>
Direct link to PARCC’s sample items and task prototypes.
- <http://www.parcconline.org/parcc-model-content-frameworks>

The Model Content Frameworks are voluntary resources offered by PARCC to help curriculum developers and teachers as they work to implement the standards in their states and districts.

- <http://www.smarterbalanced.org/>

The website of the Smarter Balanced Assessment Consortium.

- <http://www.smarterbalanced.org/sample-items-and-performance-tasks/>

Direct link to SBAC's sample items and performance tasks.

- <http://www.smarterbalanced.org/wordpress/wp-content/uploads/2011/12/Math-Content-Specifications.pdf>

The Math Content Specifications provide insight into the SBAC assessment targets.

Background on the Modules and the Common Core State Standards

These modules have been designed for educators to use to support the implementation of the Common Core State Standards. The Common Core State Standards were designed explicitly as a staircase in K-12 to college and career readiness. Many U.S. students—even those who pass their high school courses and their high school exit exams—still face remediation when they get to college because they are not prepared for entry-level coursework. A 2008 study by ACT showed that only 1 in 10 8th graders are on target to be ready for college-level work by the time they graduate from high school, and only 35 percent of U.S. 12th graders scored at or above the “proficient” level on the NAEP reading test in 2005. Furthermore, research shows that remediation is a trap from which many students don’t escape; the overwhelming majority of students who take remedial courses never complete college. The Common Core State Standards form a staircase to prepare students to be successful in college and their chosen career. If students successfully climb the staircase from kindergarten to 12th grade, they will then be truly ready for the demands that follow.

Please submit any feedback on this module to modulefeedback@studentsachieve.net.



To the extent possible under law, we have waived all copyright and related or neighboring rights to this work. Any and all components of this module may be customized to meet the needs of any audience — they may be modified, reproduced, and disseminated without prior permission.