Worthington's Transition to and Implementation of the Common Core State Standards of Mathematics

February 2013

Common Core Standards

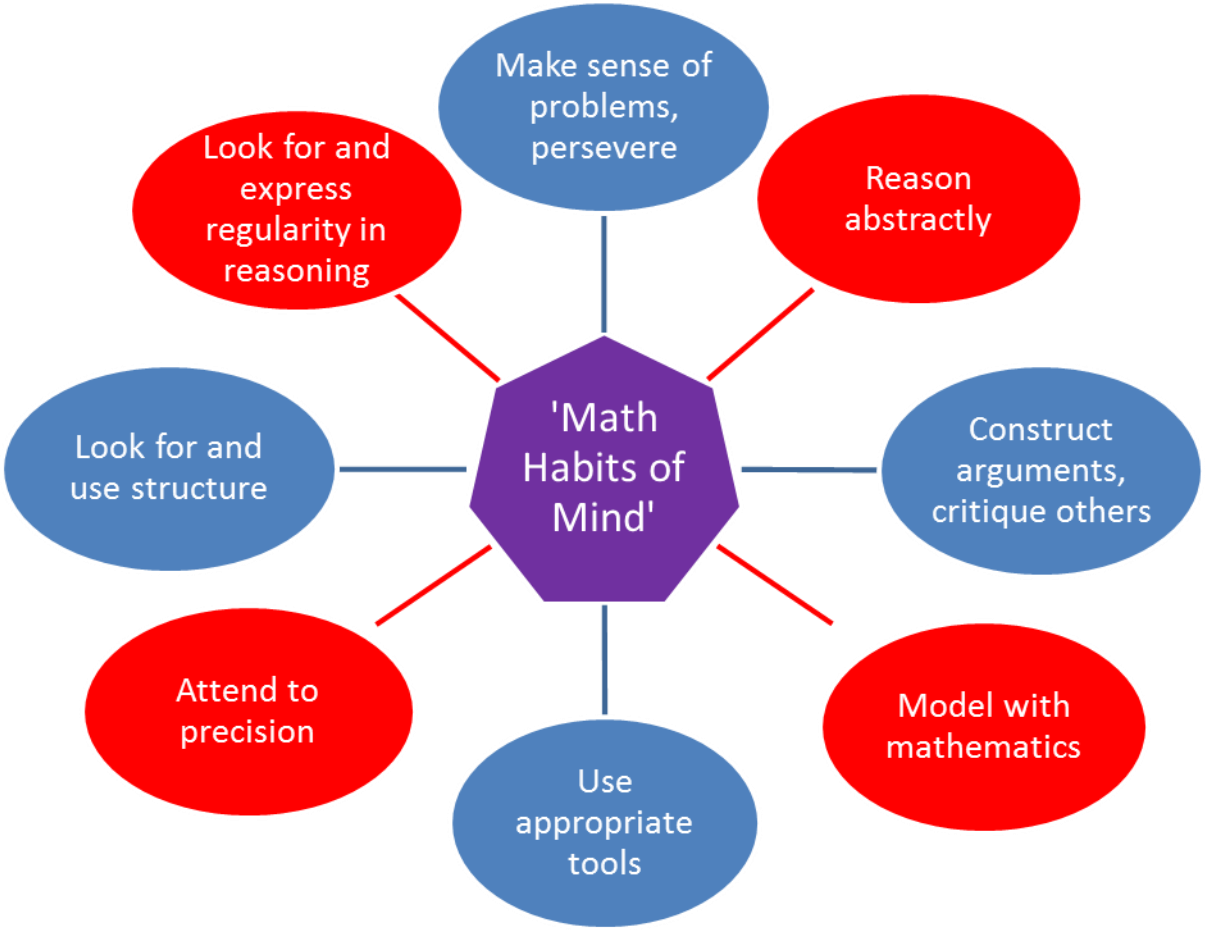
provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them……robust and relevant to real world…..*need for success in college and careers….able to compete successfully in the global economy.*

www.corestandards.org

Major Themes

- All students means ALL students
- The work is about improving instruction, which requires that teachers collaborate to reach more students more of the time

Standards for Mathematical Practice
Mathematical 'Habits of Mind'



CCSS PRINCIPLES

- Focus
  - Identifies key ideas, understandings and skills for each grade or course
  - Stresses deep learning, which means applying concepts and skills within the same grade or course
- Coherence
  - Articulates a progression of topics across grades and connects to other topics
  - Vertical growth that reflects the nature of the discipline
- Rigor
  - Pursuit of conceptual understanding, procedural skill and application

Standards Progressions

CCSS DOMAIN PROGRESSION

<table>
<tr><th>K</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>HS</th></tr>
<tr><td>Counting & Cardinality</td><td colspan="9"></td></tr>
<tr><td colspan="6">Number and Operations in Base Ten</td><td colspan="2">Ratios and Proportional Relationships</td><td></td><td rowspan="2">Number & Quantity</td></tr>
<tr><td colspan="2"></td><td colspan="4">Number and Operations – Fractions</td><td colspan="3">The Number System</td></tr>
<tr><td colspan="6" rowspan="2">Operations and Algebraic Thinking</td><td colspan="3">Expressions and Equations</td><td>Algebra</td></tr>
<tr><td colspan="2"></td><td>Functions</td><td>Functions</td></tr>
<tr><td colspan="9">Geometry</td><td>Geometry</td></tr>
<tr><td colspan="6">Measurement and Data</td><td colspan="3">Statistics and Probability</td><td>Statistics & Probability</td></tr>
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HIGH SCHOOL MATHEMATICS PATHWAYS

- CCSS Appendix A, developed by Achieve
- Two main pathways:
  - Traditional: Two algebra courses and a geometry course, with statistics and probability in each
  - Integrated: Three courses, each of which includes algebra, geometry, statistics, and probability
- Both pathways:
  - Complete the Core in the third year
  - Include the same "critical areas"
  - Require rethinking high school mathematics
  - Prepare students for a menu of fourth-year courses

Typical in U.S.

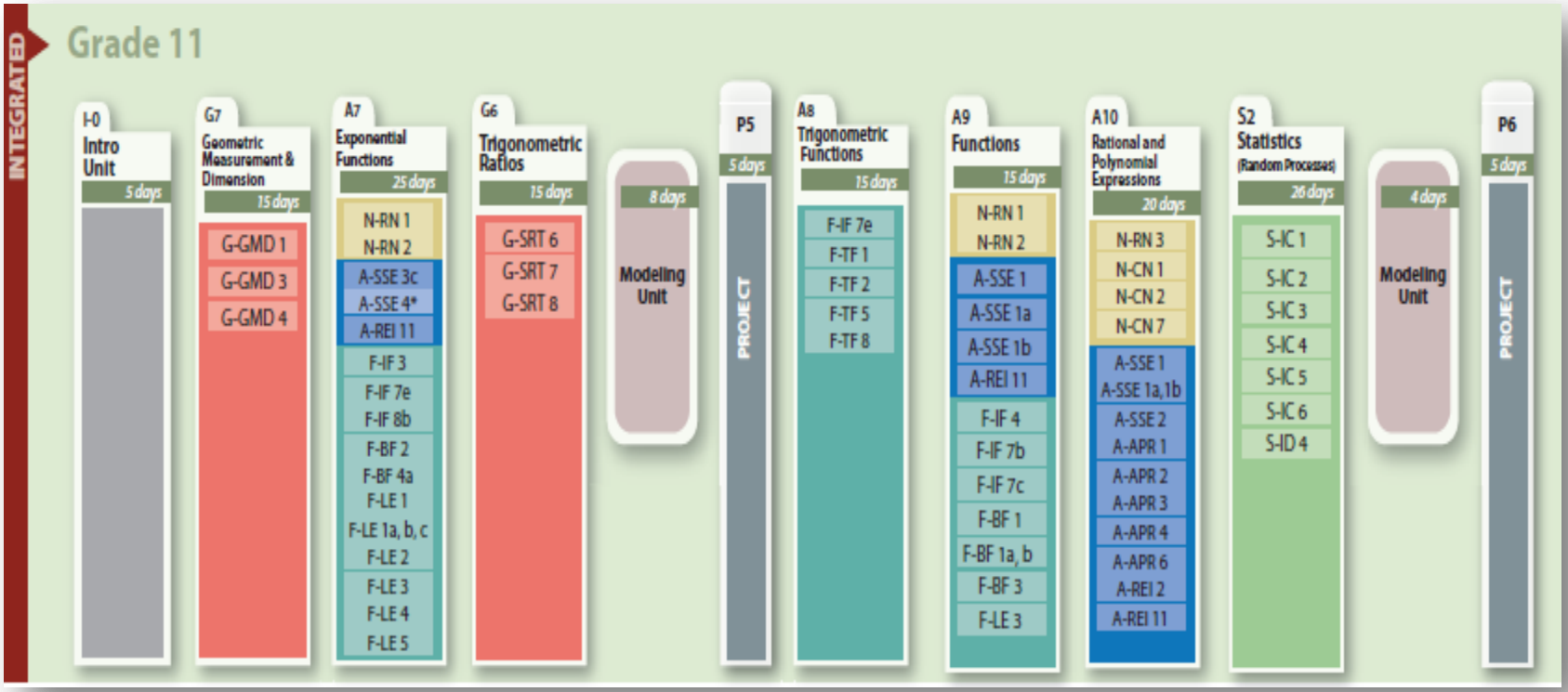
Typical outside U.S.

Worthington Implementation

- K-2 are implementing this school year using a Common Core program Stepping Stones
- Grades 3-5 will use Stepping Stones 2013-14
- Courses in grades 6-12 are being developed for implementation in Fall 2013

  Scope and sequences are guiding how current resources and other options will be used in development of the courses.

Example Scope and Sequence



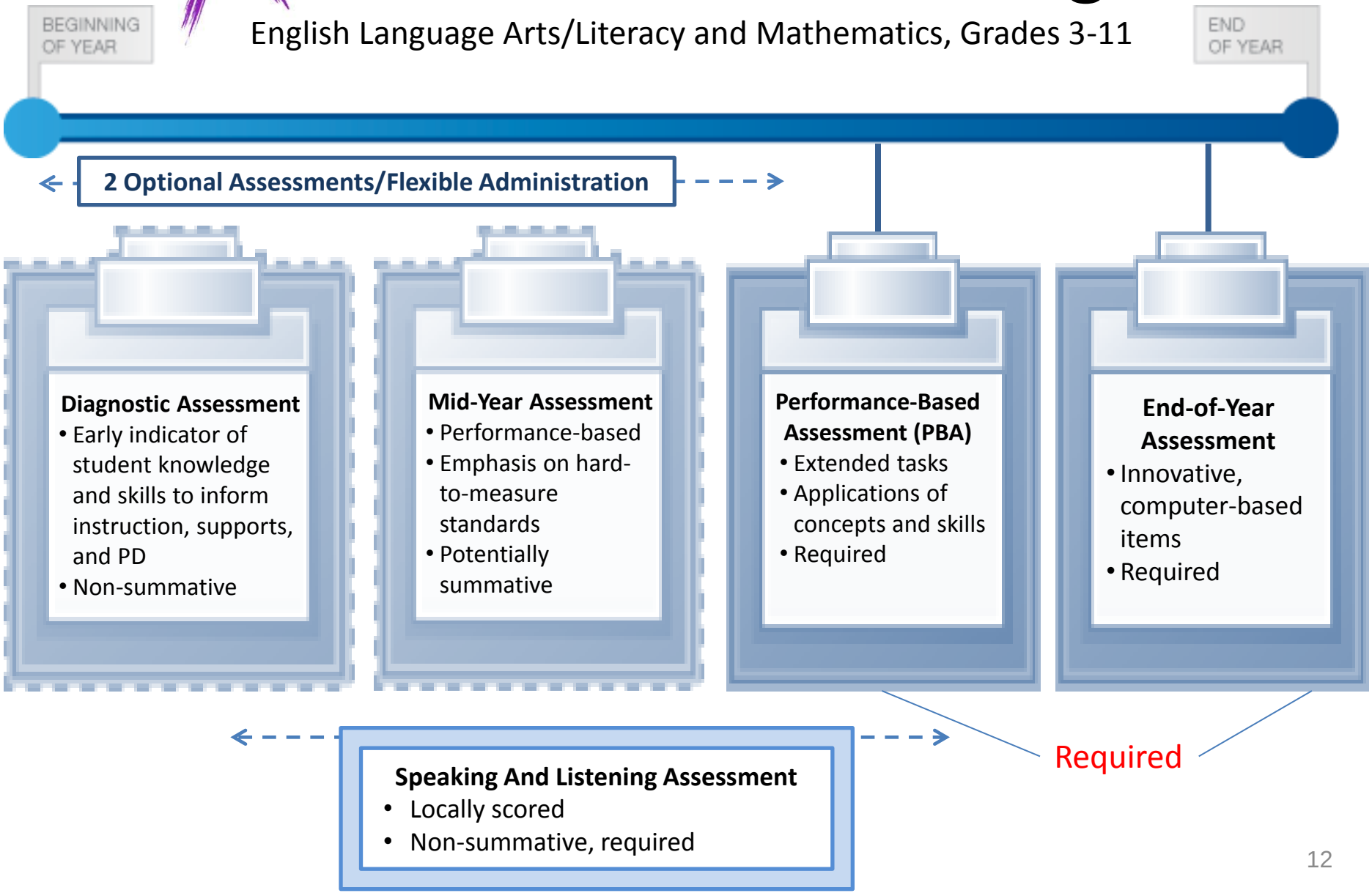
Algebra, Geometry and Statistics and Probability topics are integrated in each of the high school courses, Math 1, Math 2 and Math 3

Excerpt from Course Progression Chart

Currently Enrolled	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Phase in of Common Core						
6th	7th	8th	9th	10th	11th	12th
Pre-Algebra 6	Acc 7th	8th Grade CCSS Math 1	Honors CCSS Math 2	Honors CCSS Math 3	Honors PreCalculus	Calculus
6th	CCSS Math 7	CCSS Math 8	CCSS Math 1	CCSS Math 2 or	CCSS Math 3	Pre-Calculus, Financial Alg, Algebra 3
7th	**8th**	**9th**	**10th**	**11th**	**12th**	
7th Grade Algebra 1 + Rich Problems	Geometry + Topics from Math 1	Honors CCSS Math 2	Honors CCSS Math 3	Honors Pre-Calculus	Calculus	
Pre-Algebra 7	CCSS Math 8	CCSS Math 1	CCSS Math 2	CCSS Math 3	Pre-Calculus, Financial Alg, Algebra 3	
8th	**9th**	**10th**	**11th**	**12th**		
8th Grade Geometry or Math 1	Honors CCSS Math 2 or Alg II	Honors CCSS Math 3 or FST	Honors CCSS Pre-Calculus	Calculus		
8th Grade Algebra 2	Honors FST	Honors PDM	Calculus	PSEO		

PARCC Assessment Design

English Language Arts/Literacy and Mathematics, Grades 3-11



Goal #1: Create High Quality Assessments

- To address the priority purposes, PARCC will develop an assessment system comprised of **four components**. Each component will be computer-delivered and will leverage technology to incorporate innovations.
  - Two ***summative, required assessment components*** designed to
    - Make "college- and career-readiness" and "on-track" determinations
    - Measure the full range of standards and full performance continuum
    - Provide data for accountability uses, including measures of growth
  - Two ***non-summative, optional assessment components*** designed to
    - Generate *timely* information for informing instruction, interventions, and professional development during the school year
    - An additional third non-summative component will assess students' speaking and listening skills

Overview of Mathematics Task Types

PARCC mathematics assessments will include three types of tasks.

Task Type	Description of Task Type
I. Tasks assessing *concepts, skills and procedures*	• Balance of conceptual understanding, fluency, and application • Can involve any or all mathematical practice standards • Machine scorable including innovative, computer-based formats • Will appear on the End of Year and Performance Based Assessment components
II. Tasks assessing *expressing mathematical reasoning*	• Each task calls for written arguments / justifications, critique of reasoning, or precision in mathematical statements (MP.3, 6). • Can involve other mathematical practice standards • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component
III. Tasks assessing *modeling / applications*	• Each task calls for modeling/application in a real-world context or scenario (MP.4) • Can involve other mathematical practice standards. • May include a mix of machine scored and hand scored responses • Included on the Performance Based Assessment component

For more information see PARCC Item Development ITN Appendix D.

What is **NOT** covered in the CCSM?

- ***How*** teachers should teach
- **All** that should be taught
- **Reflection of variety** of abilities, needs, learning rates, achievement levels
- **The "whole" of readiness** – social, emotional, physical development

Responses to the challenges of implementation

- Units for CCSSM are being created from current textbooks both hardcopy and online
- Leverage resources with limited financial support
- Making an effort to focus instruction which reduces repetition in content
- Develop formative assessments which provides insight into student thinking
- Have intervention options for students who have weaknesses
- Communication plan of new course progression to students and parents
- Develop strategies for content-based professional learning in collaboration with other teachers to maximize the instructional opportunities for the students

Closing Thought

- “These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.”

  (CCSS, 2010, p. 5)