In 2009, 48 states, 2 territories and the District of Columbia committed to developing college readiness standards in Mathematics.

State-led effort coordinated by the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO).
Why Common Core State Standards?

- **Preparation**: The standards will help prepare students with the knowledge and skills they need to succeed in education and training after high school.

- **Competition**: The standards are internationally benchmarked to help ensure our students are globally competitive.

- **Equity**: Expectations are consistent for all—and not dependent on a student’s zip code.

- **Clarity**: The standards are focused, coherent, and clear so students (and parents and teachers) understand what is expected of them.

- **Collaboration**: The standards create a foundation to work collaboratively across states and districts, pooling resources and expertise.
K-12 Common Core State Standards:

- Core writing teams in Mathematics and English language arts and literacy (See [www.corestandards.org](http://www.corestandards.org) for list of team members) supported by external work groups which included many from higher education sector

- Based on college and career ready standards, learning progressions formed the basis

- Draft K-12 standards released for public comment on March 10, 2010; 9,600 comments received

- Final standards were released June 2, 2010

- To date, 40 States and the District of Columbia have adopted the Common Core State Standards.
Feedback and Review

External and State Feedback teams included:

- Postsecondary Faculty
- K-12 Faculty and staff
- State curriculum and assessments experts
- Researchers

National organizations (including, but not limited, to):

- American Council on Education (ACE)
- American Federation of Teachers (AFT)
- Campaign for High School Equity (CHSE)
- Conference Board of the Mathematical Sciences (CBMS)
- Modern Language Association (MLA)
- National Council of Teachers of English (NCTE)
- National Council of Teachers of Mathematics (NCTM)
- National Education Association (NEA)
Standards from individual high-performing countries and provinces were used to inform content, structure, and language, as well as rigor, coherence, and progression.

**Mathematics**
1. Belgium (Flemish)
2. Canada (Alberta)
3. China
4. Chinese Taipei
5. England
6. Finland
7. Hong Kong
8. India
9. Ireland
10. Japan
11. Korea
12. Singapore

**ELA/Literacy**
1. Australia
   - New South Wales
   - Victoria
2. Canada
   - Alberta
   - British Columbia
   - Ontario
3. England
4. Finland
5. Hong Kong
6. Ireland
7. New Zealand
8. Singapore
Scholarly Research

Survey data on skills required for students entering college and workforce training (ADP, ACT, CB)

Assessment data identifying college and career readiness content requirements
The CCSS deliver what postsecondary has requested over the years (some examples)

American Diploma Project (ADP) Benchmarks include:
- Read informational texts; write effectively and construct arguments; work collaboratively
- Exhibit strong foundation in mathematics linked to advanced skills and mathematical reasoning.

Early Assessment Program (EAP) of the California State University (CSU):
- Identifies mathematics through Algebra II as critical; offers on-line mathematics lessons in algebra, geometry, probability, and statistics
- Identifies expository writing as critical; offers on-line course for 12th grade teachers

ICAS Competencies (CCC, CSU, and UC)
- Call for Academic Literacy across all content areas
- Specify application of mathematics to everyday life and deep mathematics reasoning

Association of American Colleges and Universities (2009 National Survey)
- Nearly 80% of colleges identify learning outcomes that include critical cross-cutting skills and areas of knowledge such as writing, critical thinking, quantitative reasoning, oral communication, intercultural skills, information literacy, and ethical reasoning.
Key Advances

Focus and coherence
- Focus on key topics at each grade level.
- Coherent progressions across grade levels.

Balance of concepts and skills
- Content standards require both conceptual understanding and procedural fluency.

Mathematical practices
- Foster reasoning and sense-making in mathematics.

College and career readiness
- Level is ambitious but achievable.
Design and Organization

Standards for Mathematical Practice

- Carry across all grade levels
- Describe habits of mind of a mathematically expert student

Standards for Mathematical Content

- K-8 standards presented by grade level
- Organized into domains that progress over several grades
- Grade introductions give 2–4 focal points at each grade level
- High school standards presented by conceptual theme (Number & Quantity, Algebra, Functions, Modeling, Geometry, Statistics & Probability)
Design and organization

- **Content standards** define what students should understand and be able to do
- **Clusters** are groups of related standards
- **Domains** are larger groups that progress across grades

**Number and Operations in Base Ten**

**3.NBT**

*Use place value understanding and properties of operations to perform multi-digit arithmetic.*

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
Design and Organization: Grade-Level Overview

Grade K Overview

Counting and Cardinality

• Know number names and the count sequence.
• Count to tell the number of objects.
• Compare numbers.

Operations and Algebraic Thinking

• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

• Work with numbers 11–19 to gain foundations for place value.

Mathematical 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.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of
Increased depth; better progressions: Fractions, Grades 3–6

- Develop an understanding of fractions as numbers.

- Extend understanding of fraction equivalence and ordering.

- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- Understand decimal notation for fractions, and compare decimal fractions.

- Use equivalent fractions as a strategy to add and subtract fractions.

- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
Conceptual themes in high school

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability

College and career readiness threshold

- (+) standards indicate material beyond the threshold; can be in courses required for all students.
Appendix A: The High School Standards Organized in Model Courses

Two Regular Sequences:

**Traditional Pathway**
- 2 Algebra, 1 Geometry courses, with Probability and Statistics interwoven

**Integrated Pathway**
- 3 courses that attend to Algebra, Geometry, and Probability and Statistics each year

Courses in higher level mathematics: Precalculus, Calculus*, Advanced Statistics, Discrete Mathematics, Advanced Quantitative Reasoning, or courses designed for career technical programs of study.

Traditional Pathway
*Typical in U.S.*

Integrated Pathway
*Typical outside of U.S.*
Informed by multiple sources

- **ADP Core**: prior to CCSS, over 20 states had identified a common set of college- and career-ready benchmarks from among the ADP Benchmarks.

- **Algebra II End-of-Course Exam Standards**: in a survey of a statistically significant number of colleges and universities, a common set of content was determined as pre-requisite.

- **International Benchmarking**: the mathematics content a majority of high performing countries (TIMSS and PISA) expect of all students.

- **Survey data and statistical analyses from ACT and College Board**.

- **Workforce readiness research conducted for development of ADP Benchmarks**.

- **Additional scholarly research (see bibliography)**.
Key Advances

Focus and coherence

- Focus on key topics at each grade level.
- Coherent progressions across grade levels.

Balance of concepts and skills

- Content standards require both conceptual understanding and procedural fluency.

Mathematical practices

- Foster reasoning and sense-making in mathematics.

College and career readiness

- Level is ambitious but achievable.
The promise of standards

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 empty promises to our children, but promises we intend to keep.