COUNCIL OF CHIEF STATE SCHOOL OFFICERS (CCSSO)

&

NATIONAL GOVERNORS ASSOCIATION CENTER FOR BEST PRACTICES (NGA CENTER)

DEVELOPERS

What are the Common Core State Standards?

- Aligned with college and work expectations
- Focused and coherent
- Include rigorous content and application of knowledge through high-order skills
- Build upon strengths and lessons of current state standards
- Internationally benchmarked so that all students are prepared to succeed in our global economy and society
- Based on evidence and research
- State led – coordinated by NGA Center and CCSSO

Why is this important?

- Currently, every state has its own set of academic standards, meaning public education students in each state are learning to different levels **(46 states have adopted common core standards as of 9/1/12)**
- All students must be prepared to compete with not only their American peers in the next state, but with students from around the world
- Standards should be standards and consistent across the country

COMMON CORE
STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

STANDARDS HAVE BEEN DEVELOPED FOR

ENGLISH and LANGUAGE ARTS
HISTORY and SOCIAL STUDIES
SCIENCE
TECHNICAL SUBJECTS

Design and Organization

Major design goals

- Align with best evidence on college and career readiness expectations
- Build on the best standards work already developed by the states
- Maintain focus on what matters most for readiness for students for secondary education and careers

Intentional Design Limitations

What the Standards do NOT define:

- How teachers should teach
- All that can or should be taught
- The nature of advanced work beyond the core
- The interventions needed for students well below grade level
- The full range of support for English language learners and students with special needs
- Everything needed to be college and career ready

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, Trigonometry, Functions, Modeling, Geometry, Statistics & Probability)

Design and Organization

Focal Point at Grade Level (Example)

Mathematics Grade 6 Middle School

In grade 6, instructional time should focus on four critical areas;

(1) Connecting ratio and rate to whole numbers multiplication and division and using concepts of ratio and rate to solve problems.

(2) Completing the understanding of division of fractions and extending the notion number to the system of rational numbers, which includes negative numbers.

(3) Writing, interpreting and using expressions and equations.

(4) Developing the understanding of statistical thinking.

High School (Requirements)

Conceptual themes in high school

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

College and career readiness threshold

- (+) standards indicate material beyond the threshold; can be in courses required for all students.

Middle School (Boat Builders)

Navigation Concepts (Sailing the Boat You Built)

Math for the Mariner

- Mixed use of Base 10/ Base 60 math
- Position Determination by Latitude/Longitude (Chart Work)
- Bearings, Use and understanding of a compass
- Navigational Variation/ Deviation
- Use of Geometry in Position Determination (Sailings)

High School (Boat Builders)

Navigation Practice (Required to sail the boat you build)

Math for the Mariner

- Use of bearings for lines of position
- Use of geometry to advance a position
- Use of trigonometry for position determination
- Use of multiple math skills to determine:
  - Estimated time of arrival
  - Course made good
  - Speed made good
  - Effects of current/ tide / wind on vessel position

High School (Boat Builders)

Seamanship

Math for the Mariner

- Mechanical Advantage (block & tackle)
- Buoyancy / Reserve Buoyancy
- Stability & Trim
- Breaking Strength & Safe Working Loads
- Advance & Transfer
- Time and distance of arrival

School Mathematics Requirements

Middle Maritime Connections

- Hands-on experience with transformations (Lofting)

High School Applications

- Properties of rotations, reflections, translations, and dilations are reinforced (Reading plans)
- Connections with algebra, trigonometry and modeling with practical real world applications are made

Boat Building is Mathematics

Middle Maritime (Connections)

Number and quantity: Calculate linear feet, square feet

Measurement and quantity of materials

Fractions use of measurement tools

High School (Applications)

Equations used to determine ratios (Design and drawing)

Ratios of buoyancy,(Archimedes principal)

Calculate displacement of hull form for intended use

Calculate surface area and volume

Trim and Stability is Mathematics

Middle Maritime (Connections)

- Hands-on experience use of small models

High School (Applications)

- Properties of rotations, reflections, translations and dilations are reinforced thru practical shipboard application
- Connections with algebra and modeling made thru voyage planning

Sailing and Navigation are Mathematics

Middle Maritime (Connections)

- Hands-on experience through chart work and the use of plotting instruments

High School (Applications)

- Properties of rotations, reflections, translations and dilations are reinforced thru actual vessel navigation
- Connections with trigonometry thru the use of sailing problems
- Wind vectors
- Currents are vectors

Conclusion the "Boat Building" Connection

Middle School Connection

- **? Thoughts**

High School Applications

- **? Thoughts**