The Common Core State Standards in Mathematics (CCSSM) are a set of academic standards in mathematics that are grounded in evidence and designed to ensure that all students have the academic knowledge and skills they need in these core subjects to succeed after high school. The CCSS were developed in a state-led process under the leadership of governors and chief state school officers with participation from 48 states. The process included the involvement of state departments of education, districts, teachers, community leaders, experts in a wide array of fields, and professional educator organizations. These standards were adopted by the state of Connecticut in July, 2010.

Focus, coherence, and rigor are the major evidence-based design principles of the Common Core State Standards for Mathematics. These principles are meant to fuel greater achievement in a deep and rigorous curriculum, one in which students acquire conceptual understanding, procedural skill and fluency, and the ability to apply mathematics to solve problems. Thus, the instructional shifts in mathematics are as follows:

- **Focus**: fewer standards allow for focusing on the major work for each grade
- **Coherence**: the standards are designed around coherent progressions and conceptual connections
- **Rigor**: in major topics, pursue with equal intensity conceptual understanding, procedural skill and fluency, and applications of the mathematics in real-world scenarios

The Common Core State Standards for Mathematics have two key components:

- **Standards for Mathematical Practice** – these practices describe expertise and habits of mind that all math students should exhibit.
- **Standards for Mathematical Content** – conceptual understandings, procedural skills and fluencies, and applications in mathematics

The Content Standards at each grade level are grouped into domains (e.g. Geometry) and clusters within each domain.
Standards for Mathematical Practice

The eight mathematical practices are:

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.
Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

1. Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

2. Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

3. Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

4. Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.
Ratios and Proportional Relationships
• Analyze proportional relationships and use them to solve real-world and mathematical problems.

The Number System
• Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Expressions and Equations
• Use properties of operations to generate equivalent expressions
• Solve real-life and mathematical problems using numerical and algebraic expressions and equations

Geometry
• Draw, construct, and describe geometrical figures and describe the relationships between them
• Solve real-life and mathematical problems involving angle measure, area, surface area, and volume

Statistics and Probability
• Use random sampling to draw inferences about a population
• Draw informal comparative inferences about two populations
• Investigate chance processes and develop, use, and evaluate probability models