**C2.0 Mathematics 8 Course Outline**
**The Real Number System**

| Topic | Instructional Foci |
|---|---|
| **Topic 1: Magnitude and Scientific Notation** | In this topic, students continue their study of exponents by investigating very large and very small quantities. This requires them to represent, estimate, and calculate numbers expressed in scientific notation. Students apply the properties of integer exponents to transform expressions as they explore equivalency.<br><br>*Concepts:*<br>Explore the magnitude of numbers.<br>Express very large and very small numbers in scientific notation.<br>Explore properties of integer exponents through patterns.<br>Solidify understanding of properties of integer exponents.<br>Reason about and solve problems using scientific notation. |
| Topic | Instructional Foci |
| **Topic 2: Rational and Irrational Numbers** | In this topic, students differentiate between rational and irrational numbers by exploring repeating decimal patterns. They evaluate square roots and cube roots of perfect squares and perfect cubes. Students use rational approximations of irrational numbers to estimate the value of irrational numbers, compare their size, and locate them approximately on a number line diagram.<br><br>*Concepts:*<br>Categorize real numbers as rational or irrational.<br>Use geometric representations to explore squares and cubes.<br>Solve equations involving perfect squares and perfect cubes.<br>Estimate non-perfect roots between two integers. |
| Topic | Instructional Foci |
| **Topic 3: The Pythagorean Theorem** | In this topic, students explore the Pythagorean Theorem to determine the relationship between side lengths of right triangles. They explain a proof of the Pythagorean Theorem and its converse. Students link their previous understanding of square roots with their knowledge of the Pythagorean Theorem to determine the distance between two points on the coordinate plane and solve real-world and mathematical problems.<br><br>*Concepts:*<br>Explore the relationship between the squares of side lengths in a right triangle.<br>Determine missing side lengths of a right triangle by applying the Pythagorean Theorem.<br>Determine if a triangle is a right triangle using the converse of the Pythagorean Theorem.<br>Find the distance between two points in a coordinate system using the Pythagorean Theorem.<br>Apply the Pythagorean Theorem to solve real-world and mathematical problems. |