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| **8th Grade Math – 4th Quarter** |
| **Strand** | Cluster | **Standard** | **Learning Targets** | **Resources** | **Module** | **Module Unit Name** |
| The Number System | 8.NS.1 Know that there are numbers that are not rational, and approximate them by rational numbers. | 8.NS.1 **Know that there are numbers that are not rational, and approximate them by rational numbers.** 1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. | * I can classify a number as rational or irrational based on its decimal expansion.
* I can convert a repeating decimal into a rational number.
 |  | **7** | **Introduction to Irrational Numbers Using Geometry** |
| 8.NS.2 Know that there are numbers that are not rational, and approximate them by rational numbers. | 8.NS.2 **Know that there are numbers that are not rational, and approximate them by rational numbers.** 2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. | * I can use reasoning to determine between which two consecutive whole numbers a square root will fall (e.g., I can reason the square root of 39 is between 6 and 7 because it is between square root of 36 and square root of 49).
* I can plot the estimated value of an irrational number on a number line.
* I can estimate the value of an irrational number by rounding to a specific place value.
* I can use estimated values to compare two or more irrational numbers.
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| Expressions and Equations | 8.EE.2 Work with radicals and integer exponents. | 8.EE.2 **Work with radicals and integer exponents.** 2. Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational. | * I can recognize taking a square root as the inverse of squaring a number.
* I can recognize taking a cube root as the inverse of cubing a number.
* I can evaluate the square root of a perfect square.
* I can justify that the square root of a non-perfect square will be irrational.
 |  | **7** | **Introduction to Irrational Numbers Using Geometry** |
| Geometry | 8.G.6 Understand and apply the Pythagorean Theorem. | 8.G.6 **Understand and apply the Pythagorean Theorem.** 6. Explain a proof of the Pythagorean Theorem and its converse. | * I can use visual models to demonstrate the relationship of the three side lengths of any right triangle.
* I can use algebraic reasoning to relate the visual model to the Pythagorean Theorem.
* I can use the Pythagorean Theorem to determine if a given triangle is a right triangle.
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| 8.G.7 Understand and apply the Pythagorean Theorem. | 8.G.7 **Understand and apply the Pythagorean Theorem.** 7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. | * I can apply the Pythagorean Theorem to find an unknown side length of a right triangle.
* I can draw a diagram and use the Pythagorean Theorem to solve real-world problems involving right triangles.
* I can draw a diagram to find right triangles in a three-dimensional figure and use the Pythagorean Theorem to calculate various dimensions.
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| Geometry | 8.G.8 Understand and apply the Pythagorean Theorem. | 8.G.8 **Understand and apply the Pythagorean Theorem.** 8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. | * I can connect any two points on a coordinate grid to a third point so that the three points form a right triangle.
* I can use the right triangle and the Pythagorean Theorem to find the distance between the original two points.
 |  | **7** | **Introduction to Irrational Numbers Using Geometry** |
| 8.G.9 Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. | 8.G.9 **Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.** 9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. | * I can describe the similarity between finding the volume of a cylinder and the volume of a right prism.
* I can recall the formula to find the volume of a cylinder.
* I can informally prove the relationship between the volume of a cylinder and the volume of a cone with the same base.
* I can recall the formula to find the volume of a cone.
* I can informally prove the relationship between the volume of a sphere and the volume of a circumscribed cylinder.
* I can recall the formula to find the volume of a sphere.
* I can use the formulas to find the volume of cylinders, cones, and spheres.
* I can solve real-world problems involving the volume of cylinders, cones, and spheres.
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