

## 8<sup>th</sup> Grade Module 7 – Introduction to Irrational Numbers Using Geometry

	4 - Mastery	3 - Proficient	2 - Basic	1 - Below Basic	0 - No Evidence
Topic A and B (8.NS.1, 8.NS.2, 8.EE.2)	<p>Meets <b>all</b> of the criteria in a Level 3</p> <p><b>Completes tasks including synthesis and evaluation</b></p>	<p>Identify numbers as being rational or irrational</p> <p>Approximate irrational numbers to compare the size of numbers <b>and locate them on a number line.</b></p> <p>Find the decimal expansion of a rational number to identify a number is rational <b>and</b> convert a decimal expansion into a rational number</p> <p>Solve equations where the unknown is a positive number that is squared or cubed</p>	<p>Identify numbers as being rational or irrational</p> <p>Approximate irrational numbers to compare the size of numbers</p> <p>Find the decimal expansion of a rational number to identify a number is rational <b>or</b> convert a decimal expansion into a rational number</p> <p>Solve equations where the unknown is a positive number that is squared <b>or cubed</b></p>	<p>Identify numbers as being rational or irrational</p> <p>Solve equations where the unknown is a positive number <b>that is squared</b></p>	<p><b>Shows no evidence of proficiency</b></p> <p>Little evidence of reasoning or application to solve the problem.</p>
Topic C (8.G.6, 8.G.7, 8.G.8)		<p>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in <b>real-world problems</b> and find the distance between two points in the coordinate system.</p> <p>Explain a proof of the Pythagorean Theorem <b>and</b> its converse.</p>	<p>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in mathematical problems <b>and</b> find the distance between two points in the coordinate system.</p> <p><b>Explain a proof of the Pythagorean Theorem or its converse</b></p>	<p>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in mathematical problems <b>or</b> find the distance between two points in the coordinate system.</p>	
Topic D (8.G.9, 8.G.7)		<p><b>Apply</b> the the volume formulas for cones, cylinders, and spheres to solve real world problems (situations may involve Pythagorean theorem)</p>	<p>Use the volume formulas for cones, cylinders, and spheres to solve mathematical problems (situations may involve Pythagorean theorem)</p>	<p>Use the volume formulas for cones, cylinders, and spheres <b>(2 of the 3)</b> to solve mathematical problems (situations may involve Pythagorean theorem)</p>	

8.NS.A.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.

8.NS.A.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.,  $\pi^2$ ).

8.EE.A.2 - Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.

8.G.B.6 - Explain a proof of the Pythagorean Theorem and its converse.

8.G.B.7 - Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

8.G.B.8 - Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

8.G.C.9 - Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.