

Mathematics 8 Standards Parent Resource

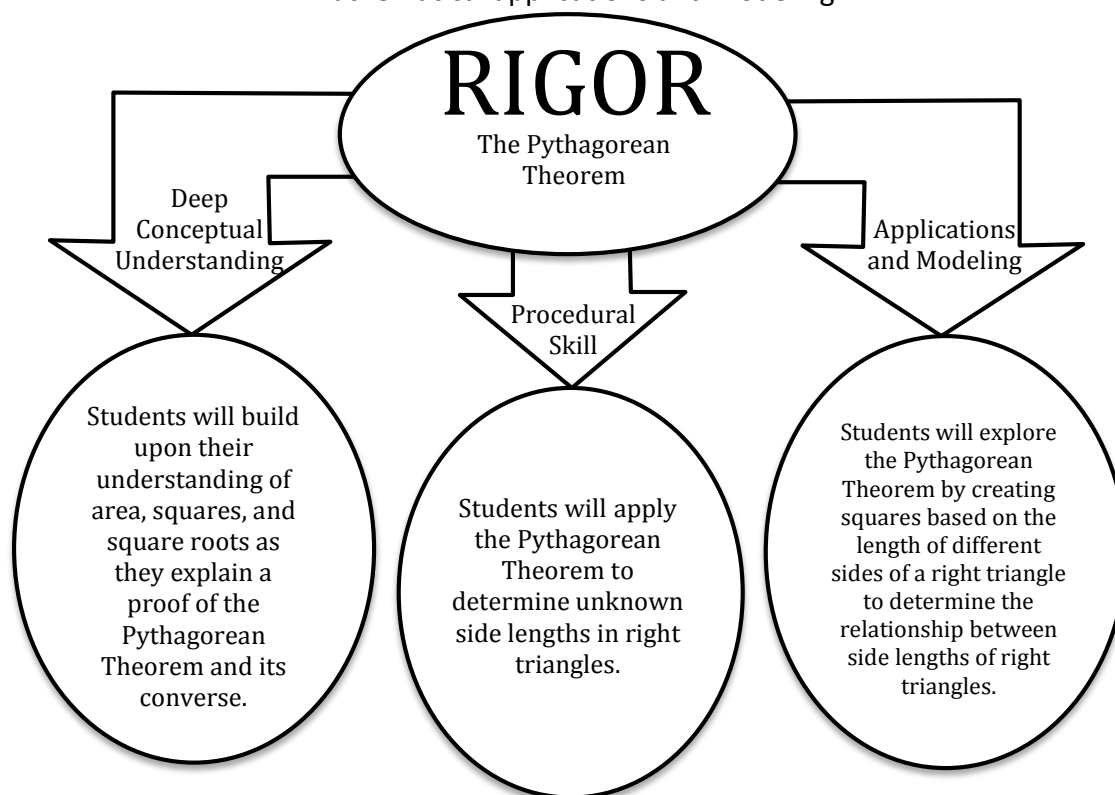
Unit 1: The Real Number System

Unit 1 includes 3 topics of study, listed below. This resource is for Topic 3.

Topic 1	Topic 2	Topic 3
Magnitude and Scientific Notation	Rational and Irrational Numbers	<i>The Pythagorean Theorem</i>

Topic	Learning Goals by <u>Common Core State Standard</u> <i>Students will be able to...</i>
The Pythagorean Theorem	<ul style="list-style-type: none"> • Explain a proof of the Pythagorean Theorem and its converse. • Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. • Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. <p style="text-align: center;"><i>Instructional videos in the hyperlinks above are meant to support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.</i></p>

The Common Core State Standards require a balance of three fundamental components that result in rigorous mathematics acquisition: deep conceptual understanding, procedural skill, and mathematical applications and modeling.

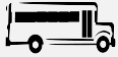


Grade 8 standards Parent Resource

Unit 1: The Real Number System

Topic 3: The Pythagorean Theorem

Learning Experiences by Common Core State Standard



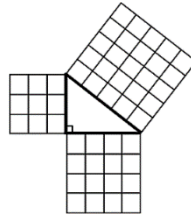
In school, your child will...



At home, your child can...

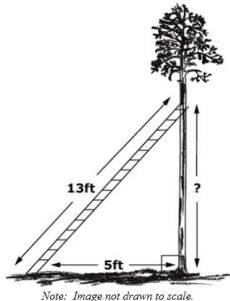
Topic 3: The Pythagorean Theorem

- Explain a proof of the Pythagorean Theorem and its converse. Explain how the model below supports the Pythagorean Theorem and its converse.



Explain why the practice of constructing a triangle with side-lengths 3, 4, and 5 to produce a right angle uses the converse of the Pythagorean Theorem.

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



Note: Image not drawn to scale.

Determine the distance, in feet, between the ground and the top of the ladder.

Adapted from:  Smarter Balanced

- Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. What is the distance between the two points (2, 4) and (8, 2) on the coordinate plane? Round your answer to the tenths place.

- Explore how the Pythagorean Theorem can be applied to the sport of Baseball - You've just picked up a ground ball at first base, and you see the other team's player running towards third base. How far do you have to throw the ball to get it from first base to third base, and throw the runner out?
- Why is it important for a structure to "be square"? Examine [The Builder's Triangle](#) to find out.
- A "Pythagorean Triple" is a set of positive integers, a, b and c that fits the rule $a^2 + b^2 = c^2$. Discover how many [Pythagorean Triples](#) you and your child can create.

Additional Resources

- [Squaring the Triangle](#) This applet allows users to explore right triangles and the Pythagorean Theorem. (interactive applet)
- [Pythagorean Explorer](#) This applet allows users to study the nature of the Pythagorean Theorem. The applet provides the user with various types of triangles of varying difficulty. For each right triangle two sides are given and the right angle is labeled. The user is to calculate the measure of the unknown side. (online check)
- [Geogebra: Converse of the Pythagorean Theorem](#) Use this applet to discover the converse of the Pythagorean Theorem! (interactive applet)
- [Math Planet: The converse of the Pythagorean Theorem and special triangles](#) Read about special triangles and watch the video to better understand how the Pythagorean Theorem works. (online lesson)
- [Pythagorean Theorem Jeopardy](#) In this Pythagorean Theorem Game, 8th grade students will practice calculating the hypotenuse and the unknown leg in a right triangle. The converse of the Pythagorean Theorem will also be utilized to verify if three numbers could be the sides of a right triangle. (online game)
- [Khan Academy: Distance between two points](#) Use the Pythagorean Theorem to find the distance between two points on the coordinate plane. (online check)
- [IXL: Find the distance between two points](#) (online check)
- [Quandaries and Queries](#) Investigate how the Pythagorean Theorem is applied to solve problems in three dimensions. (applications)
- [Mathematics 8 Standards Unit 1 Topic 3 The Pythagorean Theorem](#) (flexbook)

Additional Practice links support C2.0 content, but may use vocabulary or strategies not emphasized by MCPS.