Grade: 8   FCPS 2025-2026 Math Grade 8 Topic 7

8th Grade Topic 7: Understand and Apply the Pythagorean Theorem	Estimate Time Frame: 19 days

Essential Standards: 8.G.6, 8.G.7, 8.G.8

Assessment Resource: enVision Topic 7 and Formative Assessment Lessons **(FAL):** Discovering the Pythagorean Theorem and Finding the Shortest Route

FCPS Supporting Links	Additional Supporting Links
Pacing Guide 8th Grade Topic 7 Standards Resource with Sample Formative Assessments enVision 8th Grade Topic 2 Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document FCPS Achievement & Trauma-Informed Strategies in the Classroom	Kentucky Academic Standards KSA Blueprint Target of the Standards – conceptual, procedural & application Three-Reads Routine Notice and Wonder Routine **MILC Resources Topic 7: Understand and Apply the Pythagorean Theorem** *enVision Teacher Guide: page 384A to 384D for specific Topic 7* *Focus-Coherence-Rigor*

Big Ideas

Understand and apply the Pythagorean Theorem.

Essential Questions	Common Preconceptions/Misconceptions
How can you use the Pythagorean Theorem to solve real-world problems?	Pythagorean Theorem- confusing a,b, and c (hypotenuse is always opposite the right angle of the triangle) and use on right triangles only Distance of a line: finding the length of the lines within the given scale on a graph.

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Standards for Mathematical Practices	Kentucky Interdisciplinary Literacy Practices (KILP)
MP.1. Make sense of problems and persevere in solving them. **MP.2. Reason abstractly and quantitatively.** **MP.3. Construct viable arguments and critique the reasoning of others.** **MP.4. Model with mathematics.** **MP.5. Use appropriate tools strategically.** MP.6. Attend to precision. **MP.7. Look for and make use of structure.** **MP.8. Look for and express regularity in repeated reasoning.** *enVision Teacher Guide: page 384E for specific Topic 7 Math Practice suggestions*	1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schemas to understand and create text. 3. View literacy experiences as transactional, interdisciplinary, and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. 5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks. **6. Collaborate with others to create new meaning.** **7. Utilize digital resources to learn and share with others.** **8. Engage in specialized, discipline-specific literacy practices.** **9. Apply high-level cognitive processes to think deeply and critically about text.** 10. Develop a literacy identity that promotes lifelong learning. *Incorporating texts into math instruction fosters interdisciplinary learning for a more engaging educational experience.*

Essential Standards	Sample Learning Intentions & Success Criteria	HQIR/Resource Considerations
Cluster: Understand and apply the Pythagorean Theorem.		
KY.8.G.6 Explain a proof of the Pythagorean Theorem and its converse. ☐ **Conceptual** ☐ Procedural ☐ Application Coherence KY.7.G.6→ KY.8.G.6→KY.HS.G.11 **MP.3, MP.7, KILP.1, KILP.2, KILP.8** **Clarifications:** Students verify, using a model, that the sum of the squares of the legs is equal to the square of the	We are learning to understand the Pythagorean Theorem. ● I can describe the Pythagorean Theorem. ● Using a model, I can verify that the sum of the squares of the legs is equal to the square of the hypotenuse in a right triangle. ● I can use the converse of the Pythagorean Theorem to verify right triangles.	● Topic 7 Lesson 7-1 ● Topic 7: Let's Investigate! Building the Right Way (replaces Topic 7 Lesson 7-2) ● 3-Act Math Task - Go with the Flow ● enVision Language Support Handbook ● Formative Assessment Lessons (FAL):

hypotenuse in a right triangle. Students understand that if the sum of the squares of the two smaller legs is equal to the square of the third leg, then the triangle is a right triangle.		[Discovering the Pythagorean Theorem](#) ● MILC - 7-1 - Water Wheel Proof of the Pythagorean Theorem [(YouTube)](#)
KY.8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. ❑ Conceptual ☐**Procedural** ☐**Application** Coherence KY.8.G.7→KY.HS.G.12 **MP.1, MP.2, MP.4, KILP.3, KILP.9** **Clarifications:** Students apply the Pythagorean Theorem to real-world mathematical problems. For example, the width of a television can be determined, given the length and diagonal distance (two-dimensional) and the distance from the top left rear corner of a prism to the bottom right front corner of the prism (three-dimensional).	We are learning to apply our knowledge of the Pythagorean Theorem to solve real-world problems. ● I can use the Pythagorean Theorem to find an unknown side length (leg or hypotenuse) of a right triangle in two dimensions. ● I can use the Pythagorean Theorem to find an unknown side length (leg or hypotenuse) in three dimensions. ● I can use the Pythagorean Theorem to solve real-world problems.	● Topic 7 Lesson 7-3 ● Brainingcamp Tasks ● [enVision Language Support Handbook](#) ● Desmos: [Pythagorean Theorem Practice](#) ● Desmos: [Taco Truck](#) ● Desmos: [Exploring Lengths with an Online Geoboard](#) ● Formative Assessment Lesson (FAL): [Finding the Shortest Route](#)
KY.8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. ❑ Conceptual ☐**Procedural** ☐ Application Coherence KY.8.G.8→ KY.HS.G.21 **MP.5, MP.6, KILP.2, KILP.8** Clarifications: Students calculate distances on the coordinate plane between two non-vertical or	We are learning to apply the Pythagorean Theorem to find distances on a coordinate plane. ● I can plot points on a coordinate plane to form a right triangle. ● I can determine the lengths of the legs of the triangle. ● I can use the Pythagorean Theorem to determine the triangle's hypotenuse, the distance between the original points that do not pass through or include the	● Topic 7 Lesson 7-4 ● Brainingcamp Task (Lesson 7-4) ["Boating with Pythagoras"](#) (Lesson 7-4) ["Squares Everywhere!"](#) (Lesson 7-4) ["Triangle?"](#) ● [enVision Language Support Handbook](#) ● MILC - [Interactive Online](#)

| non-horizontal points by applying the Pythagorean Theorem. Students calculate distances between two non-vertical or non-horizontal points not given on a coordinate plane by using the Pythagorean Theorem to calculate absolute horizontal and vertical distances that the student calculates. | origin.
• I can derive an equation of y=mx + b for a line intercepting the vertical axis at b (the y-intercept). | [Distance Using Pythagorean Theorem Formula Application](#)
• MILC - [Pythagorean Theorem on a Graph Emoji Activity](#) |

Attending to the Standards for Mathematical Practice

By explaining a proof of the Pythagorean Theorem and its converse, students are constructing and defending arguments as to why the the relationship is true (MP.3).

The structure inherent in the use of the Theorem is a set of guidelines students seek to apply when applying the Theorem on right triangle relationships (MP.7).

Students make sense of the world around them by applying the Pythagorean Theorem in various ways (MP.1). Investigation into Pythagorean Triples and the relationships among similar triangles with the same ratio of Pythagorean Triples allows students to reason about the relationships (MP.2).

Extending knowledge of the Pythagorean Theorem to the coordinate plane gives students another tool for proving the relationship exists and applying it to quantitative tasks (MP.5).

Attending to precision is inherent in the study of this cluster, as a discussion will inevitably occur involving leaving a solution in terms of a radical, or a rational approximation ($\sqrt{50}$ vv . 7.07106. . .)(MP.6).

Supporting Standards

N/A

Vocabulary

Converse - The interchange of a conditional statement's "if" and "then" parts.
height - vertical distance from the top to the base
pi - mathematical constant with an approximation of 3.14
Pythagorean Theorem - "The theorem that relates the three sides of a right triangle: $a^2 + b^2 = c^{2}$".
Right triangle - A triangle in which one angle is a right angle. The relation between the sides and angles of a right triangle is the basis for trigonometry.

*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.

** Mathematical Practices (A.MP. 1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.

*** Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.