Core Content

Cluster Title: Understand and apply the Pythagorean Theorem.

Standard: Explain a proof of the Pythagorean Theorem and its converse.

Concepts and Skills to Master

- Know that in a right triangle $a^2 + b^2 = c^2$ (the Pythagorean Theorem).
- Understand and explain a proof of the Pythagorean Theorem.
- Understand and explain a proof of the converse of the Pythagorean Theorem.

Supports for Teachers

Critical Background Knowledge		
• Understand the relationship between a and a^2 , b and b^2 , and c and c^2 .		
Understand the relationship between squares and square roots.		
Academic Vocabulary		
right triangle, leg, hypotenuse, square, Pythagorean Theorem		
Suggested Instructional Strategies	Resources	
Consider introducing this with an application regarding distance.		
• Explore various proofs of the Pythagorean Theorem and discuss the		
logic within each.		
Sample Formative Assessment Tasks		
Skill-Based Task	Problem Task	
Explain the logical reasoning behind a proof of the	Investigate the historical context of one of the proofs of the	
Pythagorean Theorem.	Pythagorean Theorem and present the proof in context to the	
	class.	

Core Content

Cluster Title: Understand and apply the Pythagorean Theorem.

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

Grade 8

Concepts and Skills to Master

- Use the Pythagorean Theorem to solve for a missing side of a right triangle given the other two sides.
- Use the Pythagorean Theorem to solve problems in real-world contexts, including three-dimensional contexts.

Supports for Teachers

Critical Background Knowledge		
• Solve an equation using squares and square roots.		
Use rational approximations of irrational numbers to express answers.		
Academic Vocabulary		
right triangle, leg, hypotenuse, Pythagorean Theorem, square, square root, $$		
Suggested Instructional Strategies	Resources	
• Find and solve right triangles in career situations such as construction.		
Sample Formative Assessment Tasks		
Skill-Based Task	Problem Task	
If the height of a cone is 10 meters and the radius is 6	TV's are measured along their diagonal to find their dimension.	
meters, what is the slant height?	How does a 52-inch HD (wide-screen) TV compare to a	
	traditional 52-inch (full screen) TV?	

Core Content

Cluster Title: Understand and apply the Pythagorean Theorem.

Standard: Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Concepts and Skills to Master

• Calculate the distance between two points in a coordinate system using the Pythagorean Theorem.

Supports for Teachers

Critical Background Knowledge		
• Use the Pythagorean Theorem to solve for the hypotenuse of a right triangle.		
Academic Vocabulary		
right triangle, distance formula, leg, hypotenuse, Pythagorean Theorem, square, square root		
Suggested Instructional Strategies	Resources	
 Overlap a map with a coordinate grid and use the Pythagorean Theorem to find the distance between two locations. Investigate the relationship between the Pythagorean Theorem and the distance formula. Use the Pythagorean Theorem to explore and categorize triangles and quadrilaterals on a coordinate system. 		
Sample Formative Assessment Tasks		
Skill-Based Task Using the Pythagorean Theorem, find the distance between (4,2) and (7,10).	Problem Task List 3 coordinate pairs that are 5 units away from the origin in the first quadrant. Describe how to find the points and justify your reasoning. (Note: Points on the axes are not in the quadrant.)	