Grade:
8th Math

Unit:
Module 7 - Introduction to Irrational Numbers Using Geometry

Pacing:
19 days

PLC Question: What do we want all students to know and be able to do?

Grade Level Priority Standards (Example):

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.

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

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

Supporting Standards:

- CCSS.MATH.CONTENT.7.G.B.4
- Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
- CCSS.MATH.CONTENT.7.G.B.6
- Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
- CCSS.MATH.CONTENT.8.EE.C.7.B
- Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Essential Questions:

- **How does geometry better describe objects?**
- **How does geometry better help us solve real world problems?**

Learning Progressions

Previous Grade Level Standards:	Grade Level Standards:	Next Grade Level Standards:
7.G.4 7.G.6	8.G.7 8.G.8 8.G.9	HSG.SRT.C.8 HSG.GMB.A.1 HSG.GMB.A.2 HSG.GMB.A.3

Student Friendly Learning Targets

Standard:

- *8.G.7:*
  - *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.*
  - *I can draw a diagram to find right triangles in a three-dimensional figure and use the Pythagorean Theorem to calculate various dimensions.*
- *8.G.8:*
  - *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.*
- *8.G.9:*
  - *I can recall the formulas for the volume of cylinders, cones, and spheres.*
  - *I can use the formulas to find the volume of cylinders, spheres, and cones.*
  - *I can solve real-world problems involving the volume of cylinders, spheres, and cones.*

Essential Vocabulary

Key Academic Vocabulary:
Volume
Cone
Cylinder
Sphere
Pythagorean Theorem
Leg
Hypotenuse

Scaffolded (Review) Academic Vocabulary:
Triangle
Circle
Area
Rectangle
Square

PLC Question: How will we know when students have learned?

Assessment and Evidence

State Required Assessments	District Essential Assessments	Supporting Evidence
• WY-TOPP Summative Grades 3-7 • WY-TOPP Interim	• Team Generated Common Formative Assessments (2 to 3 weeks) • WY-TOPP Interim • Exit Tickets	Pre Assessments WY-TOPP Modulars Mid-Module Assessment **Classroom Assessment and Evidence:** • Daily Work • Exit Tickets • Checklists and observation Digital Software: • IXL Student Self Assessment: • CFAs

Priority Standard Proficiency Scale	
8.G.7	https://docs.google.com/document/d/1PyUuRNUl7enVXSH1HJUGp8RGIregBSH7-YGqrXjS9Rc/edit?usp=sharing
8.G.8	https://docs.google.com/document/d/1W6dFvMp6mt3GRGRXV5Pm3uzrb7IrFyJrkM7amwY-1r8/edit?usp=sharing
8.G.9	https://docs.google.com/document/d/1glzgCwXwUzoTMc7QW4c2gBkRXmtBemClVxQvkY52WT0/edit?usp=sharing

PLC Question: How will teachers facilitate the learning?

Key Curriculum Resources and Instructional Strategies	***Supporting*** Resources and Instructional Strategies
***Checkpoints are used as class starters or exit tickets** Introduction to Pythagorean Theorem (Teacher Built) Lesson 1: The Pythagorean Theorem Lesson 2: Square Roots Lesson 3: Unique Square. and Cube Roots Lesson 4: Simplifying Square Roots Lesson 5: Solving Equations with Radicals Lesson 15: Pythagorean Theorem revisited **Checkpoint G.7 - Pythagorean Theorem - find missing sides**	Additional lessons needed for standards: WyTOPP Blueprint Digital Tools: IXL 1. Pythagorean theorem: find the length of the hypotenuse (8-R.1)

Lesson 16: Converse of the Pythagorean Theorem Lesson 17:Distance on the Coordinate Plane **Checkpoint G.8 - Distance between points** Lesson 18: Applications of the Pythagorean Theorem **Checkpoint G.7 - Pythagorean Theorem - Applications** Lesson 19: Cylinders (volume/SA), Cones (v), and Spheres (v) **Checkpoint G.9 - Volume/SA - Write answer in decimal form** Teach - Given the volume, find the radius (or diameter) Lesson 21: Volume of Composite Solids Reteach/Review volume equations (answers in terms of pi) **Checkpoint G.9 - Volume/SA - Write answer in terms of pi** End of Module 1st Attempt (1.5 days) Reteach (2 days) End of Module 2nd Attempt (1.5 days)	2. Pythagorean theorem: find the missing leg length (8-R.2) 3. Pythagorean theorem: word problems (8-R.4) 4. Converse of the Pythagorean theorem: Is it a right triangle? (8-R.5) 5. Find the distance between two points (8-N.4) 6. Volume of cylinders (8-T.9) 7. Volume of cones (8-T.10) 8. Volume of spheres (8-T.13)

PLC Question: What will we do when students have not learned?

Interventions	
Tier 3 - Intensive	Tier 2 - Strategic

PLC Question: What will we do when students have learned?

Enrichment

PLC Reflections
How will we increase our instructional competence? How will we coordinate our efforts as a collaborative team?