



LAWRENCE COUNTY CAREER AND TECHNICAL CENTER

750 Phelps Way, New Castle, PA 16101-5099 724-658-3583 Fax 724-658-4753 www.lcctceagles.com

Table of Contents - Course Name

[Pythagorean Theorem / Converse / Square Roots](#)

[Sin, Cos, Tan\(Special Right Triangles, Inverse Functions, Reciprocal Functions, Angle of Elevation/Depression\)](#)

[Law of Sines/Law of Cosines](#)

[Properties of Circles \(Angle/Degree/Radians, Parts of a Circle, Tangent Properties, Arc and Central Angles, Inscribed Angles and Polygons\)](#)

UbD Curriculum Overview

Department	Mathematics		
Course Name	Trigonometry		
Course Summary			
Unit Name	Pythagorean Theorem / Converse / Square Roots		
Grade Level(s)	10-12	Time / Duration	9 days
Created (Date)	9/7/2022	Revised (Date)	9/9/24

Standards Addressed

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

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

CCSS.MATH.CONTENT.8.G.B.6Explain a proof of the Pythagorean Theorem and its converse.



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Stage 1 - Desired Results: Enduring Understandings & Essential Questions

What are the overarching takeaways and big ideas for students?

Big Ideas	1. Pythagorean Theorem / Distance Formula 2. Pythagorean Theorem Converse 3. Square Roots
Transfer	<i>Students will be able to independently use their learning to...</i> • Use the Pythagorean Theorem to find missing side lengths of a Right Triangle • Find the distance between two points using the distance formula. • Use the Pythagorean Theorem Converse to tell if a triangle is Right, Acute, or Obtuse • Multiply Square Roots • Simplify Square Roots • Add and Subtract Square Roots
Meaning	<i>Students will understand that...</i> • The Pythagorean Theorem can be used to find the missing length of a leg or hypotenuse of a Right Triangle • The Distance Formula is related to the Pythagorean Theorem. • Square roots can be multiplied • A common radicand must be found to add or subtract a square root. • You must find the prime factorization of a number in order to simplify it.
Essential Questions	1. How do you use the Pythagorean Theorem to find missing side lengths of a Right Triangle? 2. How do you find the distance between two points using the distance formula? 3. How do you use the Pythagorean Theorem Converse to tell if a triangle is Right, Acute, or Obtuse? 4. How do you multiply Square Roots? 5. How do you Simplify Square Roots? 6. How do you Add and Subtract Square Roots?

Stage 1 - Essential Content, Concepts, & Skills

What do we want students to know and be able to do?

Acquisition

Knowledge	<i>Students will know...</i> • The Pythagorean Theorem can be used to find the missing length of a leg or hypotenuse of a Right Triangle • The Distance Formula is related to the Pythagorean Theorem. • Square roots can be multiplied • A common radicand must be found to add or subtract a square root.
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	You must find the prime factorization of a number in order to simplify it.
Skills	<i>Students will be skilled at (be able to do)...</i> - Use the Pythagorean Theorem to find missing side lengths of a Right Triangle - Find the distance between two points using the distance formula. - Use the Pythagorean Theorem Converse to tell if a triangle is Right, Acute, or Obtuse - Multiply Square Roots - Simplify Square Roots - Add and Subtract Square Roots

Stage 2 - Assessments / Evidence of Learning

What are the formative (informal) and summative (formal) assessments used to measure learning and growth? How will you know that they did it?

Evaluation Criteria (F/S)	Assessment Evidence
Formative: - Check Points - Classroom Questions - Practice worksheets Summative: - Quizzes	Performance Task(s) / Think: - Use the Pythagorean Theorem - Use the Distance Formula - Determine if a triangle is right, acute, or obtuse. - Simplify a square root - Add, Subtract, multiply square roots.

Stage 3 - Learning Plan

What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students? This section provides a summary of the Key Learning Events and Instruction.

Summary of Key Learning Events and Instruction

- Day 1:
Section 4.4 Pythagorean Theorem / Distance Formula
- Day 2:
Section 4.5 Pythagorean Theorem Converse
- Day 3:
Pythagorean Theorem Activity
- Day 4:
Quiz
- Day 5:
Multiply Square Roots
- Day 6:
Simplify Square Roots
- Day 7:
Square Root Review



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- Day 8:
Add/Subtract Square Roots
- Day 9:
Quiz

Resources

- Notetaking Guides
- Practice Worksheets
- Worksheets
- Online activities

UbD Curriculum Overview

Department	Mathematics		
Course Name	Trigonometry		
Course Summary			
Unit Name	Sin, Cos, Tan		
Grade Level(s)	10-12	Time / Duration	
Created (Date)	11/4/2022	Revised (Date)	8/21/24

Standards Addressed

Stage 1 - Desired Results: Enduring Understandings & Essential Questions

What are the overarching takeaways and big ideas for students?

Big Ideas	1. Special Right Triangles 2. Trig Functions 3. Inverse Trig Functions 4. Reciprocal Trig Functions
Transfer	<i>Students will be able to independently use their learning to...</i> • Find the tangent of an acute angle of a Right Triangle • Find the sin and cos of an acute angle of a Right Triangle. • Determine when to use Sin, Cos, or Tan



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	Missing Sides of Special Right Triangles
Meaning	<i>Students will understand that...</i> - The Tan ratio can be used to find missing sides of right triangles - The Sin and Cos ratios can be used to find missing sides of right triangles. - Depending on what side you have you can determine whether to use Sin, Cos, or Tan - Sides can be found using special right triangle properties
Essential Questions	- How do you use the tan ratio to find missing sides of a right triangle? - How do you use the sin and cos ratios to find missing sides of a right triangle? - When do you use Sin, Cos, or Tan? - How do you find missing part of 30-60-90 and 45-45-90 Triangles?

Stage 1 - Essential Content, Concepts, & Skills

What do we want students to know and be able to do?

Acquisition

Knowledge	<i>Students will know...</i> - The Tan ratio can be used to find missing sides of right triangles - The Sin and Cos ratios can be used to find missing sides of right triangles. - Sin, Cos, Tan can be used in different situations - The ratios of sides for 45-45-90 and 30-60-90 Triangles
Skills	<i>Students will be skilled at (be able to do)...</i> - Use the tan ratio to find the missing sides of a right triangle - Use the sin and cos ratios to find the missing sides of a right triangle - Determine when to use Sin, Cos, or Tan - Finding missing sides of 45-45-90 and 30-60-90 Triangles

Stage 2 - Assessments / Evidence of Learning

What are the formative (informal) and summative (formal) assessments used to measure learning and growth? How will you know that they did it?

Evaluation Criteria (F/S)	Assessment Evidence
Formative: - Check Points - Classroom Questions - Practice worksheets Summative: - Quizzes	Performance Task(s) / Think: - Use Sin, Cos, Tan to find missing sides - Use properties of special right triangles to find missing sides.



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Stage 3 - Learning Plan

What are the differentiated instructional strategies, activities, lesson plans that support the enduring understandings and essential questions for all students? This section provides a summary of the Key Learning Events and Instruction.

Summary of Key Learning Events and Instruction

- Special triangle days.....
- Day 1:
Section 10.4 Tangent Ratios
- Day 2:
Tangent Activity
- Day 3:
Tangent Computer Activity
- Day 4:
Tan Quiz
- Day 5:
Section: 10.5 Sin and Cos Ratio
- Day 6:
Section: 10.5 Sin and Cos Ratio
- Day 7:
Sin, Cos, Tan Practice
- Day 8:
Sin, Cos, Tan Maze
- Day 9:
Sin, Cos, Tan Missing Side Quiz

Resources

- Notetaking Guides
- Practice Worksheets
- Worksheets
- Online activities