

## College Technical Math

Little Chute  
Math Department  
Grades 10-12, 1 Credit

### Course Overview/Description

College Technical Math is designed for students in a broad range of career paths requiring a solid understanding of basic math, elementary algebra, trigonometry, and geometry. The course introduces topics using a step-by-step “spiral” learning approach and reinforces them with numerous examples and applications. Presenting the mathematical topics within the context of trade applications enables students to connect the concepts to their future careers. Throughout the course, examples are presented in both symbolic and narrative form, and all concepts are applied to careers and professions.

### Scope and Sequence

Timeframe	Unit	Instructional Topics
3 Day(s)	<a href="#">Unit 1 - Review of Basic Concepts</a>	1-1 Basic Operations with Whole Numbers and Decimals 1-2 Exponents, Roots, and Powers of 10 1-3 Order of Operations and Problem Solving
4 Day(s)	<a href="#">Unit 2 - Review of Fractions</a>	2-1 Multiples and Factors 2-2 Equivalent Fractions and Decimals 2-3 Adding and Subtracting Fractions and Mixed Numbers 2-4 Multiplying and Dividing Fractions and Mixed Numbers
3 Day(s)	<a href="#">Unit 3 - Percents</a>	3-1 Percent and Number Equivalents 3-2 Percentage Problems 3-3 Increase and Decrease
6 Day(s)	<a href="#">Unit 4 - Measurement</a>	4-1 The U.S Customary System of Measurement 4-2 Introduction to the Metric System 4-3 Time, Temperature, and Other Measures 4-4 Accuracy, Precision, Error, and Measuring Instruments
4 Day(s)	<a href="#">Unit 5 - Signed Numbers and Powers of 10</a>	5-1 Adding and Subtracting Signed Numbers 5-2 Multiplying and Dividing Signed Numbers 5-3 Powers of 10 5-4 Scientific Notation
5 Day(s)	<a href="#">Unit 6 - Statistics</a>	6-1 Reading Circle, Bar, and Line Graphs 6-2 Measures of Central Tendency

		6-3 Measures of Dispersion 6-4 Counting Techniques and Simple Probabilities
6 Day(s)	<a href="#">Unit 7 - Linear Equations and Inequalities</a>	7-1 Variable Notation 7-2 Solving Linear Equations 7-3 Inequalities and Sets 7-4 Solving Linear and Compound Inequalities
4 Day(s)	<a href="#">Unit 8 - Linear Equations, Functions, and Inequalities in Two Variable</a>	8-1 Graphical Representations of Linear Equations and Functions 8-2 Slope 8-3 Linear Equation of a Line
3 Day(s)	<a href="#">Unit 9 - Formulas, Proportion, and Variation</a>	9-1 Formulas 9-2 Proportion 9-3 Direct and Joint Variation 9-4 Inverse and Combined Variation
3 Day(s)	<a href="#">Unit 10 - Systems of Linear Equations and Inequalities</a>	10-1 Solving Systems of Linear Equations and Inequalities 10-2 Problem Solving Using Systems of Linear Equations
4 Day(s)	<a href="#">Unit 11 - Powers and Polynomials</a>	11-1 Laws of Exponents 11-2 Polynomials 11-3 Basic Operations with Polynomials
3 Day(s)	<a href="#">Unit 12 - Roots and Radicals</a>	12-1 Irrational Numbers and Real Numbers 12-2 Basic Operations with Square-Root Radicals 12-3 Complex and Imaginary Numbers
4 Day(s)	<a href="#">Unit 13 - Factoring</a>	13-1 Distributive Property and Common Factors 13-2 Factoring Special Products 13-3 Factoring General Trinomials
5 Day(s)	<a href="#">Unit 14 - Rational Expressions, Equations, and Inequalities</a>	14-1 Simplifying Rational Expressions 14-2 Multiplying/Dividing Rational Expressions 14-3 Adding and Subtracting Rational Expressions
3 Day(s)	<a href="#">Unit 15 - Quadratic and Other Nonlinear Equations and Inequalities</a>	15-1 Graphing Quadratic Functions
5 Day(s)	<a href="#">Unit 16 - Exponential and Logarithmic Equations</a>	16-1 Exponential Expressions, Equations, and Formulas 16-2 Logarithmic Expressions, Equations, and Formulas
5 Day(s)	<a href="#">Unit 17 - Geometry</a>	17-1 Lines and Angles 17-2 Polygons 17-3 Volume and Surface Area
5 Day(s)	<a href="#">Unit 18 - Triangles</a>	18-1 Special Triangle Relationships

		18-2 Pythagorean Theorem 18-3 Distance and Midpoint
4 Day(s)	<a href="#">Unit 19 - Right-Triangle Trigonometry</a>	19-1 Trigonometric Functions 19-2 Solving Right Triangles
2 Day(s)	<a href="#">Unit 20 - Trigonometry with Any Angle</a>	20-1 Vectors

## UNIT 1: Review of Basic Concepts

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Unit 1 will consist of students reviewing operations with whole numbers, decimals, roots, exponents, and powers of 10. It will also review the order of operations as well as challenge students to problem solve using basic operations.

**Essential Questions and/or Enduring Understandings:**

- 1-1 Basic Operations with Whole Numbers and Decimals
- 1-2 Exponents, Roots, and Powers of 10
- 1-3 Order of Operations and Problem Solving

ESSENTIAL Standards	Topics	Learning Targets
	<b>1.1</b>	Students will compare whole numbers.
		Students will write fractions with power of 10 denominators and decimal numbers.
		Students will compare decimal numbers
		Students will round a whole number or a decimal number to a specified place value
		Students will add and subtract whole numbers and decimals
		Students will multiply and divide whole numbers and decimals
	<b>1.2</b>	Students will simplify expressions that contain exponents

		Students will square numbers and find the square roots of numbers
		Students will use powers of 10 to multiply and divide.
	<b>1.3</b>	Students will apply the order of operations to a series of operations
		Students will evaluate a formula
		Students will solve applied problems using problem-solving strategies
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 2: Review of Fractions

**Duration of Unit: 4 Day(s)**

**Description of Unit:** Similar to Unit 1, Unit 2 will have students review basic operations involving fractions. It will also review concepts such as multiples, factors, equivalent fractions, as well as decimals. Students will be asked to problem solve using fractions and operations of fractions.

**Essential Questions and/or Enduring Understandings:**

2-1 Multiples and Factors

2-2 Equivalent Fractions and Decimals

2-3 Adding and Subtracting Fractions and Mixed Numbers

2-4 Multiplying and Dividing Fractions and Mixed Numbers

<b>ESSENTIAL Standards</b>	<b>Topics</b>	<b>Learning Targets</b>
	<b>2.1</b>	Students will find multiples of a natural number.
		Students will find all factor pairs of a natural number.

		Students will determine the prime factorization of composite numbers
		Students will find the least common multiple and greatest common factor of two or more numbers
	<b>2.2</b>	Students will write equivalent fractions with different denominators
		Students will write improper fractions as whole numbers or mixed numbers
		Students will write whole numbers or mixed numbers as improper fractions
		Students will write decimals as fractions and fractions and decimals
		Students will compare fractions, mixed numbers, and decimals
	<b>2.3</b>	Students will add fractions and mixed numbers
		Students will subtract fractions and mixed numbers
	<b>2.4</b>	Students will multiply fractions and mixed numbers
		Students will raise a fraction to a power
		Students will divide fractions and mixed numbers
		Students will perform calculations involving fractions with a calculator
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 3: Percents

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Students review concepts about percents while deepening their understanding of percent increase and percent decrease. Students will have numerous opportunities to solve percentage problems in real world contexts.

**Essential Questions and/or Enduring Understandings:**

- 3-1 Percent and Number Equivalents
- 3-2 Percentage Problems
- 3-3 Increase and Decrease

ESSENTIAL Standards	Topics	Learning Targets
	<b>3.1</b>	Students will write any number as a percent equivalent
		Students will write any percent as a numerical equivalent
	<b>3.2</b>	Students will identify the portion, base, and rate in percent problems
		Students will solve percent problems using the percentage formula
		Students will solve percent problems using the percentage proportion
		Students will solve business and consumer problems involving percents
	<b>3.3</b>	Students will find the amount of increase or decrease in percentage problems
		Students will find the new amount directly in increase or decrease applications
		Students will find the rate or base in increase or decrease applications
NICE TO KNOW Standards		Learning Targets

## UNIT 4: Measurement

**Duration of Unit: 6 Day(s)**

**Description of Unit:** Students will begin by adding, subtracting, multiplying, and dividing U.S Customary measures. Students will also convert units of measurements using ratios and conversion factors. Students will then have an introduction to the metric system as well as time, temperature, and other measures. Students will finish the chapter by building an understanding of precision, accuracy, and error. Students will have the opportunity to explore measuring instruments.

**Essential Questions and/or Enduring Understandings:**

4-1 The U.S Customary System of Measurement

4-2 Introduction to the Metric System

4-3 Time, Temperature, and Other Measures

4-4 Accuracy, Precision, Error, and Measuring Instruments

ESSENTIAL Standards	Topics	Learning Targets
	<b>4.1</b>	Students will convert one unit of measure to another using unit ratios
		Students will convert one unit of measure to another using conversion factors
		Students will add and subtract U.S customary measures
		Students will multiply and divide U.S customary measures
		Students will change one U.S customary rate measure to another
	<b>4.2</b>	Students will identify uses of metric measures of length, mass, weight, and capacity
		Students will convert from one metric unit of measure to another
		Students will make calculations with metric measures
	<b>4.3</b>	Students will convert from one unit of time to another

		Students will make calculations with measures of time
		Students will convert between Fahrenheit temperatures and Celsius temperatures
		Students will examine other useful measures
	<b>4.4</b>	Students will determine the significant digits of a number
		Students will find the precision and greatest possible error of a measurement
		Students will determine the relative error and the percent error of a measurement
		Students will determine an appropriate approximation of measurement calculations
		Students will read a metric rule
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 5: Signed Numbers and Powers of 10

**Duration of Unit: 4 Day(s)**

**Description of Unit:** In this chapter, students will review basic operations on signed numbers. They will then take this understanding and transfer it to powers of 10 and scientific notation. By the completion of the chapter, students will be able to change among engineering, scientific, and ordinary notations.

**Essential Questions and/or Enduring Understandings:**

- 5-1 Adding and Subtracting Signed Numbers
- 5-2 Multiplying and Dividing Signed Numbers
- 5-3 Powers of 10
- 5-4 Scientific Notation



ESSENTIAL Standards	Topics	Learning Targets
	5.1	Students will compare signed numbers
		Students will add signed numbers with like signs
		Students will add signed numbers with unlike signs
	5.2	Students will subtract signed numbers
		Students will combine addition and subtraction
	5.3	Students will multiply signed numbers
		Students will evaluate powers of signed numbers
		Students will divide signed numbers
	5.4	Students will change a number from scientific notation to ordinary notation
		Students will change a number from ordinary notation to scientific notation
		Students will raise a number in scientific notation to a power
		Students will change among engineering, scientific, and ordinary notations
NICE TO KNOW Standards		Learning Targets

## UNIT 6: Statistics

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Students will investigate circle, bar, and line graphs in different career contexts. Students will review/build upon their knowledge of central tendency. They will also learn about measures of dispersion, as well as counting techniques. Students will complete the chapter by learning about simple probabilities and how they are related to the topics covered.

**Essential Questions and/or Enduring Understandings:**

- 6-1 Reading Circle, Bar, and Line Graphs
- 6-2 Measures of Central Tendency
- 6-3 Measures of Dispersion
- 6-4 Counting Techniques and Simple Probabilities

ESSENTIAL Standards	Topics	Learning Targets
	<b>6.1</b>	Students will read circle graphs
		Students will read bar graphs
		Students will read line graphs
	<b>6.2</b>	Students will find the arithmetic mean
		Students will find the median and the mode
		Students will make and interpret a frequency distribution
		Students will find the mean of grouped data
	<b>6.3</b>	Students will find the range
		Students will find measures of relative position
		Students will find the standard deviation
	<b>6.4</b>	Students will count the number of ways objects in a set can be arranged

		Students will determine the probability of an event occurring if activity is repeated over and over.
		Students will determine the odds of an event occurring
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 7: Linear Equations and Inequalities

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Students will deepen their conceptual understanding of linear equations and inequalities. Students will review variable notation as a whole as well as learn to translate verbal statements into variable notation. Students will be introduced/deepen their knowledge of sets and how they relate to linear equations and inequalities. Students will finish the unit by solving more complex linear equations and inequalities.

**Essential Questions and/or Enduring Understandings:**

7-1 Variable Notation

7-2 Solving Linear Equations

7-3 Inequalities and Sets

7-4 Solving Linear and Compound Inequalities

<b>ESSENTIAL Standards</b>	<b>Topics</b>	<b>Learning Targets</b>
	<b>7.1</b>	Students will identify equations, terms, factors, constants, variables, and coefficients
		Students will write verbal interpretations of symbolic statements
		Students will translate verbal statements into symbolic statements using variables
		Students will simplify variable expressions

	<b>7.2</b>	Students will solve linear equations using the addition axiom
		Students will solve linear equations using the multiplication axiom
		Students will solve linear equations with like terms on the same side of the equation
		Students will solve linear equations with like terms on opposite sides of the equation
		Students will solve linear equations that contain parentheses
	<b>7.3</b>	Students will use set terminology
		Students will show inequalities on a number line and write inequalities in interval notation
	<b>7.4</b>	Students will solve a linear inequality with one variable.
		Students will identify subsets of sets and perform set operations
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 8: Formulas, Proportions, and Variation

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Students will familiarize themselves with formulas from real world/career driven problems. They will then develop an understanding of how to solve said equations when they are proportions. Students will also spend multiple days analyzing and solving real world problems that pertain to direct/join variation as well as inverse and combined variation.

**Essential Questions and/or Enduring Understandings:**

8-1 Graphical Representations of Linear Equations and Functions

8-2 Slope

8-3 Linear Equation of a Line

ESSENTIAL Standards	Topics	Learning Targets
	8.1	Students will evaluate formulas
		Students will rearrange formulas to solve for a specified variable
	8.2	Students will solve equations that are proportions
	8.3	Students will solve problems of direct variation using proportions
		Students will solve problems of direct variation using a constant of variation
		Students will solve problems of joint variation using a constant of variation
	8.4	Students will solve problems of inverse variation using proportions
		Students will solve problems of inverse variation using a constant of variation
		Students will solve problems of combined variation using a constant of variation
NICE TO KNOW Standards		Learning Targets

## UNIT 9: Linear Equations, Functions, and Inequalities in Two Variables

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Students will extend their knowledge from unit 7. More specifically, students will graph and solve linear equations and inequalities in two variables. They will also focus on ideas pertaining to the procedure of finding slope of a line as well as the equation of a line when given different pieces of information.

**Essential Questions and/or Enduring Understandings:**

9-1 Formulas

9-2 Proportion

9-3 Direct and Joint Variation

9-4 Inverse and Combined Variation

ESSENTIAL Standards	Topics	Learning Targets
	<b>9.1</b>	Students will locate points on a rectangular coordinate system
		Students will represent an equation in two variables as a function
		Students will make a table of solutions for a linear equation or function
		Students will graph linear equation or function using a table of solutions
	<b>9.2</b>	Students will calculate the slope of a line given two points on the line
		Students will determine the slope of a horizontal or vertical line
	<b>9.3</b>	Students will find the equation of a line, given the slope and one point
		Students will find the equation of a line given two points on the line
		Students will find the equation of a line given a point on the line and an equation of a line perpendicular or parallel to that line.
NICE TO KNOW Standards		Learning Targets

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## UNIT 10: Systems of Linear Equations and Inequalities

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Students continue to build upon their knowledge of linear equations and inequalities. In this unit students will be learning/reviewing systems of linear equations and inequalities. Students will spend time using systems of linear equations to solve application problems.

**Essential Questions and/or Enduring Understandings:**

- 10-1 Solving Systems of Linear Equations and Inequalities
- 10-2 Problem Solving Using Systems of Linear Equations

ESSENTIAL Standards	Topics	Learning Targets
	<b>10.1</b>	Students will solve a system of linear equations by graphing
		Students will solve a system of linear inequalities by graphing
	<b>10.2</b>	Students will I can use a system of linear equations to solve application problems
NICE TO KNOW Standards		Learning Targets

## UNIT 11: Powers and Polynomials

**Duration of Unit: 4 Day(s)**

**Description of Unit:** Students will be revisiting or learning basic powers and polynomial laws and operations from Algebra 2. Students will practice the basic operations with polynomials while also developing a deeper understanding of the properties of polynomials.

**Essential Questions and/or Enduring Understandings:**

11-1 Laws of Exponents

11-2 Polynomials

11-3 Basic Operations with Polynomials

ESSENTIAL Standards	Topics	Learning Targets
	<b>11.1</b>	Students will multiply powers with like bases
		Students will divide powers with like bases
		Students will find a power of a power
	<b>11.2</b>	Students will identify polynomials, monomials, binomials, and trinomials
		Students will identify the degree of terms and polynomials
		Students will arrange polynomials in descending order
	<b>11.3</b>	Students will add and subtract polynomials
		Students will multiply polynomials
		Students will divide polynomials
NICE TO KNOW Standards		Learning Targets



## UNIT 12: Roots and Radicals

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Students will investigate the properties of irrational and real numbers, and how they are used in real world context. They will also practice basic operations with square-root radicals. Finally, students will learn about complex and imaginary numbers and significant role they play in real world operations.

**Essential Questions and/or Enduring Understandings:**

- 12-1 Irrational Numbers and Real Numbers
- 12-2 Basic Operations with Square-Root Radicals
- 12-3 Complex and Imaginary Numbers

ESSENTIAL Standards	Topics	Learning Targets
	<b>12.1</b>	Students will write roots using radical and exponential notation
		Students will approximate an irrational number
		Students will powers and roots using rational exponents and radical notation
	<b>12.2</b>	Students will add or subtract square-root radicals
		Students will multiply or divide square-root radicals
	<b>12.3</b>	Students will write imaginary numbers using the letter i
		Students will simplify powers of imaginary numbers
NICE TO KNOW Standards		Learning Targets

## UNIT 13: Factoring

**Duration of Unit: 4 Day(s)**

**Description of Unit:** Students will review concepts of factoring for previous algebra courses. They will then build upon them to find more efficient ways to factor special products. Finally, students will learn to factor by grouping, as well as develop a conceptual understanding of factoring as a whole.

**Essential Questions and/or Enduring Understandings:**

13-1 Distributive Property and Common Factors

13-2 Factoring Special Products

13-3 Factoring General Trinomials

ESSENTIAL Standards	Topics	Learning Targets
	<b>13.1</b>	Students will factor an expression containing a common factor
	<b>13.2</b>	Students will recognize and factor the difference of two perfect squares
		Students will recognize and factor a perfect square trinomial
		Students will recognize and factor the sum or difference of two perfect cubes
	<b>13.3</b>	Students will factor general trinomials whose squared term has a coefficient of 1
		Students will remove common factors after grouping an expression
		Students will factor a general trinomial by grouping
		Students will factor any binomial or trinomial that is not prime
NICE TO KNOW Standards		Learning Targets

## UNIT 14: Rational Expressions, Equations, and Inequalities

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Unit 14 will focus on simplifying, multiplying, dividing, adding, and subtracting rational expressions. These topics are covered in Algebra 2. However, in this course they will be front loaded more procedurally and systematically for students who may have struggled in Algebra 2. After the procedure has been addressed, the unit will also consist of opportunities for students to see real world context of rational expressions.

**Essential Questions and/or Enduring Understandings:**

14-1 Simplifying Rational Expressions

14-2 Multiplying/Dividing Rational Expressions

14-3 Adding and Subtracting Rational Expressions

ESSENTIAL Standards	Topics	Learning Targets
	<b>14.1</b>	Students will simplify or reduce rational expressions
	<b>14.2</b>	Students will multiply and divide rational expressions
	<b>14.3</b>	Students will add and subtract rational expressions
		Students will use addition and subtraction of rational expressions to simplify complex fractions
NICE TO KNOW Standards		Learning Targets

## UNIT 15: Quadratic and Other Nonlinear Equations and Inequalities

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Unit 14 will focus on simplifying, multiplying, dividing, adding, and subtracting rational expressions. These topics are covered in Algebra 2. However, in this course they will be front loaded more procedurally and systematically for students who may have struggled in Algebra 2. After the procedure has been addressed, the unit will also consist of opportunities for students to see real world context of rational expressions.

**Essential Questions and/or Enduring Understandings:**

15-1 Graphing Quadratic Functions

ESSENTIAL Standards	Topics	Learning Targets
	<b>15.1</b>	Students will graph quadratic functions using the table of solutions method
		Students will graph quadratic functions by examining properties
		Students will solve a quadratic equation from a graph of a corresponding quadratic function
		Students will graph quadratic functions using a graphing calculator
		Students will determine the nature of the roots of a quadratic equation by examining the discriminant
NICE TO KNOW Standards		Learning Targets

## UNIT 16: Exponential and Logarithmic Equations

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Similar to Unit 14, this unit will revisit Exponential and Logarithmic Equations from Algebra 2. However, this unit will front load the procedure of evaluating exponential and logarithmic equations, expressions, and formulas. The unit will then turn to deepen the conceptual understanding of exponentials and logarithms via graphs and problem solving activities.

**Essential Questions and/or Enduring Understandings:**

16-1 Exponential Expressions, Equations, and Formulas

16-2 Logarithmic Expressions, Equations, and Formulas

ESSENTIAL Standards	Topics	Learning Targets
	<b>16.1</b>	Students will evaluate formulas with at least one exponential term
		Students will evaluate formulas that contain a power of the natural exponential, $e$
		Students will solve exponential equations
		Students will graph exponential functions
	<b>16.2</b>	Students will write exponential equations as equivalent logarithmic equations
		Students will write logarithmic equations as equivalent exponential equations
		Students will evaluate common and natural logarithmic expressions using a calculator
		Students will evaluate formulas containing at least one logarithmic function
		Students will evaluate logarithms with a base other than 10 or $e$
		Students will graph a logarithmic function
		Students will simplify logarithmic expressions by using the properties of logarithms
NICE TO KNOW		Learning Targets

<b>Standards</b>		

## UNIT 17: Geometry

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Unit 17 will revisit fundamental topics and formulas from geometry. Students will have the opportunity to review and deepen their understanding of 2D and 3D geometry. The unit will consist primarily of problem solving activities that allow students to better connect geometry to their lives and future careers.

**Essential Questions and/or Enduring Understandings:**

17-1 Lines and Angles

17-2 Polygons

17-3 Volume and Surface Area

<b>ESSENTIAL Standards</b>	<b>Topics</b>	<b>Learning Targets</b>
	<b>17.1</b>	Students will use various notations to represent points, lines, line segments, rays, planes, and angles
		Students will classify angles according to size
		Students will determine the measure of an angle by using relationships among intersecting lines
		Students will convert angle measures between decimal degrees and degrees, minutes, and seconds
	<b>17.2</b>	Students will find the perimeter of a polygon using the appropriate formula
		Students will find the area of a polygon using the appropriate formula
	<b>17.3</b>	Students will find the volume of three-dimensional objects
		Students will find the surface area of three-dimensional objects

NICE TO KNOW Standards		Learning Targets

## UNIT 18: Triangles

**Duration of Unit: 5 Day(s)**

**Description of Unit:** Similar to unit 17, this unit will revisit fundamental topics and theorems from geometry. Students will revisit special triangles and how they are used in multiple different fields. As well as revisiting the Pythagorean Theorem, distance, and midpoint. Students will see how these three topics are intertwined as well as how they are used in the real world.

**Essential Questions and/or Enduring Understandings:**

18-1 Special Triangle Relationships

18-2 Pythagorean Theorem

18-3 Distance and Midpoint

ESSENTIAL Standards	Topics	Learning Targets
	<b>18.1</b>	Students will classify triangles by the relationship of the sides or angles
		Students will determine if two triangles are congruent using inductive and deductive reasoning
		Students will solve problems that involve similar triangles
	<b>18.2</b>	Students will use the Pythagorean Theorem to find the unknown side of a right triangle
		Students will use the properties of a 45, 45, 90 triangle to find unknown parts
		Students will use the properties of a 30, 60, 90 triangle to find unknown parts
	<b>18.3</b>	Students will find the distance between two points on the rectangular coordinate system
		Students will find the coordinates of the midpoint of a line segment if given the coordinates of the end

		points
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 19: Right-Triangle Trigonometry

**Duration of Unit: 4 Day(s)**

**Description of Unit:** Students will review sine, cosine, and tangent and extend their understanding to solve applied problems. This unit allows students to see how many different fields use trigonometry.

**Essential Questions and/or Enduring Understandings:**

19-1 Trigonometric Functions

19-2 Solving Right Triangles

<b>ESSENTIAL Standards</b>	<b>Topics</b>	<b>Learning Targets</b>
	<b>19.1</b>	Students will find the sine, cosine, and tangent of angles of right triangles, given the measure of at least two sides
		Students will find trigonometric values for the sine, cosine, and tangent using a calculator
		Students will find the angle measure given a trigonometric value
	<b>19.2</b>	Students will find the unknown parts of a right triangle using the sine, cosine, and tangent functions
		Students will select the most direct method for solving right triangles
		Students will solve applied problems using right triangle trigonometry
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>



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## UNIT 20: Trigonometry with Any Angles

**Duration of Unit: 3 Day(s)**

**Description of Unit:** Students will have the opportunity to learn about vectors and the role they play in other fields of study as well as engineering and mechanics.

**Essential Questions and/or Enduring Understandings:**

20-1 Vectors

ESSENTIAL Standards	Topics	Learning Targets
	<b>20.1</b>	Students will find the magnitude and direction of a vector in standard position, given the coordinates of the endpoint
NICE TO KNOW Standards		Learning Targets