# Curriculum Map: Trigonometry-2019

Course: TRIGONOMETRY  Sub-topic: Trigonometry

Grade(s): 9 to 12

## Unit: Unit 1 - Algebra review

**Month:** September

**Skills:**

Evaluate algebraic expressions.

Use laws of exponents.

Determine the domain of a variable.

Solve quadratic equations using different methods.

Use interval notation

Solve different types of inequalities.

Rationalize denominators.

Solve radical equations.

Simplify expressions with rational exponents.

**Essential Questions:** How do you evaluate, graph, analyze, and apply functions?

**Content:**

Review algebraic skills from Algebra I and II

Solve equations

Solve inequalities

Use rational exponents

**Assessments:**

- Worksheets
- Homework
- Notebook
- Board work
- Quizzes
- Tests
- Projects
- Problem sets

**Vocabulary:** Origin

Real number line

Set

Elements

Union

Intersection

Empty set

Intervals

Open Interval

Closed Interval

Base

Exponent

Rational exponent

Radical

Rationalizing the Denominator

Domain of a Variable

Factor

Special Products

Simplify Fractional Expressions(add, subtract, multiply and divide)

Compound Fractions

Conjugate Radical

Solutions or Roots of Equations

Equivalent Equations

**STANDARDS:** **STANDARDS**

NATIONAL: US Common Core State Standards (2010)

| | |
|---|---|
| MA.HSF-IF.A.1 (Advanced) | Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). |
| MA.HSF-IF.A.2 (Advanced) | Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. |
| MA.HSF-IF.B.5 | Relate the domain of a function to its graph and, where |

| | |
|---|---|
| (Advanced) | applicable, to the quantitative relationship it describes. |
| MA.HSF-IF.C.8.a (Advanced) | Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. |

Topic: Lesson 1 - 2
Minutes for Topic: 80

**Core Lesson Description:** Real Numbers and exponents

**Core Lesson Student Learning Objectives:** Students will be able to :

1. **E** Use interval notation to state solutions.
2. E Evaluate Exponents and Radicals

**STANDARDS**

STATE: Pennsylvania State Anchors (2010)

| | |
|---|---|
| M11.A.1 (Advanced) | Demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems. |
| M11.A.1.1 (Advanced) | Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation). |
| M11.A.1.3 (Advanced) | Estimate the value of an irrational number. |
| M11.A.1.3.1 (Advanced) | Locate/identify irrational numbers at the approximate location on a number line. |
| M11.A.2 (Advanced) | Understand the meanings of operations, use operations and understand how they relate to each other. |
| M11.A.3.1.1 (Advanced) | Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used). |

Topic: Lesson 3 - 5
Minutes for Topic: 120

**Core Lesson Description:** Perform the following on algebraic expressions - multiplying, dividing, factoring, adding and subtracting, simplifying compound fractions.

**Core Lesson Student** The students will be able to:

**Learning Objectives:**

1. **I** Add and subtract polynomials
2. **I** Multiply expressions using special products and distributive property
3. **E** Factor expressions
4. **E** simplify fractional expressions(including operations on expressions)
5. **E** simplify compound fractions

Topic: Lesson 6 - 7
Minutes for Topic: 80

**Core Lesson Description:** Solving Equations

**Core Lesson Student Learning Objectives:** The student will be able to :

C - solve linear equations

C - solve quadratic equations using quadratic formula, factoring, and radicals

C - use the discriminant to determine the number of Real Solutions

E - solve equations involving fractional expressions

E - solve quadratic form equations

E- solve radical equations

Topic: Lesson 8-10 - review and assessment
Minutes for Topic: 120

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:** Students will be able to:

I - solve any equation given

Topic: Lesson 11-12 - Inequalities
Minutes for Topic: 80

**Core Lesson Description:** Solving Inequalilties

**Core Lesson Student Learning Objectives:** The student will be able to:

C - solve linear inequalities

C - Solve absolute value inequalities

Topic: Lesson 13-14 - Review and assess
Minutes for Topic: 80

**Core Lesson Description:** review and assess

**Core Lesson Student Learning Objectives:** The student will be able to solve:

I - solve linear and absolute value inequalities

Topic: Lesson 15-17 review and assess unit
Minutes for Topic: 120

**Core Lesson Description:** Review and Assess

**Core Lesson Student Learning Objectives:** Students will be able to :

E - perform operations necessary to begin Trigonometry.

## Unit: Unit 2 - Functions and Graphs

**Month:** September, October

**Skills:**

Use the distance formula and midpoint formula

Determine symmetry of functions

Write equations of circles

Find equations of a line from various information including parallel and perpendicular lines

Find the functional value and the domain and range of the function

Graph equations using a table or transformations

Combine functions

Determine if a function is one-to-one and find the inverse of a function.

**Essential Questions:** How do you evaluate functions and graphs?

**Content:**

The Coordinate Plane

Linear equations

Functions

Graphing Functions

Combining Functions

One-to-one Functions

**Assessments:** .

- Worksheets
- Homework
- Notebook
- Board work
- Quizzes
- Tests
- Projects
- Problem sets

**Vocabulary:**

Cartesian Plane

Quadrants

Distance Formula

Intercepts

Standard Form of a circle

Symmetry with respect to : x, y, origin

Slope

Slope - Intercept Form

Point - Slope Form

Standard Form of a line

General Equation of a line

Vertical and Horizontal Lines

Parallel lines

Perpendicular lines

Slope

Function

Domain and Range of Functions

vertical line test

Increasing interval

Decreasing interval

Local Maxima

Local Minima

Transformations

Shifting(vertical and horizontal)

Reflecting

Stretch

Compress

Even and Odd function

One-to-one function

Inverse

**STANDARDS:** **STANDARDS**

NATIONAL: US Common Core State Standards (2010)

| | |
|---|---|
| MA.HSF-IF.B.5 (Advanced) | Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. |
| MA.HSF-IF.C.7 (Advanced) | Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. |
| MA.HSF-IF.C.7.b (Advanced) | Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value |

| | |
|---|---|
| | functions. |
| MA.HSF-BF.B.4 (Advanced) | Find inverse functions. |

Topic: Lesson 18-21
Minutes for Topic: 160

**Core Lesson Description:** distance and midpoint between two points specific to writing equations of circles

symmetry of the graph

equations of lines in all forms

**Core Lesson Student Learning Objectives:** E - Write the equation of a circle from an equation using completing the square.

E - Determine symmetry of a graph

E - Write the equation of the line in all forms given various methods

Topic: Lesson 22-25
Minutes for Topic: 120

**Core Lesson Description:** Review and Assess

**Core Lesson Student Learning Objectives:** The student will be able to :

I - evaluate circle and linear equations

I - determine symmetry

Topic: Lesson 26-27
Minutes for Topic: 80

**Core Lesson Description:** relations and functions

**Core Lesson Student Learning Objectives:** The student will be able to :

E - determine if a relation is a function

E - evaluate the functional value

E - find the domain of the function

Topic: Lesson 28-30
Minutes for Topic: 120

**Core Lesson Description:** Review and Assess

**Core Lesson Student Learning Objectives:** The student will be able to :

I - Determine if a relation is a function

I - Evaluate functional value

I - Determine domain of a function

Topic: Lesson 31-33
Minutes for Topic: 120

**Core Lesson Description:** graphing using tables, Domain and Range, Increasing and Decreasing functions, Local Maxima and Minima

**Core Lesson Student Learning Objectives:** The student will be able to :

E - graph functions identifying the Domain and Range

E - Graph a piece-wise function

E - Identify increasing and decreasing intervals

E - Identify local maxima and minima

E - Graph functions using transformations

Topic: Lesson 34-36
Minutes for Topic: 120

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:**

The student will be able to :

I - graph functions identifying the Domain and Range

I - Graph a piece-wise function

I - Identify increasing and decreasing intervals

I - Identify local maxima and minima

I - Graph functions using transformations

Topic: Lesson 37-40
Minutes for Topic: 160

**Core Lesson Description:** Functions and operations on functions

**Core Lesson Student Learning Objectives:**

The student will be able to:

E - Perform basic operations on functions

E - Compose functions

E - Determine if a function is one-to-one

E - Find inverse functions

Topic: Lesson 41-43
Minutes for Topic: 120

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:**

The student will be able to:

I - Perform basic operations on functions

I - Compose functions

I - Determine if a function is one-to-one

I - Find inverse functions

Topic: Lesson 44-46
Minutes for Topic: 120

**Core Lesson Description:** Functions and operations

**Core Lesson Student Learning Objectives:** The student will be able to:

I - Perform the operations necessary to evaluate functions completely

## Unit: Unit 3 - Trigonometric functions of Real Numbers

**Month:** October, November, December

**Skills:**

Identify points on the unit circle

Find terminal points and the value associated with them

Find reference numbers

Identify the domain and range of each trigonometric function

Identify the sign of each trigonometric function in each quadrant

Discover and use fundamental identities

Graph trigonometric functions

Evaluate and represent harmonic motion

**Essential Questions:** How do you evaluate trigonometric functions of Real numbers

**Content:**

The Unit circle

Trigonometric functions

Graphing Trigonometric functions

Harmonic Motion

**Assessments:**

. Worksheets

- Homework
- Notebook
- Board work
- Quizzes
- Tests
- Projects
- Problem sets

**Vocabulary:**

Unit Circle

Terminal point

Reference number

Sine

Cosine

Tangent

Cosecant

Secant

Cotangent

Even-Odd properties

Reciprocal properties

Pythagorean Identities

Amplitude

Vertical Move

Period

Phase shift

Harmonic motion

**STANDARDS:**

**STANDARDS**

NATIONAL: US Common Core State Standards (2010)

| | |
|---|---|
| MA.HSF-TF.A.2 (Advanced) | Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. |
| MA.HSF-TF.A.4 | Use the unit circle to explain symmetry (odd and even) |

| | |
|---|---|
| (Advanced) | and periodicity of trigonometric functions. |
| MA.HSF-TF.B.5 (Advanced) | Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. |

Topic: Lesson 47-49
Minutes for Topic: 120

**Core Lesson Description:** Unit circle, Terminal point, Reference number

**Core Lesson Student Learning Objectives:**

The student will be able to:

E - Memorize the unit circle

E - Find the terminal point

E - Identify reference numbers

Topic: Lesson 50-53
Minutes for Topic: 160

**Core Lesson Description:** six trigonometric functions, domain of functions, fundamental identities

**Core Lesson Student Learning Objectives:**

The student will be able to:

E - Define and evaluate the six trigonometric functions

E - Identify the domain of the trigonometric functions

E - Identify even-odd properties

E - Identify and evaluate using the fundamental identities

Topic: Lesson 54-57
Minutes for Topic: 160

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:**

The student will be able to:

I - Define and evaluate the six trigonometric functions

I - Identify the domain of the trigonometric functions

I - Identify even-odd properties

I - Identify and evaluate using the fundamental identities

Topic: Lesson 58-61
Minutes for Topic: 160

**Core Lesson Description:** Graphing Sine and Cosine

**Core Lesson Student Learning Objectives:** The student will be able to:

E - Graph Sine and Cosine including graphs involving Amplitude, Vertical Move, Period, and Phase shift.

Topic: Lesson 62-64
Minutes for Topic: 120

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:** The student will be able to:

I - Graph Sine and Cosine including graphs involving Amplitude, Vertical Move, Period, and Phase shift.

Topic: Lesson 65-67
Minutes for Topic: 120

**Core Lesson Description:** graphing CSC, SEC, TAN, COT. Harmonic motion.

**Core Lesson Student Learning Objectives:** The student will be able to:

E - Graph Secant and Cosecant, Tangent and Cotangent, including graphs involving Amplitude, Vertical Move, Period, and Phase shift.

C - write and evaluate harmonic motion problems

Topic: Lesson 68-70
Minutes for Topic: 120

**Core Lesson Description:** Review and assess

**Core Lesson Student Learning Objectives:** The student will be able to:

I - Graph Secant and Cosecant, Tangent and Cotangent, including graphs involving Amplitude, Vertical Move, Period, and Phase shift.

C - Write and evaluate Harmonic motion

Topic: Lesson 71-73
Minutes for Topic: 120

**Core Lesson Description:** Trigonometric Functions of Real Numbers

**Core Lesson Student Learning Objectives:** The student will be able to:

I - Evaluate trigonometric functions

I - Graph trigonometric functions

## Unit: Unit 4 - Trigonometric Functions of Angles

**Month:** December, January

**Skills:**

Find and evaluate angle measure

Find Arc length

Find Area of a sector

Use right triangles to find trigonometric ratios

Use Law of Sines to find missing values

Use Law of Cosines to find missing values

Apply Law of Sines and/or Law of Cosines to real world problems

**Essential Questions:** How do you evaluate trigonometric functions of angles.

**Content:** Angle Measure, Arc length, Area of a sector, Right Triangle Trigonometry, Law of Sines, Law of Cosines

**Assessments:**

- Worksheets
- Homework
- Notebook
- Board work
- Quizzes
- Tests
- Projects
- Problem sets

**Vocabulary:**

Angle

Radian measure

Degree

Standard position

Coterminal

Circular arc

Area of a circular sector

Trigonometric Ratios

Reference angle

Law of Sines

Law of Cosines

Ambiguous Case

**STANDARDS:** **STANDARDS**

NATIONAL: US Common Core State Standards (2010)

| | |
|---|---|
| MA.HSF-TF.A.1 (Advanced) | Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. |
| MA.HSF-TF.A.2 (Advanced) | Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. |
| MA.HSF-TF.A.3 | Use special triangles to determine geometrically the |

| | |
|---|---|
| (Advanced) | values of sine, cosine, tangent for pi/3, pi/4 and pi/6, and use the unit circle to express the values of sine, cosine, and tangent for pi–x, pi+x, and 2pi–x in terms of their values for x, where x is any real number. |
| MA.HSF-TF.A.4 (Advanced) | Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. |

Topic: Lesson 74-75
Minutes for Topic: 80

**Core Lesson Description:** Angle and Radian Measure, Area of a circular sector, Arc length

**Core Lesson Student Learning Objectives:**

The student will be able to:

E - convert from angle measures from radian to degree and degree to radian.

E - Find coterminal angles

E - Find the length of an arc

E- Find the area of a circular sector

Topic: Lesson 76-77
Minutes for Topic: 80

**Core Lesson Description:** Arc length and Area of a circular motion, radian measure, angle measure

**Core Lesson Student Learning Objectives:**

The student will be able to:

I - convert angle measures

I - find arc length and area of a circular sector

Topic: Lesson 78-81
Minutes for Topic: 160

**Core Lesson Description:** Trigonometry of right triangles, applications, evaluation of trigonometric functions

**Core Lesson Student Learning Objectives:**

The student will be able to :

E - use the trigonometric functions in relation to a right triangle to solve

Topic: Lesson 82-83
Minutes for Topic: 80

**Core Lesson Description:** Evaluation of trigonometric functions

**Core Lesson Student Learning Objectives:** The student will be able :

I - Evaluation trigonometric functions for missing values

Topic: Lesson 84-89
Minutes for Topic: 200

**Core Lesson Description:** Law of Sines, Law of Cosines, Area of oblique triangle

**Core Lesson Student Learning Objectives:** The student will be able to:

E - Use Law of Sines or Law of Cosines to find missing values in an oblique triangle

E - Find the area of triangle

Topic: Lesson 90-92
Minutes for Topic: 120

**Core Lesson Description:** Laws of trigonometry, area of triangles

**Core Lesson Student Learning Objectives:** The student will be able :

I - Use the Law of Sines and the Law of Cosines to find the missing values in a triangle

I - Find the area of a triangle

Topic: Lesson 93-97
Minutes for Topic: 160

**Core Lesson** Trigonometric Functions of Angles

**Description:**

**Core Lesson Student Learning Objectives:** Students will be able to :

I - Evaluate trigonometric functions of angles

## Unit: Unit 5 - Analytic Trigonometry

**Month:** February, March

**Skills:**

Simplify Trigonometric Expressions

Proving Trigonometric Identities

Using Addition and Subtraction to combine functions

Using Double-Angle Formulas

Using Half-Angle Formulas

Using Product-to-Sum Formulas

Using Sum-to-Product Formulas

Using Inverse functions to solve

Solving Trigonometric Equations

**Essential Questions:** How do you use known identities and formulas to solve trigonometric equations?

**Content:** Identities, Addition and Subtraction Formulas, Sum of Sines and Cosines, Double-Angle Formulas, Half-Angle Formulas, Product-to-Sum Formulas, Sum-to-Product Formulas, Inverse Trigonometric Functions, Trigonometric Equations

**Assessments:**

Worksheets

Homework

Notebook

Board work

Quizzes

Tests

Projects

· Problem sets

**Vocabulary:**

- Cofunction
- Double-Angle Formulas
- Half-Angle Formulas
- Product-to-Sum Formulas
- Sum-to-Product Formulas
- Arcsine
- Arccosine
- Arctangent

**STANDARDS:** **STANDARDS**

NATIONAL: US Common Core State Standards (2010)

| | |
|---|---|
| MA.HSF-TF.A.3 (Advanced) | Use special triangles to determine geometrically the values of sine, cosine, tangent for pi/3, pi/4 and pi/6, and use the unit circle to express the values of sine, cosine, and tangent for pi–x, pi+x, and 2pi–x in terms of their values for x, where x is any real number. |
| MA.HSF-TF.A.4 (Advanced) | Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. |
| MA.HSF-TF.C.8 (Advanced) | Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find sin(theta), cos(theta), or tan(theta) given sin(theta), cos(theta), or tan(theta) and the quadrant of the angle. |
| MA.HSF-TF.C.9 (Advanced) | Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems. |

Topic: Lesson 98-100
Minutes for Topic: 120

**Core Lesson Description:** Trigonometric Identites

**Core Lesson Student Learning Objectives:** The student will be able to:

E - Prove trigonometric Identites

Topic: Lesson 101-103
Minutes for Topic: 120

**Core Lesson Description:** Trigonometric identities

**Core Lesson Student Learning Objectives:** The student will be able:

I - prove trigonometric identities

Topic: Lesson 104 -105
Minutes for Topic: 80

**Core Lesson Description:** Addition and Subtraction Formulas

**Core Lesson Student Learning Objectives:** The student will be able to :

E - use the addition or subtraction formulas to solve for the value

Topic: Lesson 106-107
Minutes for Topic: 80

**Core Lesson Description:** Sum and Difference formulas

**Core Lesson Student Learning Objectives:** The student will be able to :

I - Use the Addition and Subtraction formulas to solve.

Topic: Lesson 108-111
Minutes for Topic: 160

**Core Lesson Description:** Double - Angle, Half - Angle, and Product - Sum Formulas

**Core Lesson Student Learning Objectives:** The student will be able to :

E - Use the Double - Angle, Half - Angle, and Product - Sum formulas to simplify trigonometric expressions

Topic: Lesson 112-113
Minutes for Topic: 80

**Core Lesson Description:** Double - Angle, Half - Angle, and Product - Sum Formulas

**Core Lesson Student Learning Objectives:** The student will be able to :

I - Use the Double - Angle, Half - Angle, and Product - Sum formulas to simplify trigonometric expressions

Topic: Lesson 114-115
Minutes for Topic: 80

**Core Lesson Description:** Inverse Trigonometric Functions

**Core Lesson Student Learning Objectives:** The student will be able to:

E - use inverse functions to solve

Topic: Lesson 116-119
Minutes for Topic: 120

**Core Lesson Description:** Inverse Functions

**Core Lesson Student Learning Objectives:** The student will be able to:

I - Solve using Inverse Functions

Topic: Lesson 120-122
Minutes for Topic: 120

**Core Lesson Description:** Solving Trigonometric Equations

**Core Lesson Student Learning Objectives:** The student will be able to :

E - Solve Trigonometric Equations

Topic: Lesson 123-125
Minutes for Topic: 120

**Core Lesson Description:** Solving Trig Equations

**Core Lesson Student Learning Objectives:** The student will be able to :

I - Solve Trig Equations

Topic: Lesson 126-128
Minutes for Topic: 120

**Core Lesson Description:** Review and assess for the unit

**Core Lesson Student Learning Objectives:** The student will be able to :

I - solve trig equations for the requested values

## Unit: Unit 6 - Exponential and Logarithmic Functions

**Month:** April,May

**Skills:**

Solve Logarithmic functions for missing values

Solve Exponential functions for missing values

Using Properties of exponents or logarithmic to solve

Using Laws of Logarithms to solve

Solve Exponential and Logarithmic equations

Using modeling to solve problems

**Essential Questions:** How do you use exponential and logarithmic functions to solve complex equations?

**Content:** Exponential Functions, Logarithmic Functions, Laws of Logarithms, Solving Exponential and Logarithmic Equations, Modeling functions

**Assessments:**

- Worksheets
- Homework
- Notebook
- Board work
- Quizzes
- Tests
- Projects
- Problem sets

**Vocabulary:** Exponential functions

Logarithmic functions

Laws of Logarithms

Natural Logarithm

Exponential Growth

Exponential Decay

Topic: Lesson 129-131
Minutes for Topic: 120

**Core Lesson Description:** Exponential Functions

**Core Lesson Student Learning Objectives:** The Student will be able to:

Graph an Exponential Function

Find the Value of a Compound Interest equation

Topic: Lesson 132-135
Minutes for Topic: 120

**Core Lesson Description:** Logarithmic Functions

**Core Lesson Student Learning Objectives:** The student will be able to:

Solve Logarithmic Equations

Graph Natural and Common Logarithmic functions

Topic: Lesson 136-138
Minutes for Topic: 120

**Core Lesson Description:** solving simple exponential and logarithmic expressions

**Core Lesson** The student will be able to

**Student Learning Objectives:**
I - Solve exponential expressions
I - Solve simple logarithmic expressions
I - analyze graphs of exponential and logarithmic functions

Topic: Lesson 139-141
Minutes for Topic: 120

**Core Lesson Description:** Laws of Logarithms, Change of Base formula

**Core Lesson Student Learning Objectives:**
The student will be able to :
E - Use the Laws of Logarithms to simplify
E - Use Change of Base Formula to simplify

Topic: Lesson 142-145
Minutes for Topic: 120

**Core Lesson Description:** Exponential and Logarithmic equations

**Core Lesson Student Learning Objectives:**
The student will be able to :
E - Solve Exponential Equations
E -Solve Logarithmic Equations

Topic: Lesson 146-148
Minutes for Topic: 120

**Core Lesson Student Learning Objectives:**
The student will be able to :
I - Use the Laws of Logarithms and Change of Base Formula to simplify
I - Solve Exponential and Logarithmic Equations

Topic: Lesson 150-151
Minutes for Topic: 80

**Core Lesson** Exponential Growth and Decay models, Logarithmic models

**Description:**

**Core Lesson Student Learning Objectives:** The Student will be able to :

C - Use Exponential Growth and Decay models to solve problems

C- Use Logarithmic models to solve problems

Topic: lesson 152-154
Minutes for Topic: 120

**Core Lesson Description:** Review Exponents and logarithms

**Core Lesson Student Learning Objectives:** The student will be able to:

E - Solve Exponential expressions and equations

E - Solve Logarithmic expressions and equations

## Unit: Unit 7 - Conic Sections

**Month:** May

**Skills:**

graphing and analyzing parabolas

graphing and analyzing ellipses

graphing and analyzing hyperbolas

**Essential Questions:** How do we analyze and evaluate conic sections?

**Content:** Parabolas, Ellipses, Hyperbolas

**Assessments:**

- Worksheets
- Homework
- Notebook
- Board work
- Quizzes
- Tests

Projects

- Problem sets

**Vocabulary:**

conic sections

circle

ellipse

parabola

hyperbola

focus/foci

directrix

latus rectum

major/minor axis

center

eccentricity

asymptotes

Topic: Lesson 155-157
Minutes for Topic: 120

**Core Lesson Description:** Parabolas

**Core Lesson Student Learning Objectives:** The student will be able to:

Identify types of parabolas

Find the parts of a parabola and analyze the impact of these values

Graph parabolas

Topic: Lesson 158-161
Minutes for Topic: 160

**Core Lesson Description:** Ellipses

**Core Lesson Student Learning Objectives:** The student will be able to:

Graph an ellipse

Analyze an ellipse and find eccentricity, foci, and axes

Write equations of ellipses given eccentricity, foci, and/or axes

Topic: Lesson 162-166
Minutes for Topic: 160

**Core Lesson Description:** Hyperbolas

**Core Lesson Student Learning Objectives:** The student will be able to:

Graph a hyperbola

Analyze hyperbola to find the center, foci, and axes

Write equations of hyperbolas given the center, foci, and/or axes

Topic: Lesson 167-169
Minutes for Topic: 120

**Core Lesson Description:** Parabolas, Ellipses, Hyperbolas

**Core Lesson Student Learning Objectives:** The student be able to:

Analyze equations to identify conics

Find values necessary to identify conics