

Grade: 10th – 12th grade

Course Title: Algebra III/Trigonometry

Topic/Concept: Functions

Time Allotment: 24-28 Days

Unit Sequence: 1

Major Concepts to be learned:

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| <ul style="list-style-type: none">• Lines In a Plane• Function Notation• Domain, Range, Interval Notation• Transforming Graphs• Combinations of Functions | <ul style="list-style-type: none">• Inverse Functions• Linear Models and Scatter Plots |
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Expected Skills to be demonstrated:

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| <ul style="list-style-type: none">• Identify a relation as a function or one-to-one function• State the domain and range of a function• Express as relation using a table, graph, list, equation, or mapping• Identify rigid and non-rigid transformations of a function• Combine functions using arithmetic or composition• Write the equation of a line, in slope intercept or general forms, given two points or a point and the slope• Calculate the slope of a line |
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PA Standards/Anchors:

Eligible Content:

M11.D.1

M11.C.3.1.1-2
M11.D.1.1.2-3
M11.D.2.1.2-3
M11.D.3.2.1-3

Instructional Strategies:

Assessments:

Lecture	Group discussion
Performance task	Cooperative groups
Written work	Note Taking
Math Binders	Graphic Calculators

Minimum of 4 quizzes throughout the unit.
One end of unit comprehensive exam.
Bell ringers for warm ups daily.
Open ended/free response questions.

Grade: 10th – 12th grade

Course Title: Algebra III/Trigonometry

Topic/Concept: Polynomial & Rational Functions

Time Allotment: 40-45 Days

Unit Sequence: 2

Major Concepts to be learned:

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| <ul style="list-style-type: none">• Polynomial and Rational Functions• Polynomial Function and Higher Degree• Real Zeros of Polynomial Functions• Complex Numbers• The Fundamental Theorem of Algebra | <ul style="list-style-type: none">• Rational Functions and Asymptotes• Graphs of Rational Functions |
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Expected Skills to be demonstrated:

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| <ul style="list-style-type: none">• Solve a quadratic equation using factoring, completing the square, or the quadratic formula• Graph a quadratic equation• Be able to convert between vertex and standard forms of a quadratic equation• State and apply the Fundamental Theorem of Algebra• Find complex zeros of polynomial functions by factoring• Write a polynomial function given its complex factors• Perform arithmetic involving imaginary numbers• Plot a imaginary number on the complex plane• Identify the features of a rational function including asymptotes, holes, zeros, and end behavior |
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PA Standards/Anchors:

Eligible Content:

M11.D.2

- M11.D.2.1.5
- M11.D.2.2.1-3

Instructional Strategies:

Assessments:

Lecture
Performance task
Written work
Math Binders

Group discussion
Cooperative groups
Note Taking
Graphic Calculators

Minimum of 4 quizzes throughout the unit.
One end of unit comprehensive exam.
Bell ringers for warm ups daily.
Open ended/free response questions.

Grade: 10th – 12th grade

Course Title: Algebra III/Trigonometry

Topic/Concept: Exponential & Logarithmic Functions

Time Allotment: 27-30 Days

Unit Sequence: 3

Major Concepts to be learned:

- Exponential functions
- Logarithmic functions
- Properties of Logarithms
- Solving Logarithmic and Exponential Functions

Expected Skills to be demonstrated:

- Sketch the graphs of exponential and logarithmic functions
- Solve exponential and logarithmic equations
- Use exponential growth and decay models to solve problems
- Use properties of Logarithms to evaluate or rewrite log expressions
- Use properties of Logarithms to expand or condense log expressions

PA Standards/Anchors:

Eligible Content:

M11.D.4	M11.D.4.1.1
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Instructional Strategies:

Assessments:

Lecture Performance task Written work Math Binders	Group discussion Cooperative groups Note Taking Graphic Calculators	Minimum of 4 quizzes throughout the unit. One end of unit comprehensive exam. Bell ringers for warm ups daily. Open ended/free response questions.
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Grade: 10th – 12th grade

Course Title: Algebra III/Trigonometry

Topic/Concept: Trigonometry

Time Allotment: 50-60 Days

Unit Sequence: 4

Major Concepts to be learned:

- Radian and Degree Measure
- The unit circle
- Right Triangle Trigonometry
- Trigonometric Functions of Any Angle
- Graphs of Sine and Cosine Functions

Graphs of Other Trigonometric Functions
Inverse Trigonometric Functions
Applications of Trig Functions
Laws of Sines and Cosines

Expected Skills to be demonstrated:

- Convert between radians and degrees
- Determine the trig function of a "special" angle using the unit circle
- Find the reference angle of a given angle
- Identify coterminal angles
- Graph a sinusoidal function
- Model a physical situation using a sinusoidal function
- Use inverse trig functions to solve trigonometric equations
- Solve right and oblique triangles using trig functions, the law of sines and the law of cosines
- Find the area of any triangle

PA Standards/Anchors:

Eligible Content:

N/A

N/A

Instructional Strategies:

Assessments:

Lecture
Performance task
Written work
Math Binders

Group discussion
Cooperative groups
Note Taking
Graphic Calculators

Minimum of 4 quizzes throughout the unit.
One end of unit comprehensive exam.
Bell ringers for warm ups daily.
Open ended/free response questions.

Grade: 10th – 12th grade

Course Title: Algebra III/Trigonometry

Topic/Concept: Trigonometry

Time Allotment: 8-10 Days

Unit Sequence: 6

Major Concepts to be learned:

- Law of Sines
- Law of Cosines

Expected Skills to be demonstrated:

- Use law of sines to solve oblique triangles (AAS, ASA)
- Use law of sines to solve obliques triangles (SSA)
- Find area of obliques triangles
- Use law of sines to model and solve real life problems
- Use law of cosines to solve oblique triangles (SSS, SAS)
- Use law of cosines to model and solve real life problems

PA Standards/Anchors:

Eligible Content:

N/A

N/A

Instructional Strategies:

Assessments:

Lecture
Performance task
Written work
Math Binders

Group discussion
Coooperative groups
Note Taking
Graphic Calculators

Minimum of 4 quizzes throughout the unit.
One end of unit comprehensive exam.
Bell ringers for warm ups daily.
Open ended/free response questions.