

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 1: Linear Functions	TIME FRAME: 17 Days

<p>NATIONAL STANDARDS: NCTM Standards</p> <p>1. NUMBER AND OPERATIONS</p> <p>A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems</p> <p>B. Understand meanings of operations and how they relate to one another</p> <p>C. Compute fluently and make reasonable estimates</p> <p>2. ALGEBRA</p> <p>A. Understand patterns, relations, and functions</p> <p>B. Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>C. Use mathematical models to represent and understand quantitative relationships</p> <p>D. Analyze change in various contexts</p> <p>3. PROBLEM SOLVING</p> <p>A. Build new mathematical knowledge through problem solving</p> <p>B. Solve problems that arise in mathematics and in other contexts</p> <p>C. Apply and adapt a variety of appropriate strategies to solve problems</p> <p>D. Monitor and reflect on the process of mathematical problem solving</p> <p>4. COMMUNICATION</p> <p>A. Organize and consolidate their mathematical thinking through communication</p> <p>B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others</p> <p>C. Analyze and evaluate the mathematical thinking and strategies of others</p> <p>D. Use the language of mathematics to express mathematical ideas precisely</p> <p>5. CONNECTIONS</p> <p>A. Recognize and use connections among mathematical ideas</p> <p>B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole</p> <p>C. Recognize and apply mathematics in contexts outside of mathematics</p> <p>6. REPRESENTATION</p> <p>A. Create and use representations to organize, record, and communicate mathematical ideas</p> <p>B. Select, apply, and translate among mathematical representations to solve problems</p> <p>C. Use representations to model and interpret physical, social, and mathematical phenomena</p>

<p>STATE STANDARDS:</p> <p>M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.</p> <p>M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed).</p> <p>M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).</p> <p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Identify real numbers as natural, whole, integer, rational, or irrational • Solve simple and compound linear inequalities • Represent inequalities using interval notation and a number line • Solve absolute value equalities and inequalities • Calculate the distance and midpoint between two points in the Cartesian plane • Write an equation of a line through two points • Determine the domain and range of a function • Write and apply linear equations in real life situations
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<p>(may be presented as ordered pairs or a table).</p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p>M11.D.3.2.2 Given the graph of the line, 2 points on the line, or the slope and a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p> <p>M11.D.3.2.3 Compute the slope and/or y-intercept represented by a linear equation or graph.</p>	
<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Name Game Concert at River Park Developing Rules Solving Inequalities Pool Hall Problem Wave Activity Spring Experiment Car Loan Activity Scatter Plots and Predictions</p>	<p>ASSESSMENTS:</p> <p>Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Exam View Test Generator Tests Journal Writing and Writing Assignments</p> <p>REMEDIATION:</p> <p>Solving Inequalities Writing Linear Equations Slopes and Intercepts Scatter Plots and Prediction Equations Problem Solving with Equations Table of Values The Coordinate Plane Cross-Number Puzzle Basic Properties of Real Numbers Solving Equations in One Variable Words into Symbols The Slope of a Line Equations of a Line</p> <p>DIFFERENTIATION:</p> <p>Predicting Heights and Weights of Athletes Temperature Activity</p>

Shrinking Arrows Lab
Activity 5, Fuel Bills

RESOURCES:

College Algebra – Pearson
Algebra II – Prentice Hall
Worksheets & Assessments

WEBSITES

www.algebrahelp.com

www.coolmath.com

www.mathleague.com

www.interactmath.com

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 2: Systems of Linear Equations and Matrices TIME FRAME: 11 Days	

<p>NATIONAL STANDARDS: NCTM Standards</p> <p>1. ALGEBRA</p> <p>A. Understand patterns, relations, and functions</p> <p>B. Represent and analyze mathematical situations and structures using algebraic symbols</p> <p>C. Use mathematical models to represent and understand quantitative relationships</p> <p>D. Analyze change in various contexts</p> <p>2. PROBLEM SOLVING</p> <p>A. Build new mathematical knowledge through problem solving</p> <p>B. Solve problems that arise in mathematics and in other contexts</p> <p>C. Apply and adapt a variety of appropriate strategies to solve problems</p> <p>D. Monitor and reflect on the process of mathematical problem solving</p> <p>3. COMMUNICATION</p> <p>A. Organize and consolidate their mathematical thinking through communication</p> <p>B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others</p> <p>C. Analyze and evaluate the mathematical thinking and strategies of others</p> <p>D. Use the language of mathematics to express mathematical ideas precisely</p> <p>4. CONNECTIONS</p> <p>A. Recognize and use connections among mathematical ideas</p> <p>B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole</p> <p>C. Recognize and apply mathematics in contexts outside of mathematics</p> <p>5. REPRESENTATION</p> <p>A. Create and use representations to organize, record, and communicate mathematical ideas</p> <p>B. Select, apply, and translate among mathematical representations to solve problems</p> <p>C. Use representations to model and interpret physical, social, and mathematical phenomena</p>
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<p>PA MATH ASSESSMENT ANCHORS:</p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Solve systems of linear equations in two variables by substitution and elimination • Classify systems of equations as consistent / inconsistent, dependent / independent • Perform matrix addition, subtraction, multiplication, and scalar multiplication • Solve systems of equations in three variables using matrix operations on a calculator • Solve systems of linear inequalities graphically
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<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Two Months Later at the Coffee Shop ProCats Math Time vs. Chemistry Time Activity Student Dance Pick a Number Pat Runs a Race Linear Inequalities High Flying Amusement Activity Fay Cogitator's Fractals Junk Bonds Laser Printer Assembly Sketchpad Activities</p>	<p>ASSESSMENTS:</p> <p>Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Tests Journals and Writing Assignments</p> <p>REMEDIATION:</p> <p>Graphing Systems of Equations Packet of Skill Sheets: Solving Systems of Equations Skill Sheet: Matrices Skill Sheet: Graphing Systems of Inequalities Skill Sheet: Using Linear Systems of Inequalities Skill Sheet: Graphing Linear Systems of Inequalities</p> <p>Differentiation:</p> <p>Fund-Raising What is the Cost? Problems with Two Variables Drugs and Pollution in the Algebra Class</p> <p>RESOURCES:</p> <p>College Algebra – Pearson Algebra II – Prentice Hall Worksheets & Assessments</p> <p>WEBSITES</p> <p>www.algebrahelp.com www.coolmath.com www.mathleague.com www.interactmath.com</p>
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COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 3: Quadratic Functions	TIME FRAME: 18 Days

<p>NATIONAL STANDARDS: NCTM Standards</p> <p>1. NUMBER AND OPERATIONS</p> <ul style="list-style-type: none"> A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems B. Understand meanings of operations and how they relate to one another C. Compute fluently and make reasonable estimates <p>2. ALGEBRA</p> <ul style="list-style-type: none"> A. Understand patterns, relations, and functions B. Represent and analyze mathematical situations and structures using algebraic symbols C. Use mathematical models to represent and understand quantitative relationships D. Analyze change in various contexts <p>3. PROBLEM SOLVING</p> <ul style="list-style-type: none"> A. Build new mathematical knowledge through problem solving B. Solve problems that arise in mathematics and in other contexts C. Apply and adapt a variety of appropriate strategies to solve problems D. Monitor and reflect on the process of mathematical problem solving <p>4. COMMUNICATION</p> <ul style="list-style-type: none"> A. Organize and consolidate their mathematical thinking through communication B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others C. Analyze and evaluate the mathematical thinking and strategies of others D. Use the language of mathematics to express mathematical ideas precisely <p>5. CONNECTIONS</p> <ul style="list-style-type: none"> A. Recognize and use connections among mathematical ideas B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole C. Recognize and apply mathematics in contexts outside of mathematics <p>6. REPRESENTATION</p> <ul style="list-style-type: none"> A. Create and use representations to organize, record, and communicate mathematical ideas B. Select, apply, and translate among mathematical representations to solve problems C. Use representations to model and interpret physical, social, and mathematical phenomena

<p>PA MATH ASSESSMENT ANCHORS:</p> <p>M11.D.2.1.5 Solve quadratic equations using factoring (integers only: not including completing the square or the Quadratic Formula).</p> <p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Use the discriminant to predict the number and nature of the roots and then solve quadratic equations algebraically by factoring and using the quadratic formula • Determine characteristics of quadratic functions (e.g. vertex, axis of symmetry, intercepts, maximum or minimum values) • Analyze graphs of the library of functions to determine continuity, types of symmetry, intervals of increasing/decreasing, etc. • Perform operations with complex numbers
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<p>M11.D.4.1.1 Match the graph of a given function to its table or equation.</p>	<ul style="list-style-type: none"> • Solve equations with imaginary roots • Identify transformations of functions • Use the method of completing the square when given generic directions
<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Sunburn Activity Solve Quadratic Equations Pendulum Experiment Effects of Monomial Terms on Polynomial Functions Falling Objects Changing Powers Moving Other Functions Traveling with Graphs The Parabola Family Invent a Story Distance from Home Activity Race Graph Graphs in Real Life Solve Quadratic Equations</p>	<p>ASSESSMENTS: Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Tests</p> <p>REMEDIATION: Transformation of Graphs Packet of Skill sheets: Solving Quadratic Equations by using graphing, using factoring, completing the square, and using the quadratic formula The Oil Tank Problem Forms of the Cubic Function Forms of the Quartic Function</p> <p>DIFFERENTIATION: Transformation Creations on Families of Quadratic Functions Fish Kite Parabola Diamonds Necklace Sketching Graphs of Equations of Graphs in Standard Form Designing a Water Tank Completing the Square Writing Equations from Roots What do Different Functions Look Like? Freely-Falling Objects Assessment Gravity of the Moon Situation</p> <p>RESOURCES: College Algebra – Pearson Algebra II – Prentice Hall Worksheets & Assessments</p> <p>WEBSITES www.algebrahelp.com www.coolmath.com www.mathleague.com www.interactmath.com</p>

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 4: Radical and Rational Functions	TIME FRAME: 21 Days

<p>NATIONAL STANDARDS: NCTM Standards</p> <p>1. NUMBER AND OPERATIONS</p> <ul style="list-style-type: none"> A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems B. Understand meanings of operations and how they relate to one another C. Compute fluently and make reasonable estimates <p>2. ALGEBRA</p> <ul style="list-style-type: none"> A. Understand patterns, relations, and functions B. Represent and analyze mathematical situations and structures using algebraic symbols C. Use mathematical models to represent and understand quantitative relationships D. Analyze change in various contexts <p>3. PROBLEM SOLVING</p> <ul style="list-style-type: none"> A. Build new mathematical knowledge through problem solving B. Solve problems that arise in mathematics and in other contexts C. Apply and adapt a variety of appropriate strategies to solve problems D. Monitor and reflect on the process of mathematical problem solving <p>4. COMMUNICATION</p> <ul style="list-style-type: none"> A. Organize and consolidate their mathematical thinking through communication B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others C. Analyze and evaluate the mathematical thinking and strategies of others D. Use the language of mathematics to express mathematical ideas precisely <p>5. CONNECTIONS</p> <ul style="list-style-type: none"> A. Recognize and use connections among mathematical ideas B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole C. Recognize and apply mathematics in contexts outside of mathematics <p>6. REPRESENTATION</p> <ul style="list-style-type: none"> A. Create and use representations to organize, record, and communicate mathematical ideas B. Select, apply, and translate among mathematical representations to solve problems C. Use representations to model and interpret physical, social, and mathematical phenomena

<p>PA MATH ASSESSMENT ANCHORS:</p> <p>M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers: exponents should not exceed power of 10).</p> <p>M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g. $x^6 * x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7=x^{42}$) and powers of products $(2x^2)^3=8x^6$ (positive exponents only).</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Evaluate expressions with rational exponents (including zero and negative exponents) • Solve radical equations • Simplify rational expressions by factoring • Add and subtract rational expressions with like or unlike denominators • Solve rational equations algebraically and graphically • Identify vertical and horizontal asymptotes • Find the inverse of a function • Find the composite of two functions • Evaluate a composite function
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<p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).</p> <p>M11.D.2.2.3 Simplify algebraic fractions.</p> <p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p> <p>M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable (e.g., $y=4/x$, if x doubles, what happens to y?).</p>	
<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Negative Exponents Activity Fractional Exponents Activity Ratios and Exponents Power Games A Moonlighting Mathematician An Unsolved Problem Add/Subtract Rational Expressions Solve Rational Equations and Inequalities Identify Asymptotes Composition of Functions Composition and Linear Functions F(x) Activity Inverse Functions Composition and Inverses of Functions</p>	<p>ASSESSMENTS:</p> <p>Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Exam View Test Generator Tests Journals and Writing Assignments</p> <p>REMEDIATION:</p> <p>Multiplying and Dividing Radicals Inverse Functions Packet of Skill Sheets: Computation of Radicals Hidden Crops Solving Equations with Radicals Rational Exponents Composition of Functions Reteach Rational Functions Reteach Using Inverse and Joint Variation Reteach Multiplying and Dividing Rational Expressions Solving Rational Equations Working with Rational Expressions</p>

DIFFERENTIATION:

Modeling the Movement of a Cold Front
Analysis of Graphs and Functions
How Rugged is Your Coastline?
The Wonder Shovel
The Point of No Return
Rational Inequalities
Radical Inequalities
Graphing Inverses
Student Study Guide
Writing Activities
An Attractive View of Composite Functions
The Two-Person Scenario
The Three-Person Scenario
The Four-Person Scenario
The Five-Person Scenario
The General Case

RESOURCES:

College Algebra – Pearson
Algebra II – Prentice Hall
Worksheets & Assessments

WEBSITES

www.algebrahelp.com
www.coolmath.com
www.mathleague.com
www.interactmath.com

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 5: Data Analysis	TIME FRAME: 8 Days

<p>NATIONAL STANDARDS: NCTM Standards</p> <p>1. NUMBER AND OPERATIONS</p> <ul style="list-style-type: none"> A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems B. Understand meanings of operations and how they relate to one another C. Compute fluently and make reasonable estimates <p>2. ALGEBRA</p> <ul style="list-style-type: none"> A. Understand patterns, relations, and functions B. Represent and analyze mathematical situations and structures using algebraic symbols C. Use mathematical models to represent and understand quantitative relationships D. Analyze change in various contexts <p>3. DATA ANALYSIS AND PROBABILITY</p> <ul style="list-style-type: none"> A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them B. Select and use appropriate statistical methods to analyze data C. Develop and evaluate inferences and predictions that are based on data D. Understand and apply basic concepts of probability <p>4. PROBLEM SOLVING</p> <ul style="list-style-type: none"> A. Build new mathematical knowledge through problem solving B. Solve problems that arise in mathematics and in other contexts C. Apply and adapt a variety of appropriate strategies to solve problems D. Monitor and reflect on the process of mathematical problem solving <p>5. COMMUNICATION</p> <ul style="list-style-type: none"> A. Organize and consolidate their mathematical thinking through communication B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others C. Analyze and evaluate the mathematical thinking and strategies of others D. Use the language of mathematics to express mathematical ideas precisely <p>6. CONNECTIONS</p> <ul style="list-style-type: none"> A. Recognize and use connections among mathematical ideas B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole C. Recognize and apply mathematics in contexts outside of mathematics <p>7. REPRESENTATION</p> <ul style="list-style-type: none"> A. Create and use representations to organize, record, and communicate mathematical ideas B. Select, apply, and translate among mathematical representations to solve problems C. Use representations to model and interpret physical, social, and mathematical phenomena
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<p>PA MATH ASSESSMENT ANCHORS:</p> <p>M11.E.4.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Determine the regression equation of best fit (linear and quadratic) • Use standard deviation, variance, and normal distributions
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<p>M11.E.4.2.2 Make predictions using the equations or graphs of best-fit lines of scatter plots.</p>	
<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Finding Lines of Best Fit Car Data Activity Bouncing a Superball Analyzing Cereals Activity Median Home Price Assessment Math Club Sale Presidents vs. Vice-Presidents Statistical Process Control Lab Random Samples Homeless People Activity Standard Deviation Difficulty Test</p>	<p>ASSESSMENTS: Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Exam View Test Generator Tests Journal Writing and Writing Assignments</p> <p>REMEDIATION:</p> <p>A GRAPHICAL APPROACH TO COLLEGE ALGEBRA: Tutoring CD</p> <p>Prentice Hall Algebra 1, 2007: Hands-On Activities Skill and Concept Review Masters Online Video Tutor Student EXPRESS MindPoint Quiz Show CD-ROM: End-of-Chapter reviews</p> <p>DIFFERENTIATION:</p> <p>A GRAPHICAL APPROACH TO COLLEGE ALGEBRA: Tutoring CD</p> <p>Prentice Hall Math, 2007: Online Active Math: Built-in interactive explorations MindPoint Quiz Show CD-ROM Enrichment Masters PHSchool.com: Online support for Mathematics Web Codes within the textbook provide access to:</p> <ul style="list-style-type: none"> • Vocabulary Quizzes • Chapter Tests • Chapter Projects • Math at Work <p>RESOURCES: College Algebra – Pearson Algebra II – Prentice Hall Worksheets & Assessments</p> <p>WEBSITES www.algebrahelp.com www.coolmath.com www.mathleague.com www.interactmath.com</p>

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 6: Probability, Sequences and Series	TIME FRAME: 8 Days

NATIONAL STANDARDS: NCTM Standards	
1. NUMBER AND OPERATIONS	
<ul style="list-style-type: none"> A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems B. Understand meanings of operations and how they relate to one another C. Compute fluently and make reasonable estimates 	
2. ALGEBRA	
<ul style="list-style-type: none"> A. Understand patterns, relations, and functions B. Represent and analyze mathematical situations and structures using algebraic symbols C. Use mathematical models to represent and understand quantitative relationships D. Analyze change in various contexts 	
3. DATA ANALYSIS AND PROBABILITY	
<ul style="list-style-type: none"> A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them B. Select and use appropriate statistical methods to analyze data C. Develop and evaluate inferences and predictions that are based on data D. Understand and apply basic concepts of probability 	
4. PROBLEM SOLVING	
<ul style="list-style-type: none"> A. Build new mathematical knowledge through problem solving B. Solve problems that arise in mathematics and in other contexts C. Apply and adapt a variety of appropriate strategies to solve problems D. Monitor and reflect on the process of mathematical problem solving 	
5. COMMUNICATION	
<ul style="list-style-type: none"> A. Organize and consolidate their mathematical thinking through communication B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others C. Analyze and evaluate the mathematical thinking and strategies of others D. Use the language of mathematics to express mathematical ideas precisely 	
6. CONNECTIONS	
<ul style="list-style-type: none"> A. Recognize and use connections among mathematical ideas B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole C. Recognize and apply mathematics in contexts outside of mathematics 	
7. REPRESENTATION	
<ul style="list-style-type: none"> A. Create and use representations to organize, record, and communicate mathematical ideas B. Select, apply, and translate among mathematical representations to solve problems C. Use representations to model and interpret physical, social, and mathematical phenomena 	

PA MATH ASSESSMENT ANCHORS:	UNIT OBJECTIVES:
<p>M11.E.3.1.1 Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent).</p> <p>M11.E.3.1.2 Find, convert and/or compare the probability</p>	<ul style="list-style-type: none"> • Compare odds and probability • Find the nth term of a sequence • Evaluate the sum of a sequence • Generate sequences and series to model real life applications • Use the Binomial Theorem when given the

<p>and/or odds of a simple event.</p> <p>M11.E.3.2.1</p> <p>Determine the number of permutations and/or combinations or apply the fundamental counting principle. (Formula provided on the reference sheet).</p>	<p>general expansion for $(x + y)^n$</p>
<p>ACTIVITIES:</p> <p>Teacher directed differentiated instructional projects and activities are ongoing and based on student need.</p> <p>Frankfurter Franchise Medical Research Dr. Zeus Yellow-Bellied Sapsucker Lottery Activity Coin Activity Handshake Activity Arranging the Pictures Genetic Code Combinations Fundamental Counting Principle Probability Trees When the Order Doesn't Matter Loops Activity Factorial Functions Activity Medical Testing Activity Dinner Activity Mutually Exclusive and Independent Events Receiving a Defective Shipment Birthday Activity Arithmetic Series Sequences and Series Uncle Scrooge's Investment Activity The Gauss Trick Binomial Expansion Binomial Theorem</p>	<p>ASSESSMENTS:</p> <p>Observation and questioning Presentation and discussions Projects and Investigations Homework Quizzes Exam View Test Generator Tests Journal Writing and Writing Assignments</p> <p>REMEDIATION:</p> <p>Building Blocks Binomial Theorem Binomial Expansion Arithmetic Sequences Arithmetic Series Geometric Sequences Geometric Series Infinite Geometric Series</p> <p>DIFFERENTIATION:</p> <p>Using Experimental Probabilities to Stimulate Family Makeup How Many Ways? The Football Coaches' Dilemma The Tower of Hanoi Activity Equivalent Forms Toothpick Trapezoids Activity Counting Beans Activity Sierpinski Triangle Game Sequences and Series Project</p> <p>RESOURCES:</p> <p>College Algebra – Pearson Algebra II – Prentice Hall Worksheets & Assessments</p> <p>WEBSITES</p> <p>www.algebrahelp.com www.coolmath.com www.mathleague.com www.interactmath.com</p>

COURSE: Academic Algebra II	GRADE(S): 11 th Grade
UNIT 7: Conic Sections (Enrichment)	TIME FRAME:

<p>NATIONAL STANDARDS:</p> <p>1. ALGEBRA</p> <ul style="list-style-type: none"> A. Understand patterns, relations, and functions B. Represent and analyze mathematical situations and structures using algebraic symbols C. Use mathematical models to represent and understand quantitative relationships D. Analyze change in various contexts <p>2. GEOMETRY</p> <ul style="list-style-type: none"> A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems C. Apply transformations and use symmetry to analyze mathematical situations D. Use visualization, spatial reasoning, and geometric modeling to solve problems <p>3. COMMUNICATION</p> <ul style="list-style-type: none"> A. Organize and consolidate their mathematical thinking through communication B. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others C. Analyze and evaluate the mathematical thinking and strategies of others D. Use the language of mathematics to express mathematical ideas precisely <p>4. CONNECTIONS</p> <ul style="list-style-type: none"> A. Recognize and use connections among mathematical ideas B. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole C. Recognize and apply mathematics in contexts outside of mathematics <p>5. REPRESENTATION</p> <ul style="list-style-type: none"> A. Create and use representations to organize, record, and communicate mathematical ideas B. Select, apply, and translate among mathematical representations to solve problems C. Use representations to model and interpret physical, social, and mathematical phenomena
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<p>STATE STANDARDS:</p> <p>M11.C.1 Analyze characteristics and properties of two- and three-dimensional geometric shapes and demonstrate understanding of geometric relationships.</p> <p>M11.C.1.1 Identify and/or use parts of circles and segments associated with circles.</p> <p>M11.D.1 Demonstrate an understanding of patterns, relations, and functions.</p> <p>M11.D.2 Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.</p> <p>M11.D.2.2 Simplify expressions involving polynomials.</p>	<p>UNIT OBJECTIVES:</p> <ul style="list-style-type: none"> • Identify the equations of the conic sections • Identify characteristics of the graphs of conic sections (e.g. vertex, center, radius, etc.)
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ACTIVITIES:

Teacher directed differentiated instructional projects and activities are ongoing and based on student need.

A Graphical Approach to College Algebra:

Practice Exercises
CD ROM Tutorial

Prentice Hall, 2007:

Daily Review and Problem Solving Exercises

ASSESSMENTS:

Observation and questioning
Presentation and discussions
Projects and Investigations
Homework
Quizzes
Exam View Test Generator
Tests
Journals and Writing Assignments

REMEDIATION:**A Graphical Approach to College Algebra:**

Remediation Resources

Prentice Hall, 2007:

Remediation Resources
Prentice Hall Note-Taking Workbook

DIFFERENTIATION:**A Graphical Approach to College Algebra:**

Enrichment and Technology Resources

Prentice Hall, 2007:

Enrichment and Technology Resources
Modeling the Path of a Bouncing Ball

RESOURCES:

College Algebra – Pearson
Algebra II – Prentice Hall
Worksheets & Assessments

WEBSITES

www.algebrahelp.com

www.coolmath.com

www.mathleague.com

www.interactmath.com