Algebra 2 Curriculum 2017-2018

Unit: Sequences and Series…just the basics.

Essential Questions: What is the difference between a geometric and arithmetic sequence?
How can you represent the terms of a sequence explicitly?
What does it mean to represent the terms of a sequence recursively?
How do you find the sum of a finite sequence?

Total Days: 3

Algebra 2 Unit Guide 2017 – 2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
1	A-SSE 1: Interpret expressions that represent a quantity in terms of its context. A-SSE 2: Use the structure of an expression to identify ways to rewrite it.	-Use summation notation to write series and find sums of series. -Identify sequences that are arithmetic or geometric. -Be able to write the rule for each.	McDougal-Littell 2007 12.1, 12.2 McDougal-Littell 2001 11.1 Prentice Hall 11.1, 11.2	-Do now (warm-up) -chunking (connecting to previously held knowledge) -Comparison -dip sticking -graphic organizers	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
2	A-SSE 4: Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.	-Use the formula to solve problems such as calculating mortgage payments. - Manipulate the formula $S_n = a(\frac{1-r^n}{1-r})$	McDougal-Littell 2007 11.3 McDougal-Littell 2001 11.3 Prentice Hall 11.3	-the important thing about ….. -Classification -eliminating possibilities	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Linear Functions…Most of this focus is on absolute value, piece wise functions, and linear programming.

Essential Questions: Does it matter what form of a linear equation you use?
How do you use transformations to help graph absolute value functions?
How can you use a piecewise function to model your summer job earnings?
How can you use linear programming to find maximum and minimum values in real-life situations?
How does representing systems of equations graphically help to solve problems?
In what way is a graph changed when certain quantities in its equation are changed?

Total Days: 9

Algebra 2 Unit Guide 2017 – 2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
3	A-CED 1: Create equations and inequalities in one variable and use them to solve problems. A-CED 2: Create equations in two or more variables to represent relationships between; graph equations on coordinate axes with labels and scales. F-IF 6: Calculate and interpret the average rate of change of a function. Estimate the rate of change from the graph.	-Graph these equations. -Determine the average rate of change of a function using various forms.	McDougal-Littell 2007 Chapters 1,2 McDougal-Littell 2001 Chapters 1,2 Prentice Hall Chapters 1,2	-K-W-L (what I know/what I want to know/what I learned) -jigsaw -poems, songs, raps -internet based activities	CFA Skills Assessment Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
3	A-CED 2: Create equations in two or more variables to represent relationships between; graph equations on coordinate axes with labels and scales.	-Graph these systems of equations and find their intersection points.	McDougal-Littell 2007 Chapter 3 McDougal-Littell 2001	-Classification -Comparison -Problem solving -the important thing about	CFA Linear Programming Project Worksheets Quizzes Test

	A-CED 3: Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. F-IF 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. A-REI-11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately.	-Use these equations to represent constraints in real-life linear programming problems. -Interpret solutions. Find minimum/maximum values in linear programming problems. -Define and determine the domain and range of these functions.	Chapters 3 Prentice Hall Chapters 3	-graphing calculator applications -draw a picture -Do now (warm-up) -Around the room -dip sticking -Writing Across the Curriculum -cooperative learning groups	Whiteboards Type 2 & 3 WACs
1	F-BF 1: Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic operations. F-IF 4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. F-IF 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. F-IF 8: Write a function defined by an expression in different but equivalent	-Write and graph piecewise functions and use them to model and interpret real-life situations. -Understand and interpret the domain and range of these functions. -translate among different representations of functions and relations: graphs, equations, point sets, and tables.	McDougal-Littell 2007 2.7 extension McDougal-Littell 2001 2.7 Prentice Hall pg. 71	-lecture -drill and practice -cooperative learning groups -draw a picture -K-W activator (what I know/what I want to know)	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

	forms to reveal and explain different properties of the function. F-IF 9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	-explain relationships verbally and in writing. -compare properties			
2	F-BF 3: Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. F-IF 7: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. A-REI-11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately	-Write and graph absolute value functions and use them to model and interpret real-life situations. -Use translations to graph these functions and determine solutions to problems, algebraically and graphically. -Use graphing calculators to graph and evaluate these functions as well as find intersections.	McDougal-Littell 2007 2.7 McDougal-Littell 2001 2.8 Prentice Hall 2.5	-graphing calculator applications -use a formula -find a pattern -draw a picture -K-W-L (what I know/what I want to know/what I learned) -Learning stations -individual whiteboards	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Vectors and Matrices…Level 2 may consider using for just solving systems. Students have seen and will see vectors again.

Essential Questions: How do you represent quantities and model with vectors?
How do you perform operations on matrices?
How can you use matrices to represent and solve a three variable system of equations?
How can a matrix represent a transformation of a geometric figure in the plane?
How do you perform vector operations?

Total Days: 6

Algebra 2 Unit Guide 2017-2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
2	N-VM 1: Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., ***v***, $\|\boldsymbol{v}\|$, $\|\|\boldsymbol{v}\|\|$, *v*). N-VM 3: Solve problems involving velocity and other quantities that can be represented by vectors.	-Distinguish between magnitude (length) and direction angle. -Write the component form of a vector ***v*** is written as $\mathbf{v} = \langle v_1, v_2 \rangle$. -Be able to find the magnitude of a vector. -Apply the algebraic interpretation of vectors. - $\|v\|$ denotes the magnitude of the vector. -Find the magnitude and direction of the vector ***v*** that has initial point (4,-7) and terminal point (-1,5). -Use vectors to solve navigation problems. -Find the magnitude of a resultant.	McDougal-Littell Geometry 2001: Section 9.7 Algebra & Trigonometry by Larson 8th Edition 2011: Section 8.3-8.4	-Classification -Comparison -K-W activator (what I know/what I want to know)	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

		-Manipulate equations involving velocity.			
3	N-VM 6: Use matrices to represent and manipulate data. N-VM 8: Add, subtract and multiply matrices of appropriate dimensions. N-VM 12: Work with 2 X 2 matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area of a triangle.	-Add, subtract and multiply matrices. -Perform geometric transformations using matrices. (reflect, dilate, rotate and translate) -Find the area of a triangle using matrices.	McDougal-Littell 2007 3.5, 3.6 McDougal-Littell 2001 4.1, 4.2, 4.3 Prentice Hall 4.1, 4.2, 4.3, 4.4	-Writing Across the Curriculum -Peer/partner learning -Presentations (Luck of the Draw) -poems, songs, raps -dip sticking -graphing calculator applications	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs CFA term 3
1	N-VM 6: Use matrices to represent and manipulate data.	Use matrices and the graphing calculator to solve three variable systems.	McDougal-Littell 2007 3.8 McDougal-Littell 2001 4.5 Prentice Hall 4.7, 4.8	-individual whiteboards -Discovery learning -dip sticking	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Quadratic Functions…Remember main focus is supposed to be on complex numbers!

Essential Questions: How are the solutions of a quadratic equation related to the graph of the related function?
How can you determine the maximum height of a ball thrown in the air?
What do you do when an equation appears to have no real number solutions?
How do you solve a quadratic equation that cannot be factored?
How do you determine the number and nature of solutions to a quadratic equation?
Given data or a graph how can you find a quadratic model?

Total Days: 15

Algebra 2 Unit Guide 2017-2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
3	F-IF 4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. F-IF 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. F-IF 8: Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. F-IF 9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). F-BF 3: Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x$	-Graph quadratic equalities and inequalities and interpret key features of graphs and tables in terms of quantities. -Relate the domain of a quadratic function to its graph. -translate among different representations of functions and relations: graphs, equations, point sets, and tables. -explain relationships verbally and in writing.	McDougal-Littell 2007 4.1, 4.2 McDougal-Littell 2001 5.1 Prentice Hall 5.2, 5.3	-Discovery learning -Writing Across the Curriculum -Peer/partner learning -individual whiteboards -Problem solving -guess and check -make a table eliminating possibilities -use a formula -find a pattern -draw a picture -simplify the problem -choose the operation	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

	+ k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	-understanding the shifting of the parent function. -compare properties			
10	N-CN 1: Know that i^2=-1 and every complex number has the form a + bi with a and b real. N-CN 2: Use the relation i^2=-1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. N-CN 7: Solve quadratic equations with real coefficients that have complex solutions. N-CN 8: Extend polynomial identities to complex numbers. N-CN 9: Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. A-SS-E 2: Use the structure of an expression to identify ways to rewrite it. For example, see x^4-y^4 as $(x^2)^2$-$(y^2)^2$, thus recognizing it as a difference of squares that can be factored $(x^2-y^2)(x^2+y^2)$ and further factored (x-y)(x+y)(x-yi)(x+yi).	-adding, subtracting, and multiplying numbers involving i. -solve by factoring, taking the square root, completing the square, using the quadratic formula and discriminant (Note: All of these processes are technically taught in Algebra 1. Our primary focus should be on the complex number system.)	McDougal-Littell 2007 Chapter 4 McDougal-Littell 2001 Chapter 5 Prentice Hall Chapter 5	-Classification -Comparison -Writing Across the Curriculum -Peer/partner learning -graphing calculator applications -Learning stations -Around the room	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs CFA "Solving quadratics equations"
2	F-BF 1: Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic operations.	-Use quadratic regression feature of graphing calculator.	McDougal-Littell 2007 4.10 McDougal-Littell 2001 5.8 Prentice Hall 5.1	-K-W activator (what I know/what I want to know) -Think pair share -dip sticking -graphic organizers	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Polynomial Functions

Essential Questions: How do you write the factored form of a polynomial?
How do you determine the dimensions of a figure given the volume?
What is Pascal's Triangle?
How can you maximize the volume of a rectangular prism?

Total Days: 14

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Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
5	A-APR 1: Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, multiplication, and division. A-APR 4: Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x_2 + y_2)_2 = (x_2 - y_2)_2 + (2xy)_2$ *can be used to generate Pythagorean triples.*	-Add, subtract, multiply and divide polynomials. -Factor polynomials.(sum and difference of cubes, grouping)	McDougal-Littell 2007 5.3, 5.4, 5.5 McDougal-Littell 2001 6.1, 6.3,6.4, 6.5 Prentice Hall 6.1, 6.3, 6.4, 6.5	-drill and practice -cooperative learning groups -jigsaw -You Tube Tutorials -Using manipulatives	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
4	A-APR 2: Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$. A-APR 3: Identify zeros of polynomials when suitable factorizations are	-Know and apply the Remainder Theorem. -Identify zeros of polynomials using factoring/division.	McDougal-Littell 2007 5.4, 5.5, 5.6 McDougal-Littell 2001 6.4, 6.5, 6.6 Prentice Hall	-Game -Learning stations -Around the room -lecture -drill and practice	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs CFA- Solving Polynomials

	available, and use the zeros to construct a rough graph of the function defined by the polynomial.		6.4, 6.5, 6.6		
2	A-APR 5: Know and apply the Binomial Theorem for the expansion of $(x + y)n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle.	-Show how multiplying polynomials relates to Pascal's Triangle and the binomial theorem.	McDougal-Littell 2007 10.2 McDougal-Littell 2001 10.2 Prentice Hall 6.8	-lecture -Learning stations -Peer/partner learning	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
3	F-IF 7: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. (c) Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. F-IF MA 10: Given algebraic, numeric, and/or graphical representations of functions, being able to recognize the function as polynomial. A-REI 11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately.	-Classify polynomials and graph polynomial functions by hand and using technology while identifying zeroes and finding intersection points. -Describe end behavior of polynomial functions. -Knowing that a function is a polynomial. -applications involved with polynomial functions.	McDougal-Littell 2007 5.2 McDougal-Littell 2001 6.2 Prentice Hall 6.1	-graphing calculator applications -use a formula -find a pattern -draw a picture -K-W-L (what I know/what I want to know/what I learned) -Learning stations -individual whiteboards	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs Midterm Exam

Unit: Rational/Radical Functions

Essential Questions: When you square each side of an equation is the resulting equation equivalent?
How is a function and its inverse related?
How do you convert radical expressions to expressions with exponents?
How do you determine the domain of a radical or rational function?
What is an extraneous solution?

Total Days: 16

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Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
2	A-APR 6: Rewrite simple rational expressions in different forms. -write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x) and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for more complicated examples, a computer algebra system.	-properties of rational exponents	McDougal-Littell 2007 6.1, 6.2 McDougal-Littell 2001 7.1, 7.2 Prentice Hall 7.1	-lecture -drill and practice -Problem solving -simplify the problem -guess and check -make a table -eliminating possibilities -use a formula -find a pattern -draw a picture -choose the operation	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
5	A-APR 7: Understand that rational expressions form a system analogous to the rational numbers, closed under addition,	-add, subtract, multiply and divide rational expressions.	McDougal-Littell 2007 Chapter 8	-Computer based learning i.e. Plato, Geometer's Sketchpad, Jeopardy, graphing calculator applications,	Worksheets Quizzes Test Whiteboards

	subtraction, multiplication, and division by a nonzero rational expression.	-direct & inverse variation.	McDougal-Littell 2001 Chapter 9 Prentice Hall Chapter 9	Kahn Academy, or You Tube Tutorials -lecture -drill and practice -cooperative learning groups	Type 2 & 3 WACs
3	A-REI 2: Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. A-REI 11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately.	-identifying zeroes and finding intersection points.	McDougal-Littell 2007 6.6, 8,6 McDougal-Littell 2001 7.6, 9.6 Prentice Hall 7.5, 9.6	-Game -Learning stations -Around the room -lecture -drill and practice	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs CFA solving rational equations
3	F-IF 4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. F-IF 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. F-IF 7b: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. F-IF 8: Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. F-IF 9: Compare properties of two functions each represented in a different way	-Determine the domain of rational and radical functions based on its graph. -Graph square root, cube root functions as well as simple rational functions. -translate among different representations of functions and relations: graphs, equations, point sets, and tables. -explain relationships	McDougal-Littell 2007 6.5, 8.2, 8.3 McDougal-Littell 2001 7.5, 9.2, 9.3 Prentice Hall 7.8, 9.2, 9.3	-lecture -drill and practice -cooperative learning groups -draw a picture -K-W activator (what I know/what I want to know)	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

	(algebraically, graphically, numerically in tables, or by verbal descriptions). F-IF MA 10: Given algebraic, numeric, and/or graphical representations of functions, being able to recognize the function as rational. F-BF 3: Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	verbally and in writing. -understanding the shifting of the parent function. -compare properties. -Knowing that a function is rational. -applications involved with rational functions.			
1	F-BF 4a: Find inverse functions. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse.	-Identify inverses and show how equations may have an inverse as long as restrictions are applied.	McDougal-Littell 2007 6.4 McDougal-Littell 2001 7.4 Prentice Hall 7.7	-lecture -drill and practice -cooperative learning groups -K-W-L (what I know/what I want to know/what I learned) -graphing calculator applications	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
2	F-BF 1b: Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic operations.	-composition of functions.	McDougal-Littell 2007 6.3 McDougal-Littell 2001 7.3 Prentice Hall 7.6	-K-W activator (what I know/what I want to know) -Think pair share -dip sticking -graphic organizers	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Probability and Statistics…Note: This can be done at any time. Needs to be done before May MCAS for Sophomores!

Essential Questions: What's the probability of scoring in soccer on a penalty kick, and do statistics from past games help you decide what to do?
How do you compare data sets?
How do you apply theoretical and experimental probabilities?
How are measures of central tendency different from standard deviation?

Total Days: 6

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Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
2	S-ID 4: Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	-Summarize, represent and interpret data on a single variable -Find measures of central tendency algebraically. -When appropriate, fit to a normal distribution. -Use graphing calculator to find measures of central tendency.	McDougal-Littell 2007 11.1, 11.3 McDougal-Littell 2001 7.7, 12.7 Prentice Hall 12.3, 12.4	Classification -Comparison -Problem solving -guess and check -eliminating possibilities -use a formula -find a pattern	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs CFA Normal Curve
1	S-IC 1: Understand statistics as a process for making inferences to be made about population parameters based on a random sample from that population. S-IC 2: Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.	-sampling techniques -what does the statistics tell us about a population	McDougal-Littell 2007 11.4 McDougal-Littell 2001 12.1-12.5 Prentice Hall 12.5	-Using manipulatives -lecture -drill and practice -cooperative learning groups -jigsaw	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

1	S-IC 3: Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. S-IC 4: Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. S-IC 5: Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. S-IC 6: Evaluate reports based on data.	-Use data to make estimations and determine margin of error. -identify different ways to gather data. -biased or unbiased populations. -Use the random integer function on your calculator to generate a sample. - focus on statistics in a way of dealing with, not eliminating, inherent randomness.	McDougal-Littell 2007 11.4 McDougal-Littell 2001 Chapter 12 Prentice Hall 8.2-8.6	-Game -Learning stations -Around the room -poems, songs, raps -dip sticking	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
2	S-MD 6: Use probabilities to make fair decisions S-MD 7: Analyze decisions and strategies using probability concepts (i.e. pulling a hockey goalie at the end of the game and replacing with an extra skater).	-Understand the difference between experimental and theoretical probability -Understand probability concepts such as permutations and combinations. -Use probabilities to make predictions and decisions.	McDougal-Littell 2007 Chapter 10 McDougal-Littell 2001 Chapter 12 Prentice Hall 12.1, 12.2	-cooperative learning groups -jigsaw -internet based activities -Learning stations -Around the room	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Exponential/Logarithmic Functions

Essential Questions: How do you model a quantity that changes regularly over time by the same percentage?
How are exponents and logarithms related?
How are logarithmic and exponential functions related?
How can you use exponential and logarithmic functions to model scientific relationships?
How is compound interest calculated?

Total Days: 8

Algebra 2 Unit Guide 2017– 2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
2	F-IF 4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. F-IF 5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. F-IF 7e: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases such as graph exponential and logarithmic functions, showing intercepts and end behavior. F-IF 8: Write a function defined by an expression in different but equivalent	-Graph exponential and logarithmic functions. -Understand domain, end behavior and intercepts. -translate among different representations of functions and relations: graphs, equations, point sets, and tables. -explain relationships verbally and in writing. -compare properties. -Knowing that a function is logarithmic or exponential.	McDougal-Littell 2007 7.1, 7.2, 7.7 McDougal-Littell 2001 8.1, 8.2, 8.4, 8.7 Prentice Hall 8.1, extension 8.5	-graphing calculator applications -use a formula -find a pattern -draw a picture -K-W-L (what I know/what I want to know/what I learned) -Learning stations -individual whiteboards	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

	forms to reveal and explain different properties of the function. F-IF 9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). F-IF MA 10: Given algebraic, numeric, and/or graphical representations of functions, being able to recognize that a functions is logarithmic or exponential.	-applications involved with logarithmic and exponential functions.			
4	F-LE 4: For exponential models, Express exponential models as a logarithm the solution to $ab^{ct}=d$ where a, c, and d are numbers and the base b is 2, 10 or e; evaluate the logarithm using technology. F-BF 4a: Find inverse functions. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse.	-Apply properties of logarithms. -Evaluate the logarithm using technology. -Solve exponential and logarithmic equations. -Recognize that exponential and logarithmic functions are inverses of each other.	McDougal-Littell 2007 7.4, 7.5, 7.6 McDougal-Littell 2001 8.3, 8.5, 8.6 Prentice Hall 8.2-8.6	-Game -Learning stations -Around the room -lecture -drill and practice	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs
2	F-BF 1: Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic operations. A-REI 11: Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately.	-Write a function that models an exponential or logarithmic relationship. - identifying zeroes and finding intersection points.	McDougal-Littell 2007 7.7 McDougal-Littell 2001 8.7Prentice Hall 8.3	-K-W activator (what I know/what I want to know) -Think pair share -dip sticking -graphic organizers	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Unit: Trigonometric Functions

Essential Questions: What is radian measure?
How does the unit circle relate to trigonometric functions?
Based on a graph, can you determine the trigonometric function as well as its characteristics?
Using the Pythagorean Identity, can you find specific values for the sine, cosine, and tangent function?

Total Days: 7

Algebra 2 Unit Guide 2017 – 2018

Days	Standards (blue book)	Skills	Sections (text book)	Instructional Strategies	Assessments
3	F-TF 1: Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. F-TF 2: 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.	-Define the initial side, terminal side, standard position, & coterminal angles. -Relationship between radians and degrees. - Arc length: $s = r\theta$ - Apply the formulas to evaluate the following trigonometric functions. $\sin \theta = y/r$ $\cos \theta = x/r$ $\tan \theta = y/x$	Prentice Hall Algebra 2: Chapter 13.2, 13.3 McDougal-Littell 2007: Chapter 13.2, 13.3 McDougal-Littell 2001: Chapter 13.2	-dip sticking -Discovery learning -individual whiteboards -3/2/1 -Think pair share	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

2	F-TF 5: Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. F-IF 7e: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases such as trigonometric functions, showing period, midline, and amplitude. F-IF MA 10: Given algebraic, numeric, and/or graphical representations of functions, being able to recognize a function as trigonometric.	-Graph sine, cosine, and tangent functions identifying key parts of the graph -Knowing that a function is trigonometric. -applications involved with trigonometric functions.	Prentice Hall Algebra 2: Chapter 13.4, 13.5, 13.6 McDougal-Littell 2007: Chapter 14.1 McDougal-Littell 2001: Chapter 14.1	-use a formula -find a patern -draw a picture -cooperative learning groups -K-W activator (what I know/what I want to know)	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs "Ferris Wheel Project
2	F-TF 8: 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.	-Verify trigonometric identities that only involve basic sine, cosine, and tangent functions.	Prentice Hall Algebra 2: Chapter 14.1 McDougal-Littell 2007: Chapter 14.3 McDougal-Littell 2001: Chapter 14.3	-K-W-L (what I know/what I want to know/what I learned) -graphing calculator applications -Kahn Academy -lecture -drill and practice	Worksheets Quizzes Test Whiteboards Type 2 & 3 WACs

Note: There are 6 days/blocks not accounted for to give flexibility due to testing, MCAS, field trips, holidays and early release days.