Wayland-Cohocton Central School

Algebra 1 and Math1-2

Mathematic Curriculum Map Overview

Topic	Skills	Approximate Days of Study
Module 1	• Solve multi-step equations and Inequalities(including decimals & fractions) • Explain the steps in solving an equation • Verify solutions to equations and inequalities using the properties of operations with proper mathematical vocabulary • Solve literal equations • Write and solve linear equations and inequalities from a word problem • Interpret solutions within the context of word problems • Explain whether solutions to a linear equation or inequality are valid or not • Write and graph linear equations using two or more variables • Interpret solutions within the context of word problems • Solve systems of linear equations using graphs • Use technology to graph the equations and determine their point of intersection • Solve a system of equations by substitution and elimination. • Determine best method for solving a system of linear equations • Graph the solution set to a system of linear inequalities in two variables as the intersection of their corresponding half-planes • Interpret solutions within the context of word problems. • Solve systems of equations and inequalities in the context of word problems	30 days - Algebra 1 55 days - Math 1

Module 2	•Substitute the x and y values into y=f(x) to verify the point is a solution to the system (check) • Explain why the intersection of y = f(x) and y = g(x) is the solution of f(x) = g(x) for any combination of linear, polynomial, rational, and absolute value. • Use successive approximations that become closer and closer to the actual value to determine points of intersection • Use the definition of a function to determine whether a relationship is a function given a table, graph or words • Given the function f(x), identify x as an element of the domain, the input, and f(x) is an element in the range, the output • Know that the graph of the function, f, is the graph of the equation y=f(x) • When a relation is determined to be a function, use f(x) notation • Evaluate functions for inputs in their domain • Interpret statements that use function notation in terms of the context in which they are used • Write the correct domain for a function (linear, exponential, and quadratic). • Identify the appropriate domain for a function within the context of a word problem (e.g. when to accept/reject negative solutions, when fractional solutions are not appropriate). • Calculate the rate of change from an equation, graphs,table of values,or a given interval	47 days - Algebra 1 90 days - Math 1

Module 2	• Estimate the rate of change from a graph. • Describe the rate of change in terms of the context of the situation. • Graph a linear function and identify the intercepts, domain, range, and rate of change • Compare the rate of change of two linear functions • Graph an exponential function and identify the intercepts, domain and range • Identify the parent function and the shift of a linear or exponential function. • Graph the shift of a function as a translation of the parent function. • Create the equation for the graph after its translation. • Explain the effects of the shifts of graphs using my calculator. • Compare the parent function to the function that has been shifted. • Identify the translation of a function from the graph and write the function algebraically. • Identify the slope and y-intercept of a linear function. • Identify intervals where a function is increasing or decreasing, the roots, the x and y intercepts, the symmetries and end behavior for graphs (linear, exponential). • Sketch and describe the key features of a function (linear, exponential). • Compare characteristics of two different functions (linear, exponential) represented in two different forms (e.g. table of values vs. algebraic representation) • Identify parts of a function (linear, exponential) algebraically, graphically, and verbally • Describe the difference between linear and exponential functions • Explain the slope of a linear function as compared to the growth of equal diff over equal intervals	47 days - Algebra 1 90 days - Math 1

Module 2	• Explain the growth/decay of an exponential function as compared to growth by equal factors over equal intervals • Identify when situations can be described by linear functions or by exponential functions • Compare and contrast linear growth to exponential from a graph or table • Explain why exponential models continue to grow/decay more rapidly than linear • Write a linear function, exponential or an arithmetic sequence from a graph, description, or table. • Define an arithmetic and geometric sequence. • Define an arithmetic sequence as a linear function. • Define a geometric sequence as an exponential function. • Define an arithmetic or geometric sequence as a function, sometimes defined recursively. • Explain the steps to set up a linear or exponential function. • Construct an exponential or linear function explicitly from a word problem. • Construct a linear function recursively from a word problem. • Compare and contrast linear growth to exponential growth to quadratic growth from a graph or a table. • Explain why exponential models continue to grow/decay more rapidly than linear or quadratic models.	47 days - Algebra 1 90 days - Math 1

Module 3	· Identify the parts of an expression by defining appropriate vocabulary such as: terms, factors, coefficients, constant, monomial, binomial, trinomial, polynomial, exponent, degree, variables, standard form, index, etc. • Identify the parts of an expression by defining appropriate vocabulary such as: terms, factors, coefficients, constant, monomial, binomial, trinomial, polynomial, exponent, degree, variables, standard form, index, etc • Explain how different parts of an expression effect the expression. • Define the closure property • Add and Subtract polynomials. • Explain that polynomials can be operated on in the same way as integers. • Multiply a monomial by a monomial • Raise a power to a power • Multiply a monomial by a polynomial • Multiply binomials by binomials • Multiply binomials by polynomials • Define the system of polynomials as closed under addition, subtraction, and multiplication. • Explain why the operation of division is not defined as closed. • Factor quadratic expressions (Greatest Common Factor).	30 days - Algebra 1 52 days - Math 2 +Review of Math 1

Module 3	• Rewrite an expression using laws of exponents. • Factor an expression by grouping (GCF). • Factor quadratic expressions (reverse double distribution a=1 or a≠1, diff of perfect squares). • Factor a polynomial completely • Identify the factors of an expression. • Describe the effects of the parts of an expression (examples: the interest formula where p is a coefficient and when factoring a quadratic equation, the GCF does not affect the roots). • Find the zeros (roots) of a quadratic function by factoring • Determine the end behavior of a polynomial. • Create a rough graph of a polynomial function using the zeros. • Explain why quadratic equations may have up to two solutions. • Rewrite equations with squared variables in terms of a different variable. • Solve quadratic equations by inspection (e.g. square rooting both sides) • Solve quadratic equations by "completing the square" method. • Solve quadratic equations by applying the quadratic formula. • Rewrite a quadratic equation to the form (x - p)^2 = q by using "completing the square" method. • Derive the quadratic formula from "completing the square" method. • Factor quadratic expressions by completing the square. • Explain what different forms of a quadratic expression reveal about the function. • Write a quadratic expression in vertex form to reveal the maximum or minimum value of the function. • Write a quadratic equation from a word problem.	30 days - Algebra 1 52 days - Math 2 +Review of Math 1

Module 3	• Solve a quadratic equation written from a word problem and interpret its solution within the context. • Graph a quadratic equation from a table of values from a word problem. • Find/Identify minimums/maximums,roots, and axis of symmetry of a quadratic function • Identify intervals where a quadratic function is increasing or decreasing • Identify the x and y intercepts of a quadratic function. • Identify symmetries and end behaviors for quadratic functions • Identify the domain and range of a quadratic function • Sketch and Describe the key features of a quadratic function • Compare characteristics of two different quadratic functions represented in two different forms (e.g. table of values vs. algebraic representation). • Identify parts of a quadratic function algebraically, graphically, and verbally (max/min of graphs, roots/solutions). • Understand transformations of quadratic functions. .	30 days - Algebra 1 52 days - Math 2 +Review of Math 1

Module 4	· Calculate standard deviation, mean, median, range, and interquartile range • Compare two different sets of data using mean, median, interquartile range and std dev. • Construct dot plots (line plots), box and whisker plots. • Construct histograms and cumulative frequency histograms • Create a two-way table from two categorical variables and read values from two way table. Interpret joint, marginal, and relative frequencies in context • Recognize associations and trends in data from a two-way table • Construct a line of best fit manually • Define correlation coefficient • Identify positive, negative, zero correlation and the best correlation coefficient • Given verbal scenarios, state which have positive, negative, or no correlations • Explain the difference between correlation and causation • Determine the line of best fit when given a scatter plot using technology • Apply/fit the appropriate function to the data using technology • Describe how variables are related in a scatter plot such as slope and y-intercept and what they represent	18 days - Algebra 1 32 days - Math 2
Module 4	• Analyze the r value given by the graphing calculator • Make predictions within and outside the range of data • Calculate and Interpret the meaning of slope and y-intercept in the context of data • Assess the fit of the function by plotting and analyzing residuals. • Describe if the line of best fit is appropriate for the scatter plot through the residual plot. • Assess the fit of the function by plotting and analyzing residuals. • Explore non-linear models • Interpolate and extrapolate data .	18 days - Algebra 1 32 days - Math 2

Module 5	• Graph square root functions using technology • Graph cube root functions using technology • Graph absolute value functions using technology • Graph step functions • Graph piecewise-defined functions • Identify the domain, range, intercepts, maximums, minimums, end-behavior, intervals in which the function is increasing/decreasing, and symmetries where applicable for each of the functions listed above • Write the correct domain for a function. • Identify the appropriate domain for a function within the context of a word problem (e.g. when to accept/reject negative solutions, when fractional solutions are not appropriate).	Algebra 1 - 14 days ks review Math 2 - 25 days plus 6 weeks review
Regents Review	All of the above. Included in Module 5 pacing.	

Key: Clusters and Standards
Major Content
Supporting Content
Additional Content