

Sheridan County School District #3

Algebra I & II Priority Standards (priority standards are highlighted in yellow and align with WyTopp)

ONLY those standards with a * beside them apply to the Advanced Mathematical Connections course.

Algebra I (16 priority standards)		Algebra II (11 priority standards)	
The Real Number System (RN)			
ALG.N.RN.A Extend the properties of exponents to rational exponents.(N.RN.A.1,2)			
N.RN.A. 1	Explain how the meaning of the definition of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	N.RN.A. 1	Explain how the meaning of the definition of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
N.RN.A. 2	-Rewrite expressions involving radicals and rational exponents using the properties of exponents.	N.RN.A. 2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
ALG.N.RN.B Use properties of rational and irrational numbers.(N.RN.B.3)			
N.RN.B. 3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.		
Seeing Structure and Expressions (SSE)			
ALG.SSE.A Interpret the structure of expressions.(A.SSE.A.1)			
A.SSE.A. 1	Interpret expressions that represent a quantity in terms of its context. A. Interpret parts of an expression, such as terms, factors, and coefficients. B. Interpret complicated expressions by viewing one or more of their parts as a single entity.		
***ALG.SSE.B Write expressions in equivalent forms to solve problems. (A.SSE.B.3)			
*A.SSE.B. 3(a-c)	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by expression. A. Factor a quadratic expression to reveal the zeros of the function it defines. B. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. C. Use the properties of exponents to transform expressions for exponential functions. Apply the concepts of decimal and	*A.SSE.B. 3(a-c)	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by expression. A. Factor a quadratic expression to reveal the zeros of the function it defines. B. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

	<p>scientific notation to solve real-world and mathematical problems.</p> <p>i. Multiply and divide numbers expressed in both decimal and scientific notation.</p> <p>ii. Add and subtract numbers in scientific notation with the same integer exponent.</p>		<p>C. Use the properties of exponents to transform expressions for exponential functions. Apply the concepts of decimal and scientific notation to solve real-world and mathematical problems.</p> <p>i. Multiply and divide numbers expressed in both decimal and scientific notation.</p> <p>ii. Add and subtract numbers in scientific notation with the same integer exponent.</p>
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Arithmetic with Polynomials & Rational Expression (APR) NOT A WYTOPP STANDARD

*****ALG.APR.C & D Performing operations with and analyzing polynomial expressions/functions. (A.APR.C.1 AND A.APR.D.2,3)**

A.APR.C.1	Understanding that polynomials form a system analogous to the integers, namely they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. (Not a WyTopp Standard)		
		*A.APR.D .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.APRD. .3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Creating Equations (CED)

*****ALG.CED.G Create equations that describe numbers or relationships. (A.CED.G.1,2)**

*A.CED.G .1	Create equations and Inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.	*A.CED.G .1	Create equations and Inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.
A.CED.G. 2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. <i>(not a WyTopp standard introduce in Algebra I)</i>	A.CED.G. 2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. <i>(not a WyTopp standard)</i>

Reasoning with Equations and Inequalities (REI)

*****ALG.REI.H Understand solving equations as a process of reasoning and explain the reasoning. (A.REI.H.1)**

*A.REI.H. 1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.		
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*****ALG.REI.I Solve equations and inequalities in one variable. (A.REI.I.2,3,4)**

		A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. (not a WyTopp standard)
*A.REI.I.3	-Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.		
		*A.REI.I.4	Solve quadratic equations in one variable. (not a WyTopp standard) A. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. B. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a + bi$ for real numbers a and b . C. (+)Derive the quadratic formula from the general form of a quadratic equation.
***ALG.REI.J Solve systems of equations. (A.REI.J.6)			
A.REI.J.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other, produces a system with the same solution.		
A.REI.J.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. (REI.5 is embedded in REI.6)		
***ALG.REI.K Represent and solve equations and inequalities graphically. (A.REI.K.11,13)			
		A.REI.K.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, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. (not a WyTopp standard)
		A.REI.K.12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solutions set to a system of linear inequalities in two variables as the intersections of the corresponding half-planes. (not a WyTopp standard)

Functions -- Interpreting Functions (F.IF)

F.IF.A Understand the concept of a function and use function notation.(F.IF.1-3)

F.IF.A.1	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 $y=f(x)$.		
F.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.		
F.IF.A.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.		

*****F.IF.B Interpret functions that arise in applications in terms of the context.(F.IF.B.4-6)**

F.IF.B.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 verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.	*F.IF.B.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 verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.
F.IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.		
F.IF.B.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	F.IF.B.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

*****F.IF.C Analyze functions using different representations.(F.IF.7a-e)**

F.IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima. NOT a WyTopp Standard, introduce in Algebra I	F.IF.C.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.
		*F.IF.C.7 b-e	b-Graph square root, cube root, and piecewise defined functions including step functions and absolute value functions. c-Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d-(+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e-Graph exponential and logarithmic functions, showing intercepts and end behavior. (Not a WyTopp Standard)

Functions -- Building Functions (FBF)

*****F.BF.D Build a function that models a relationship between two quantities. (F.BF.D.1)**

F.BF.D.1 and 1a	Write a function that describes a relationship between two quantities. A. Determine an explicit expression, a recursive process, or steps for calculation from a context.	*F.BF.D.1	Write a function that describes a relationship between two quantities.
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*****F.BF.E Build a function that models a relationship between two quantities. (F.BF.E.3)**

		*F.BF.E.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. Include recognizing even and odd functions from their graphs and algebraic expressions for them. (NOT a WyTopp standard)
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Functions -- Linear, Quadratic, and Exponential (F.LE)

*****F.LE.F Construct and compare linear, quadratic, and exponential models and solve problems.(F.LE.F.1c)**

F.LE.F.1c	Distinguish between situations that can be modeled with linear functions and with exponential functions. C. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	*F.LE.F.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. A. Verify that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals. B. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. C. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
		*F.LE.F.4	For exponential models, express 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. (NOT a WyTopp standard)

Statistics -- Interpreting Categorical and Quantitative Data

S.ID.A Summarize, represent, and interpret data on a single count or measurement variable.(S.ID.A.1,2)

S.ID.A.1	Represent data with plots on the real number line (dot plots, histograms, and box plots) by hand or using technology.		
S.ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.		

S.ID.C Interpret linear models (S.ID.C.7)

S.ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. Not a WyTopp standard		
S.ID.C.9	Distinguish between correlation and causation.		
Statistics & Probability -- Conditional Probability and Rules of Probability			
***S.CP.F. Understand independence and conditional probability and use them to interpret data.(S.CP.F.2,3,4,) NOT WyTopp Standards			
		*S.CP.F. 2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this to determine if they are independent.
		*S.CP.F. 3	Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, interpret independence of A and B as saying that the conditional probability of A given B is the same as probability of A, and vice-versa)
		S.CP.F.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
***S.CP.G. Understand independence and conditional probability and use them to interpret data.(S.CP.G.7) NOT WyTopp Standard			
		*S.CPG.. 7	Apply the Addition Rule, $P(A \text{ or } B)=P(A) +P(B)-P(A \text{ and } B)$, and interpret the answer in terms of the model.