

Naches Valley School District - **Power Standards – Math** - February 25, 2010

Grade	Power Standards	Vocabulary Words	Outcomes/Assessment
Kindergarten	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will develop basic understanding of numbers by rote count to 100, reading aloud numbers 0-31, build and breakdown numbers fluently 1-5, compare numbers to 10, count and compare sets of up to 10 objects. ❖ Algebra <ul style="list-style-type: none"> • Students will sort and pattern (more complex than just AB) • Students will Identify, copy, and extend patterns using sounds, symbols, movement and objects ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will develop basic ideas related to geometry by identifying, naming, and describing such as the circle, triangle, rectangle, squares, cubes, and spheres. • Students will use and explain sorting rules • Students will be able to describe location of objects such as in, out, over, under..... • Students will informally develop early measurement concepts such as length, weight, capacity 		
First Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will read, write, compare and order numbers 0-120 • Students will quickly recall addition facts and related subtraction facts for sums equal to 10 • Students will group numbers into tens and ones in more than one way. Grouping numbers in place value lays the foundation for future addition and subtraction work. • Students will Group and count objects by tens, fives, and twos ❖ Algebra <ul style="list-style-type: none"> • Students will show equal quantities on either side of the equal sign • Students will demonstrate the inverse relationship between addition and subtraction. One will undo the other ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will learn length, weight, capacity, time and coin value as it relates to measurement with an appropriate tool • Students will compare and sort a variety of two and three dimensional figures. • Students will name the days of the week and month of the year to determine day and month ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will represent and compare data using tallies, tables, pictures, and bar graphs 		
Second Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will do a quick recall of addition/subtraction facts to 20 • Students will learn to understand place value to the hundreds • Students will add and subtract 2 digit numbers using standard algorithms • Students will Identify coins and their values and write in dollar and cents notation • Students will be introduced to the conceptual ideas of basic multiplication, division, and fraction as a number. ❖ Algebra <ul style="list-style-type: none"> • Students will state and extend a rule for a pattern that can be generated by addition ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will tell time to the minute • Students will measure length in metric and customary English units ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will collect , represent, and interpret data in bar graphs and picture graphs 		

Third Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will continue to work towards mastery of addition, subtraction and place value skills to the 10,000 place • Students will learn the meaning of multiplication and division, and how they relate to each other. • Students will master working with multiplication facts 1,2,5 and 10 • Students will learn about fractions and how they are used by representing fractions with denominators of 2,3,4,5,6,8,9,10,12, compare fraction with these denominators and represent and identify equivalent fraction with these denominators ❖ Algebra <ul style="list-style-type: none"> • Students will determine whether two expressions are equal such as $24 \div 3 = 2 \times 4$. since the idea of equivalence is an important foundation to later work in algebra ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will learn geometric concepts of lines, angles, and quadrilaterals. • Students will measure to find perimeter of rectangles, temperature, weight and capacity ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will construct and analyze pictographs, frequency tables, line plots and bar graphs 		
Fourth Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will master basic multiplication facts and the standard algorithm for multiplication of 2 and 3 digit numbers • Students will understand the relationship between multiplication and division as inverse operations, and solve and verify multi-step word problems • Students will represent, read, write, compare and order decimals through hundredths • Students will compare fractions with denominators of 1-10 and write equivalent fractions with the same denominators ❖ Algebra <ul style="list-style-type: none"> • Students will graph and identify points in the first quadrant of the coordinate plane using ordered pairs • Students will represent an unknown quantity in simple expressions, equations, and inequalities using letters, boxes, and other symbols ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will determine the area and perimeter of a rectangle using a formula. • Students will demonstrate that rectangles with the same area can have different perimeters and rectangles with the same perimeter can have different areas • Students will solve problems involving familiar unit conversion, including time, within either US customary or metric system ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will determine median, mode, and range of a set of data • Students will describe the likelihood of events and determine a simple probability from a context that includes a picture • Students will display the results of a probability experiment and interpret results 		
Fifth Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will divide whole numbers up to four digit numbers by one and two digit divisors • Students will add and subtract fractions including mixed numbers with denominators of 1-10 & 12 • Students will find a common denominator when given two fraction with unlike denominators • Students will add and subtract decimals to the hundredths place • Students will classify numbers as prime or composite ❖ Algebra <ul style="list-style-type: none"> • Students will create a rule for numerical and geometric patterns and extend the pattern including relationships between two sets of data that are linearly related • Students will write and evaluate algebraic expression using substitution when variable are involved 		

	<ul style="list-style-type: none"> • Students will graph ordered pairs in the coordinate plane for to sets of data related to a linear rule and draw the line the determine ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will classify quadrilaterals and triangles by angle measure and congruent sides • Students will identify, sketch, and measure acute, right, and obtuse angles • Students will find the perimeter and area of triangles and parallelograms • Students will determine the number and location of lines of symmetry in triangles and quadrilaterals ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will determine and interpret the mean of a small data set (no more than 7 data points of whole numbers) • Students will construct and interpret line graphs 		
Sixth Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Student will solve multiplication and division with fractions(denominator 1-10 or multiples of 1-10 less than or equal to 100) and decimals (product to thousandths, divisor to the tenths place and dividend to hundredths place) • Students will locate positive and negative integers on a number line and use integers to represent quantities in various situations • Students will identify and write ratios as comparisons of part to part and part of whole relationships • Students will convert between the fractional, decimal, and percent representations of a number ❖ Algebra <ul style="list-style-type: none"> • Students will write expressions or equations with variables to represent information from a table or situation • Students will draw a first quadrant graph to represent data in a table of given situation • Students will evaluate expressions and one step equations • Students will use the order of operations to evaluate mathematical expressions ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will determine the circumference and area of a circle • Students will determine the perimeter and area of a composite figure that can divided into different shapes (triangles, rectangles, and parts of a circle • Students will determine the volume and surface area of rectangular prisms. ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will determine experimental probability of a simple event using data collected in an experiment • Students will determine theoretical probability of and event and represent that probability as a fraction, decimal, or percent 		
Seventh Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will add, subtract , multiply and divide rational numbers, fractions, decimals and integers (positive and negative numbers) • Students will write a prime factorization of whole numbers using exponents when appropriate ❖ Algebra <ul style="list-style-type: none"> • Students will extend their work with ratios to solve problems involving a variety of proportional relationships such as similar figures and scale drawings • Students will represent proportional relationships using graphs, tables, and equations. • Students will determine the unit rate in a proportional relationship and relate it to the slope of a line • Students will extend their coordinate graphing skills to plotting points with both positive and negative coordinates on the coordinate plane • Students will solve two step linear equations 		

	<ul style="list-style-type: none"> ❖ Geometry and Measurement <ul style="list-style-type: none"> • Student will determine the surface area and volume of cylinders, cones, pyramids • Students will describe the effect that a change in scale factor on one attribute of a two or three dimensional figure has on other attributes of the same figure. ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will represent the sample space of probability experiments in multiple ways, including tree diagrams and organized lists • Students will determine theoretical probability and use it to predict experiment outcomes • Students will describe a data set using measures of center (mean, median, mode, and range) 		
❖ Eighth Grade	<ul style="list-style-type: none"> ❖ Numbers and Operations <ul style="list-style-type: none"> • Students will fluently solve operations with all real numbers. • Students will represent and solve problems using scientific notation. • Students will evaluate numerical expressions involving positive exponents using the laws of exponents and order of operations. ❖ Algebra <ul style="list-style-type: none"> • Students will solve a variety of one variable equations. • Students will represent and/or identify linear functions in the form of a table, graph, symbolic and verbal expression. Students will also make connections between each of these representations. • Students will solve one and two step inequalities with positive coefficients and graph the solution on a number line. ❖ Geometry and Measurement <ul style="list-style-type: none"> • Students will identify pairs of angles as complementary, supplementary, adjacent, or vertical. • Students will use these angle relationships to find the measure of a missing angle and determine missing angle measures among parallel lines, transversals and polygons. • Students will represent and explain the effect of one or more translations such as rotation, reflection, or dilation centered on the origin of a coordinate plane • Students will use and understand the Pythagorean Theorem to find the missing measure of a side length of a right triangle. Students will also use the theorem to find the distance between two points on a coordinate plane. ❖ Data Analysis, Statistics and Probability <ul style="list-style-type: none"> • Students will summarize and compare data sets in terms of variability and measures of center (mean, median, mode, and range) • Students will describe different methods of selecting statistical samples and analyze strengths and weaknesses of each method. • Students will compare and construct two sets of data using displays including box & whisker, stem and leaf, histograms, circle graphs, scatter plots, and line plots • Students will use a trend line in a scatter plot to make predictions • Students will determine the probability for mutually exclusive, dependent, and independent events. 		
HS Algebra I	<p>Curriculum Standards</p> <ul style="list-style-type: none"> • A.1.1 <u>Solve Problems</u>: Students solve problems based on linear, quadratic, and exponential models, choose appropriate models, and solve systems of linear equations. • A.1.2 <u>Numbers, expressions, operations</u>: Students compare and order numbers, use a number line, understand variables, integer exponents and roots. They determine approximate versus exact answers, and factor and combine like terms, and add, subtract, multiply, and divide polynomials. • A.1.3 <u>Functions</u>: Students determine domain and range of a function, independent versus dependent variables, determine if a pattern is a function or not, and represent functions with tables, graphs, words, and symbolic notation, including $f(x)$. • A.1.4 <u>Linear functions</u>: Students will write and solve equations and inequalities with 1 variable; write and graph given two pts, or a point and a slope,; Students will identify slope and intercepts, and write and solve systems of equations and inequalities, and absolute value. • A.1.5 <u>Quadratic functions</u>: Students will represent quadratic functions using symbols, graphs, tables, and verbal descriptions; understand effects of changing parameters, and find and interpret zeros. Students will factor; complete the square, and use the quadratic formula. 		

	<ul style="list-style-type: none"> • A.1.6 Data: Students will use, evaluate, and compare summary statistics, and make inferences & conclusions. Students will determine the effect of linear transformations, find understand line of best fit, and correlations. • A.1.7 Misc.: Students will sketch exponential functions, find and approximate solutions, write and use explicit and recursive sequences, and solve an equation for a variable. • A.1.8 Processes: Students will analyze a problem, select strategies, evaluate solutions, generalize solutions strategies, interpret diagrams & graphs, summarize ideas, synthesize information, and use inductive reasoning. <p>Highest Priority Standards for Algebra 1</p> <ul style="list-style-type: none"> • Students will use properties of equality to solve linear equations with one variable on both sides, and check. • Students will find and interpret slope in context and in the abstract. • Students will add, subtract, multiply, and divide integers without calculators. • Students will substitute values into variable expressions and use order of operations to evaluate. • Students will translate between graphical, symbolic, verbal, and numerical representations of functions. • Students will write and graph exponential equations. 		
HS Geometry	<p>Curriculum Standards for Geometry:</p> <ul style="list-style-type: none"> • G.1. Students use inductive reasoning to make and test conjectures, then use deductive reasoning to write proofs, refute statements, analyze arguments, and identify assumptions and invalid reasoning. • G.2 Students will know, prove, and apply theorems about parallel lines, perpendicular lines, and angles, and also describe intersections. • G.3 Students will know and apply theorems of triangles, properties of special right triangles, the Pythagorean theorem, trigonometric ratios, and properties of parallelograms. Students will know and apply theorems about quadrilaterals and other polygons, and circles; explain and perform constructions related to the circle; and describe and analyze 3-D shapes. • G.4 Students will determine equations and coordinates of lines, points, an circles described geometrically, and verify properties of quadrilaterals in the coordinate plane. • G.5 Students will perform and describe composite transformations and their properties in the coordinate plane as well as describe symmetries. • G.6 Students will determine arc lengths and sector areas of a circle; distance and angle measures on a sphere, and measurements of 3-D objects. Students will also determine the effect of changes in one, two, or three linear dimensions on other measurements, determine degree of precision necessary for measurements, and convert between systems of measurement. • G.7 Students will use problem solving techniques to analyze a situation, make a plan, apply appropriate strategies, and analyze results. Students will interpret diagrams and graphs, communicate mathematically, synthesize information, and use inductive and deductive reasoning. <p>Highest Priority Standards for Geometry</p> <ul style="list-style-type: none"> • Students will understand triangle congruence and similarity theorems, recognize congruent triangles and implications, and justify triangle relationships. • Students will know the angle relationships when parallel lines are cut by a transversal. • Students will know high school level geometric vocabulary. • Given 3 side measurements of a potential triangle, students will classify as nonexistent, acute, obtuse or right. • Students will memorize special triangle ratios (45-45-90, 30-60-90). • Students will perform and identify multiple transformations on coordinate grid. • Students will solve right triangle problems with trigonometry ratios and inverse trigonometry functions. 		