PERFORMANCE STANDARDS FOR MATH: GRADE 8

A. Mathematical Processes

Content Standard: Students in Wisconsin will draw on a broad body of mathematical knowledge and apply a variety of mathematical skills and strategies, including reasoning, oral and written communication and the use of appropriate technology, when solving mathematical, real-world* and non-routine* problems.

Rationale: In order to participate fully as a citizen and a worker in our contemporary world, a person should be mathematically powerful. Mathematical power is the ability to explore, to conjecture, to reason logically and to apply a wide repertoire of methods to solve problems. Because no one lives and works in isolation, it is also important to have the ability to communicate mathematical ideas clearly and effectively.

Performance Standard

A.8.1 Use reasoning abilities to:
- evaluate information
- perceive patterns
- identify relationships
- formulate questions for further exploration
- evaluate strategies
- justify statements
- test reasonableness of results
- defend work

8th Grade

1. Use reasoning abilities to:
   - perceive patterns (congruent, similar, divisibility, L.C.M., G.C.F., prime factorization, comparing and ordering, sequence, Pascal's Triangle, Fibonacci Sequence, probability) _____
   - identify relationships (congruent, arithmetic, geometric, ratio, proportion) _____
   - evaluate information (too much, not enough, what do you need to use) _____
2. Use reasoning abilities to:
   - design questions that will help with further research _____
   - justify a statement using logical reasoning by explaining processes used to arrive at the answer _____
   - test reasonableness of results through estimation, sampling and substitution _____
   - to defend work by using the four-step process (explore, plan, solve, examine)_____
3. Apply the following problem-solving strategies:

_____ choose an operation	_____ draw a diagram
_____ use manipulatives	_____ guess and check
_____ make a chart/table/list	_____ use estimation
_____ work backwards	_____ note important information
_____ use a calculator	_____ identify needed/extra information
_____ find a pattern	_____ use a graph

_____ use an equation	_____ use a formula
_____ solve a simpler problem	_____ make a model
_____ classify	_____ eliminate possibilities
_____ Venn diagrams	

4. Justify strategies and solutions through oral and written explanations. _____

Performance Standard

A.8.2   Communicate logical arguments clearly to show why a result makes sense.

8th Grade

1. Communicate logical arguments clearly to show why a result makes sense using words, numbers, pictures, symbols, charts, graphs, tables, diagrams, models. _____
2. Know when to use the appropriate resource/strategy. _____
3. Justify logical arguments through oral and written explanation. _____

Performance Standard

A.8.3   Analyze non-routine* problems by modeling*, illustrating, guessing, simplifying, generalizing, shifting to another point of view, etc.

8th Grade

1. Analyze non-routine problems by illustrating, guessing, simplifying, relating to everyday life, modeling, acting it out, generalizing, shifting to another point of view, process of elimination. _____
2. Use mathematics as a way to understand other areas of the curriculum (e.g. measurement in science, geography skills in social studies, and Venn diagrams in language arts). _____
3. See relationships between various kinds of problems and actual events. _____

Performance Standard

A.8.4   Develop effective oral and written presentations that include:

- appropriate use of technology
- the conventions of mathematical discourse (e.g., symbols, definitions, labeled drawings)
- mathematical language
- clear organization of ideas and procedures
- understanding of purpose and audience

8th Grade

1. Exercise and apply what they know in written form by using a journal. _____
2. Calculators – a learner will utilize.

3. A learner will apply the following: spreadsheet tool; graphing tool; geometry tool; internet access. _____
4. The learner will determine when technology is appropriate and when other approaches are more appropriate or efficient. _____
5. Present results of a project, written and oral, to an audience. _____

Performance Standard

A.8.5   Explain mathematical concepts, procedures, and ideas to others who may not be familiar with them.

8th Grade

1. Communications – The learner will explain and demonstrate mathematical concepts, procedures and ideas to others by reading, talking about it, sharing and assisting others.

   * think/pair/share _____   * peer tutoring _____
   * study buddies _____   * cooperative groups _____

Performance Standard

A.8.6   Read and understand mathematical texts and other instructional materials and recognize mathematical ideas as they appear in other contexts.

8th Grade

1. Curriculum connections: social studies/history/geography; health/physical education; science; music; language arts; art; and electives. _____
2. Real-world connections: the learner will use real-world connections as they apply in daily life, careers, as consumers and in multicultural situations. _____

Vocabulary

8th Grade

_____ elimination   _____ Pascal
_____ Fibonacci   _____ probability

Content Standard: Students in Wisconsin will use numbers effectively for various purposes, such as counting, measuring, estimating and problem solving.

Rationale: People use numbers to quantify, describe and label things in the world around them. It is important to know the many uses of numbers and various ways of representing them. Number sense is a matter of necessity, not only in one's occupation but also in the conduct of daily life, such as shopping, cooking, planning a budget or analyzing information reported in the media. When computing, an educated person needs to know which operations (e.g., addition, multiplication), which procedures (e.g., mental techniques, algorithms*), or which technological aids (e.g., calculator, spreadsheet) are appropriate.

Performance Standard:

B.8.1   Read, represent and interpret various rational numbers* (whole numbers*, decimals, fractions and percents) with verbal descriptions, geometric models* and mathematical notation (e.g., expanded*, scientific*, exponential*).

8th Grade

1.   Reinforce the use of integers, decimals, fractions, and percents. _____
2.   Express numbers in scientific notation. _____
3.   Use powers and exponents in expressions. _____
4.   Identify and simplify rational expressions. _____

Performance Standard:

B.8.2   Perform and explain operations on rational* numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value).

8th Grade

1.   Evaluate numerical and algebraic expressions using order of operations. _____
2.   Solve equations using the subtraction, addition, multiplication and division properties of equality. _____
3.   Solve two-step equations. _____
4.   Graph integers on a number line and use absolute value. _____
5.   Add, subtract, multiply and divide one or more integers. _____
6.   Add, subtract, multiply and divide fractions. _____
7.   Add, subtract, multiply and divide repeating and/or terminating decimals. _____
8.   Find square roots. _____
9.   Recall of multiplication and division facts 0-12. _____

Performance Standard

B.8.3   Generate and explain equivalences among fractions, decimals and percents.

B. **Number Operations and Relationships**

8ᵗʰ Grade

1. Identify and solve equations. _____
2. Formulate algebraic expressions and equations from verbal phrases and sentences. _____
3. Express rational numbers as decimals and terminating decimals as fractions. _____
4. Express repeating decimals as fractions. _____

Performance Standard:

B.8.4   Express order relationships among rational numbers using appropriate symbols (>, <, >, <, =).

8ᵗʰ Grade

1. Compare and order decimals integers using <, >, =. _____
2. Compare and order rational numbers expressed as fractions and/or decimals <, >, =. _____
3. Identify and solve inequalities. <, >, =. _____

Performance Standard:

B.8.5   Apply proportional thinking in a variety of problem situations that include, but are not limited to:
- ratios and proportions (e.g., rates, scale drawings*, similarity*)
- percents including those greater than 100 and less than one (e.g., discounts, rate of increase or decrease, sales tax)

8ᵗʰ Grade

1. Express ratios as fractions in simplest form and determine unit rates. _____
2. Determine if a pair of ratios form a proportion and solve proportions. _____
3. Solve problems involving scale drawings. _____
4. Express fractions as percents. Solve problems using the percent proportion. _____
5. Express decimals and fractions as percents. Express percents as fractions and decimals. _____
6. Express percents greater than 100 or less than 1 as decimals and fractions. _____
7. Estimate by using fractions, decimals and percents interchangeably. _____
8. Find the percent of increase or decrease. _____
9. Solve problems involving discounts and simple interest. _____

Performance Standard:

B.8.6   Model* and solve problems involving number-theory concepts such as:
- prime* and composite numbers
- divisibility and remainders
- greatest common factors
- least common multiples

B. Number Operations and Relationships

8th Grade

1. Find the prime factorization of a composite number. _____
2. Use divisibility rules for 2, 3, 4, 5, 6, 8, 9, and 10. _____
3. Find the greatest common factor of two or more integers. _____
4. Find the least common multiple of two or more integers. _____
5. Reinforce dividing whole numbers and repeating and terminating rational decimals. _____

Performance Standard:

B.8.7 In problem-solving situations, select and use appropriate computational procedures with rational numbers such as:

- calculating mentally
- estimating
- using technology (e.g., scientific calculators, spreadsheets)

8th Grade

1. Solve problems using the four-step plan. _____
2. Compute mentally using compensation and properties of numbers. _____
3. Estimate answers by using different strategies. _____
4. Determine whether answers to problems are reasonable. _____
5. Problem solving strategies:
   Classify information, guess and check, use a graph, make a table, determine reasonable answers, use a formula, solve a simpler problem, choose the method of computation, make a list, eliminate possibilities, find a pattern, use logical reasoning, draw a diagram, make a model, work backward, use an equation and not enough information is present. _____
6. Estimate square roots. _____
7. Estimate by using fractions, decimals and percents interchangeably. _____

Vocabulary

8th Grade

_____ Addition Property	_____ algebraic expression	_____ associative
_____ bar notation	_____ commutative	_____ coordinate
_____ distributive	_____ Division Property	_____ equation
_____ evaluate	_____ graph	_____ integer
_____ interest	_____ inverse operation	_____ Multiplication Property
_____ numerical expression	_____ open sentence	_____ principal
_____ principal square root	_____ replacement set	_____ rounding
_____ sale price	_____ solution	_____ substitute
_____ Subtraction Property	_____ time	_____ variable
_____ Fundamental Theorem of Arithmetic		

C. Geometry

Content Standard: Students in Wisconsin will be able to use geometric concepts, relationships and procedures to interpret, represent and solve problems.

Rationale: Geometry and its study of shapes and relationships is an effort to understand the nature and beauty of the world. While the need to understand our environment is still with us, the rapid advance of technology has created another need: to understand ideas communicated visually through electronic media. For these reasons, educated people in the 21st century need a well-developed sense of spatial order to visualize and model real world* problem situations.

Performance Standard

C.8.1   Describe special and complex two- and three-dimensional figures (e.g., rhombus, polyhedron, cylinder) and their component parts (e.g., base, altitude and slant height) by:

- naming, defining and giving examples
- comparing, sorting and classifying them
- identifying and contrasting their properties (e.g., symmetrical, isosceles, regular)
- drawing and constructing physical models to specifications
- explaining how these figures are related to objects in the environment

8th Grade

1. Identify and draw points, line segments, line rays, transversal lines, perpendicular lines, parallel lines, and intersecting lines. _____
2. Draw and construct physical models to specifications by using a compass, protractor, and straight edge. _____
3. Describe and classify angles (alternate interior, alternate exterior, corresponding, vertical, complementary and supplementary, right, obtuse, acute, straight) and triangles (equilateral, isosceles, scalene, acute, obtuse and right). _____
4. Construct angles and triangles (congruent and bisected). _____
5. Calculate the sum of the angles of a polygon. _____
6. Identify, classify, and construct regular and irregular polygons (three-sided through n-sided, convex and concave). _____
7. Identify and construct congruent, similar and symmetrical figures. _____
8. Construct and identify the parts of a circle including diameter and radius. _____

Performance Standard:

C.8.2   Identify and use relationships among the component parts of special and complex 2- and 3-dimensional figures (e.g., parallel sides, congruent* faces).

C. Geometry

8th Grade

1. Predict and construct a pattern for the number of diagonals in a polygon. _____
2. Illustrate perpendicular and parallel lines; congruent and similar figures. _____
3. Construct a triangle congruent to a given triangle, demonstrating Angle/Side/Angle (ASA), Side/Angle/Side (SAS) and Side/Side/Side (SSS) tests for congruency. _____

Performance Standard:

C.8.3 Identify 3-dimensional shapes from 2-dimensional perspectives and draw 2-dimensional sketches of 3-dimensional objects preserving their significant features.

8th Grade

1. Plan and construct physical models to specifications. _____

Performance Standard:

C.8.4 Perform transformations* on 2-dimensional figures and describe and analyze the effects of the transformations on the figures.

8th Grade

1. Draw rotations, reflections, transformations, and translations of figures on a coordinate plane. _____
2. Design tessellations. _____

Performance Standard:

C.8.5 Locate objects using the rectangular coordinate system*.

- Employ technology to demonstrate the rectangular coordinate system when grade appropriate.

8th Grade

1. Identify ordered pairs using the rectangular coordinate system. _____
2. Identify and graph the transformations or movements of geometric figures shown on a coordinate grid. _____
3. Translate, rotate, and reflect figures on the coordinate plane. _____

Vocabulary

8th Grade

_____ alternate exterior angle   _____ geometric construction   _____ angle-side-angle
_____ isosceles trapezoid   _____ arc   _____ midpoint
_____ chord   _____ perimeter   _____ collinear points
_____ semicircle   _____ coplanar   _____ side-angle-side
_____ side-side-side

D. Measurement

Content Standard: Students in Wisconsin will select and use appropriate tools (including technology) and techniques to measure things to a specified degree of accuracy. They will use measurements in problem-solving situations.

Rationale: Measurement is the foundation upon which much technological, scientific, economic and social inquiry rests. Before things can be analyzed and subjected to scientific investigation, or mathematical modeling*, they must first be quantified by appropriate measurement principles. Measurable attributes* include such diverse concepts as voting preferences, consumer price indices, speed and acceleration, length, monetary value, duration of an Olympic race, or probability of contracting a fatal disease.

Performance Standard:

D.8.1   Identify and describe attributes* in situations where they are not directly* or easily measurable (e.g., distance, area of an irregular figure, likelihood of occurrence).

8th Grade

1. Find irregular figures in community and estimate area of each. _____
2. Determine appropriate tools to measure length, mass and volume. _____
3. Use procedures for basic indirect measurement to find area of irregular figures. _____
4. Investigate and summarize who designed the figures and why they were designed. _____
5. Construct a model to scale using technology by incorporating steps 2, 3 and 4 and present it to the class. _____

Performance Standard

D.8.2   Demonstrate understanding of basic measurement facts, principles and techniques including the following:
- approximate comparisons between metric and US customary units (e.g., a liter and a quart are about the same; a kilometer is about six-tenths of a mile.)
- knowledge that direct measurement* produces approximate, not exact, measures.
- the use of smaller units to produce more precise measures.
- employment of appropriate grade level technology.

8th Grade

1. Demonstrate that each unit of measurement is part of another either smaller or larger unit. _____
2. Identify additional precision measurements and the use of significant digits (i.e. tenths, hundredths, thousandths, etc.). _____
3. Research and site clear examples of careers in which precise measurement is utilized. _____

D. Measurement

Performance Standard

D.8.3   Determine measurement directly* using standard units (metric and US customary) with
these suggested degrees of accuracy:
- lengths to the nearest mm or 1/16 of an inch
- weight (mass) to the nearest 0.1 g or 0.5 ounce
- liquid capacity to the nearest ml
- angles to the nearest degree
- temperature to the nearest Centigrade and Fahrenheit degree
- elapsed time to the nearest second

8th Grade

1. Determine measurements to the following degrees of accuracy:
   - length to the nearest sixteenth, eighth, quarter, half-inch, foot, yard, millimeter,
     centimeter, meter _____
   - weight to the nearest ounce, pound, gram, and kilogram _____
   - temperature to the nearest degree in Celsius and Fahrenheit _____
   - time to the nearest second _____
   - liquid capacity to the nearest ounce, cup, pint, quart, half-gallon, gallon, milliliter,
     liter, and fluid ounce _____
   - angles to the nearest degree. _____
2. Determine appropriate units to measure length, mass, temperature, capacity and time. ___
3. Apply measurement skills to real life problems. _____

Performance Standard

D.8.4   Determine measurements indirectly* using:
- estimation
- conversion of units within a system (e.g., quarts to cups, millimeters to centimeters)
- ratio and proportion (e.g., similarity*, scale drawings*)
- geometric formulas to derive lengths, areas, volumes of common figures (e.g.,
  perimeter, circumference, surface area)
- the Pythagorean* relationship
- geometric relationships and properties for angle size (e.g., parallel lines and trans-
  versals; sum of angles of a triangle, vertical angles*)

8th Grade

1. Convert units within metric/customary systems. _____
2. Estimate measurement indirectly by using non-standard units. _____
3. Create ratio and proportion/scale drawings. _____
4. Apply geometric formulas to calculate:
   - perimeter and circumference. _____
   - area of triangles, quadrilaterals, and circles. _____
   - surface area and volume of prisms, cylinders, cones, spheres, and pyramids. _____

D. Measurement

5. Distinguish geometric relationships and properties for angle size (parallel lines and transversal; vertical, supplementary, corresponding, alternate interior and alternate exterior angles; sum of the angles of triangle.) _____
6. Solve basic rate problems (unit price, distance per unit of time). _____
7. Apply the Pythagorean Theorem ($a + b = c$). _____
8. Apply measurement skills to real life problems. _____

Vocabulary

8th Grade

_____ alternate exterior angles	_____ alternate interior angles
_____ altitude (segment of a pyramid)	_____ base (of a prism)
_____ corresponding angles	_____ indirect measurement
_____ precision	_____ scale factor
_____ significant digit	_____ transversal

E. Statistics and Probability

Content Standard: Students in Wisconsin will use data collection and analysis, statistics and probability in problem solving situations, employing technology where appropriate.

Rationale: Dramatic advances in technology have launched the world into the Information Age, when data are used to describe past events or predict future events. Whether in the business place or in the home, as producers or consumers of information, citizens need to be well versed in the concepts and procedures of data analysis in order to make informed decisions.

Performance Standard

E.8.1. Work with data in the context of real-world situations by:
- formulating questions that lead to data collection and analysis
- designing and conducting a statistical investigation
- using technology to generate displays, summary statistics* and presentations

8th Grade

1. Collect, organize and record real-world data. _____
2. Conduct surveys, experiments or simulations and display results. _____
3. Formulate questions and determine the appropriate data to collect and how to collect data. _____
4. Draw reasonable conclusions about real-world data. _____
5. Reinforce the use of technology to produce a simple database and be able to present it. _____
6. Reinforce the use of technology to produce a simple spreadsheet and present it. _____

Performance Standard

E.8.2 Organize and display data from statistical investigations using:
- appropriate tables, graphs and/or charts (e.g., circle, bar, or line, for multiple sets of data)
- appropriate plots (e.g., line*, stem-and-leaf*, box*, scatter*)

8th Grade

1. Gather and organize data into a table. _____
2. Construct circle graphs. _____
3. Construct bar graphs and line graphs with multiple sets of data. _____
4. Construct line plots, back-to-back stem and leaf plots, box and whisker plots and scatter plots. _____
5. Assess the most effective way of displaying data. _____
6. Create story problems based on collected data for classmates to solve. _____

E. Statistics and Probability

Performance Standard

E.8.3   Extract, interpret and analyze information from organized and displayed data by using:
- frequency and distribution, including mode* and range*
- central tendencies* of data (mean* and median*)
- indicators of dispersion (e.g., outliers*)

8th Grade

1. Predict and calculate the mean, median, mode and range from a set of data. _____
2. Analyze information based on frequency and distribution. _____
3. Assess and select the appropriate scale and interval for graphs or frequency tables. _____
4. Examine the effect of extreme values on measures of central tendency. _____
5. Assess and select the best measure of central tendency to represent data. _____
6. Determine and understand the function of an outlier. _____
7. Interpret and analyze upper and lower quartile in a box and whisker plot. _____
8. Solve data problems by extracting, interpreting, and analyzing data. _____

Performance Standard

E.8.4   Use the results of data analysis to:
- make predictions
- develop convincing arguments
- draw conclusions

8th Grade

1. Predict and draw conclusions from data. _____
2. Analyze data from line, bar, circle graphs, and scatter plots. _____
3. Apply results of the data analysis to solve problems. _____
4. Determine if the conclusion drawn is valid for the data presented. _____
5. Construct and present arguments to support analysis and display of data. _____

Performance Standard

E.8.5   Compare several sets of data to generate, test, and, as the data dictate, confirm or deny hypotheses.

8th Grade

1. Formulate a hypothesis from multiple sets of actual data. _____
2. Evaluate the data for reliability and credibility. _____
3. Construct a database on the computer using charts or graphs. _____
4. Prepare a presentation using technology and present it to the class. _____

E. Statistics and Probability

Performance Standard:

E.8.6   Evaluate presentations and statistical analyses from a variety of sources for:
- credibility of the source
- techniques of collection, organization and presentation of data
- missing or incorrect data
- inferences
- possible sources of bias

8th Grade

1. Determine if a source is credible and why. _____
2. Evaluate techniques of collection, organization and presentation of data. _____
3. Determine if data is missing or incorrect and why. _____
4. Identify sources of bias in data. _____

Performance Standard:

E.8.7   Determine the likelihood of occurrence of simple events by:

- using a variety of strategies to identify possible outcomes (e.g., lists, tables, tree diagrams*
- conducting an experiment
- designing and conducting simulations*
- applying theoretical notions of probability (e.g., that four equally likely events have a 25% chance of happening)
- employing appropriate grade level technology for presentations

8th Grade

1. Use a variety of strategies to identify possible outcomes (lists, tables, tree diagrams.) _____
2. Design and conduct an experiment. _____
3. Design and conduct simulations. _____
4. Apply theoretical notions of probability:
   - permutations _____
   - independent/dependent events _____
   - sampling _____

Vocabulary

8th Grade

_____ back-to-back stem & leaf plots   _____ scatter plot
_____ box & whiskers plot   _____ source
_____ interquartile range   _____ upper quartile
_____ lower quartile

F. Algebraic Relationships

Content Standard: Students in Wisconsin will discover, describe and generalize simple and complex patterns and relationships. In the context of real-world problem situations, the student will use algebraic techniques to define and describe the problem to determine and justify appropriate solutions.

Rationale: Algebra is the language of mathematics. Much of the observable world can be characterized as having patterned regularity where a change in one quantity results in changes in other quantities. Through algebra and the use of variables* and functions*, mathematical models* can be built which are essential to personal, scientific, economic, social, medical, artistic and civic fields of inquiry.

Performance Standard

F.8.1   Work with algebraic expressions in a variety of ways, including:
- using appropriate symbolism, including exponents* and variables*
- evaluating expressions through numerical substitution
- generating equivalent expressions
- adding and subtracting expressions

8th Grade

1. Use vocabulary symbols and notation of algebra correctly (n,n ,=,<,>). _____
2. Evaluate numerical and algebraic expressions by using the order of operations. _____
3. Demonstrate the use of exponents in algebraic expressions. _____
4. Solve real-life problems involving algebraic expressions. _____
5. Write algebraic expressions from verbal phrases. _____
6. Simplify polynomials using area models. _____
7. Demonstrate the use of addition, subtraction and multiplication in polynomials. _____

Performance Standard

F.8.2   Work with linear and nonlinear patterns* and relationships in a variety of ways, including:

- representing them with tables, with graphs and with algebraic expressions, equations and inequalities
- describing and interpreting their graphical representations (e.g., slope*, rate of change, intercepts*)
- using them as models of real-world phenomena
- describing a real-world phenomenon that a given graph might represent

8th Grade

1. Identify and solve inequalities. _____
2. Find distance between points in the coordinate plane. _____
3. Find missing measures in special right triangles. _____
4. Solve problems by using proportions. _____

5. Find the percent of increase or decrease. _____
6. Solve problems involving discounts and simple interest. _____
7. Graph functions by using function tables. _____
8. Graph linear functions by plotting points. _____
9. Solve systems of linear equations by graphing. _____
10. Graph quadratic functions. _____

Performance Standard

F.8.5 Recognize and use generalized properties and relations, including:
   - additive and multiplicative property of equations and inequalities
   - commutativity* and associativity* of addition and multiplication
   - distributive* property
   - inverses* and identities* for addition and multiplication
   - transitive* property

8th Grade

1. Recognize a function and find the input and output values of a function. _____
2. Represent linear, quadratic and exponential functions using tables, graphs, and equations. _____

Performance Standard

F.8.3 Recognize, describe, and analyze functional relationships* by generalizing a rule that characterizes the pattern of change among variables. These functional relationships include exponential growth and decay (e.g., cell division, depreciation)

8th Grade

1. Identify, solve and graph linear equations by using mental math, the guess & check strategy (use of a replacement set) and inverse operations. _____
2. Solve problems by using a formula. _____
3. Solve equations:
   - proportions _____
   - linear equations using models _____
   - two-step equations using models _____
   - involving percents _____
4. Solve and graph equations:
   - using rational numbers _____
   - with two variables _____
5. Identify, solve and graph inequalities. _____
6. Use a calculator to solve equations. _____
7. Write algebraic equations from verbal sentences. _____
8. Solve for a specified variable. _____
9. Solve more complex problems by writing and solving an equation. _____
10. Solve systems of linear equations by graphing. _____
11. Graph quadratic functions. _____

F. Algebraic Relationships

Performance Standard

F.8.4   Use linear equations and inequalities in a variety of ways, including:

- writing them to represent problem situations and to express generalizations.
- solving them by different methods (e.g., informally, graphically, with formal properties, with technology).
- writing and evaluating formulas (including solving for a specified variable).
- using them to record and describe solution strategies.

8th Grade

1. Recognize, use, and differentiate between the basic properties of arithmetic:
   - Order/Commutative property for +/x. _____
   - Zero property for +/x. _____
   - One/Identity Property for x/÷. _____
   - Inverse property for +/- and x/÷ (12-3=9/9+3=12). _____
   - Property of one for x and ÷. _____
   - Associative property for + and x [5x(3x2)=(5x3)x2]. _____
   - Distributive property. _____
2. Identify and use addition, subtraction, multiplication and division properties of equality. _____
3. Identify and use the transitive property for equality and inequality. _____

Vocabulary

8th Grade

_____ algebraic expression	_____ linear function	_____ substitute
_____ binomial	_____ monomial	_____ system of equations
_____ circle graph	_____ numerical expression	_____ converse
_____ polynomial	_____ domain	_____ Pythagorean Theorem
_____ factoring	_____ quadratic function	_____ hypotenuse
_____ transitive property for equality & inequality	_____ range	_____ like terms