

New Hampshire Mathematics Curriculum Framework	Boardworks Middle School Math Presentations
Grade 6	
Number and Operations	
M:N&O:6:1 Demonstrates conceptual understanding of rational numbers with respect to ratios; and rates using models, explanations, or other representations.	Ratio and rates Direct proportion Dividing in a given ratio Direct variations
M:N&O:6:2 Demonstrates understanding of the relative magnitude of numbers by ordering or comparing numbers with whole number bases and whole number exponents (e.g.,33, 43), integers, or rational numbers within and across number formats (fractions, decimals, or whole number percents from 1–100) using number lines or equality and inequality symbols.	Ordering integers Ordering fractions Ordering decimals Fractions and decimals Equivalent fractions Equivalent fractions, decimals and percentages Introducing percentages Powers Inequalities
M:N&O:6:3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting positive fractions and integers; and multiplying and dividing fractions and decimals.	Adding and subtracting integers Adding and subtracting integers activities Adding and subtracting simple fractions Methods of adding and subtracting fractions Mental multiplication Mental division Mental addition and subtraction Written methods for addition and subtraction Written methods for multiplication Written methods for division Multiplying by numbers between 0 and 1 Multiplying and dividing by 0.1 and 0.01

<p>M:N&O:6:3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the meaning of a power by representing the relationship between the base (whole number) and the exponent (whole number) (e.g., 33, 43); and the effect on the magnitude of a whole number when multiplying or dividing it by a whole number, decimal, or fraction.</p>	<p>Multiplying and dividing integers Multiplying fractions Dividing by fractions Mental multiplication Mental division Written methods for multiplication Written methods for division Powers</p>
<p>M:N&O:6:4 Accurately solves problems involving single or multiple operations on fractions (proper, improper, and mixed), or decimals; and addition or subtraction of integers; percent of a whole; or problems involving greatest common factor or least common multiple.</p>	<p>Adding and subtracting integers Adding and subtracting integers activities Adding and subtracting simple fractions Methods of adding and subtracting fractions Mental multiplication Mental division Mental addition and subtraction Written methods for addition and subtraction Written methods for multiplication Written methods for division Multiplying and dividing integers Multiplying fractions Dividing by fractions GCF and LCM Calculating percentages mentally Calculating percentages on paper Calculating percentages with a calculator One number as a fraction of another Multiples and factors</p>
<p>M:N&O:6:6 Uses a variety of mental computation strategies to solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answers; and mentally calculates change back from 5, 10, 20, 50 and 100 dollars; multiplies a two-digit whole number by a one-digit number whole number, two digit whole numbers that are multiples of ten, a three-digit whole number that is a multiple of 100 by a two- or three-digit number which is a multiple of 10 or 100, respectively; divides 3- and 4-digit multiples of powers of ten by their compatible factors and determines the part of a whole number using benchmark percents.</p>	<p>Mental multiplication Mental division Mental addition and subtraction Calculating percentages mentally Mental math puzzles Mental math and place value</p>

M:N&O:6:7 Makes estimates in a given situation by identifying when estimation is appropriate, selecting the appropriate method of estimation, determining the level of accuracy needed given the situation, analyzing the effect of the estimation method on the accuracy of results, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.	Estimation and approximation Introducing percentages
M:N&O:6:8 Applies properties of numbers (odd, even, positive, negative, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity, distributive, and additive inverses) to solve problems and to simplify computations.	Divisibility Multiples and factors Prime factorization Properties of numbers
Geometry and Measurement	
M:G&M:6:1 Uses properties or attributes of angles (right, acute, or obtuse) or sides (number of congruent sides, parallelism, or perpendicularity) to identify, describe, classify, or distinguish among different types of triangles (right, acute, obtuse, equiangular, scalene, isosceles, or equilateral) or quadrilaterals (rectangles, squares, rhombi, trapezoids, or parallelograms).	Triangles Identifying right triangles Quadrilaterals
M:G&M:6:3 Uses properties or attributes (shape of bases, number of lateral faces, number of bases, number of edges, or number of vertices) to identify, compare, or describe three-dimensional shapes (rectangular prisms, triangular prisms, cylinders, spheres, pyramids, or cones).	Solid shapes Cylinders, cones and spheres
M:G&M:6:4 Demonstrates conceptual understanding of congruency by predicting and describing the transformational steps (reflections, translations, and rotations) needed to show congruence (including the degree of rotation) and as the result of composing and decomposing two- and three-dimensional objects using models or explanations; and using line and rotational symmetry to demonstrate congruent parts within a shape.	Reflection Translation Rotation Congruence Reflection symmetry Rotational symmetry Combining transformations
M:G&M:6:5 Demonstrates conceptual understanding of similarity by describing the proportional effect on the linear dimensions of polygons or circles when scaling up or down while preserving the angles of polygons, or by solving related problems (including applying scales on maps). Describes effects using models or explanations.	Dilation Scale drawings Finding missing lengths Using scale factors

<p>M:G&M:6:6 Demonstrates conceptual understanding of perimeter of polygons, the area of quadrilaterals or triangles, and the volume of rectangular prisms by using models, formulas, or by solving problems; and demonstrates understanding of the relationships of circle measures (radius to diameter and diameter to circumference) by solving related problems. Expresses all measures using appropriate units.</p>	<p>Perimeter Area Area problems Volume Circles Circumference of a circle Area of a circle Using formulas Formulas for shapes</p>
<p>M:G&M:6:7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.</p>	<p>Customary unit conversions Converting metric units</p>
<p>Functions and Algebra</p>	
<p>M:F&A:6:1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or in problem situations; or writes a rule in words or symbols for finding specific cases of a linear relationship; or writes a rule in words or symbols for finding specific cases of a nonlinear relationship; and writes an expression or equation using words or symbols to express the generalization of a linear relationship (e.g., twice the term number plus 1 or $2n + 1$).</p>	<p>Graphs of functions Graphs of nonlinear functions Exploring nonlinear graphs Nonlinear equations The equation of a straight line Writing expressions Introducing formulas Using formulas Transforming formulas Deriving formulas Introducing sequences Sequences from geometrical patterns Describing and continuing sequences Generating sequences from flow charts Generating sequences from rules Finding the nth term Sequences from practical contexts</p>
<p>M:F&A:6:2 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by constructing or interpreting graphs of real occurrences and describing the slope of linear relationships (faster, slower, greater, or smaller) in a variety of problem situations; and describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.</p>	<p>Direct variations The equation of a straight line Reading and plotting graphs Distance-time graphs Interpreting graphs Conversion graphs</p>

M:F&A:6:3 Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write linear algebraic expressions involving any of the four operations and consistent with order of operations expected at this grade level; or by evaluating linear algebraic expressions (including those with more than one variable); or by evaluating an expression within an equation (e.g., determine the value of y when $x = 4$ given $y = 3x - 2$).	Writing expressions Introducing formulas Solving simple equations
M:F&A:6:4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions, solving multi-step linear equations of the form $ax \pm b = c$, where a , b , and c are whole numbers with $a \neq 0$.	Solving simple equations Factoring expressions Multiplying algebraic terms Dividing algebraic terms
Data, Statistics, and Probability	
M:DSP:6:1 Interprets a given representation (circle graphs, line graphs, or stem-and-leaf plots) to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.	Circle graphs Line graphs Appropriate graphs Calculating statistics
M:DSP:6:2 Analyzes patterns, trends or distributions in data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode) or dispersion (range) to analyze situations, or to solve problems.	Calculating the mean Finding the median Finding the mode Finding the range
M:DSP:6:3 Organizes and displays data using tables, line graphs, or stem-and-leaf plots to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.	Organizing data Line graphs Appropriate graphs
M:DSP:6:4 Uses counting techniques to solve problems in context involving combinations or simple permutations using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or others).	Probability diagrams
M:DSP:6:5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the theoretical probability of an event and tests the prediction through experiments and simulations; and designs fair games.	Experimental probability Calculating probability part 1
M:DSP:6:5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the experimental or theoretical probability of an event in a problem solving situation.	Experimental probability Calculating probability part 2
M:DSP:6:6 In response to a teacher or student generated question or hypothesis decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested, and when appropriate makes predictions; and asks new questions and makes connections to real world situations.	Population and sampling Collecting data Organizing data Writing a statistical report Appropriate graphs

Grade 7	
Number and Operations	
M:N&O:7:1 Demonstrates conceptual understanding of rational numbers with respect to square roots of perfect squares, rates, and proportional reasoning.	Square roots Ratio and rate Direct proportion Direct variations
M:N&O:7:1 Demonstrates conceptual understanding of rational numbers with respect to percents as a means of comparing the same or different parts of the whole when the wholes vary in magnitude; and percents as a way of expressing multiples of a number using models, explanations, or other representations.	Comparing proportions
M:N&O:7:2 Demonstrates understanding of the relative magnitude of numbers by ordering, comparing, or identifying equivalent rational numbers across number formats, numbers with whole number bases and whole number exponents (e.g., 33, 43), integers, absolute values, or numbers represented in scientific notation using number lines or equality and inequality symbols.	Ordering integers Ordering fractions Ordering decimals Fractions and decimals Equivalent fractions Equivalent fractions, decimals and percentages Introducing percentages Powers Absolute value Scientific notation
M:N&O:7:3 Demonstrates conceptual understanding of operations with integers and whole number exponents (where the base is a whole number) using models, diagrams, or explanations.	Powers
M:N&O:7:4 Accurately solves problems involving the addition or subtraction of integers, raising numbers to whole number powers, and determining square roots of perfect square numbers and nonperfect square numbers.	Square roots Powers Adding and subtracting integers Adding and subtracting integers activities Written methods for adding and subtracting Mental addition and subtraction

<p>M:N&O:7:4 Accurately solves problems involving proportional reasoning; percents involving discounts, tax, or tips; and rates.</p>	<p>Percentage change Percentages and inverse operations Comparing proportions Ratio and rate Direct proportion Using scale factors Ratio and proportion problems Calculating percentages mentally Calculating percentages on paper Calculating percentages with a calculator</p>
<p>M:N&O:7:6 Uses a variety of mental computation strategies to solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answers; and mentally calculates benchmark perfect squares and related square roots; determines the part of a number using benchmark percents and related fractions</p>	<p>Mental addition and subtraction Mental multiplication Mental division Mental math puzzles Mental math and place value Calculating percentages mentally Checking results Introducing percentages Square and triangular numbers</p>
<p>M:N&O:7:7 Makes estimates in a given situation (including tips, discounts, and tax) by identifying when estimation is appropriate, selecting the appropriate method of estimation, determining the level of accuracy needed given the situation, analyzing the effect of the estimation method on the accuracy of results, and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.</p>	<p>Calculating percentages mentally Estimation and approximation</p>
<p>M:N&O:7:8 Applies properties of numbers (odd, even, positive, negative, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity, distributive, inverses) to solve problems and to simplify computations, and demonstrates conceptual understanding of field properties as they apply to subsets of the real numbers (e.g., the set of whole numbers does not have additive inverses, the set of integers does not have multiplicative inverses).</p>	<p>Multiples and factors Divisibility Prime factorization Properties of numbers</p>
<p>Geometry and Measurement</p>	
<p>M:G&M:7:1 Uses properties of angle relationships resulting from two or three intersecting lines (adjacent angles, vertical angles, straight angles, or angle relationships formed by two non-parallel lines cut by a transversal), or two parallel lines cut by a transversal to solve problems.</p>	<p>Calculating angles Angles made with parallel lines</p>
<p>M:G&M:7:2 Applies theorems or relationships (triangle inequality or sum of the measures of interior angles of regular polygons) to solve problems.</p>	<p>The sum of interior and exterior angles</p>

<p>M:G&M:7:4 Applies the concepts of congruency by solving problems on a coordinate plane involving reflections, translations, or rotations.</p>	<p>Congruence Reflection Rotation Translation Combining transformations</p>
<p>M:G&M:7:5 Applies concepts of similarity by solving problems involving scaling up or down and their impact on angle measures, linear dimensions and areas of polygons, and circles when the linear dimensions are multiplied by a constant factor. Describes effects using models or explanations.</p>	<p>Dilation Finding missing lengths Using scale factors</p>
<p>M:G&M:7:6 Demonstrates conceptual understanding of the area of circles or the area or perimeter of composite figures (quadrilaterals, triangles, or parts of circles), and the surface area of rectangular prisms, or volume of rectangular prisms, triangular prisms, or cylinders using models, formulas, or by solving related problems. Expresses all measures using appropriate units.</p>	<p>Area of a circle Area of irregular shapes Surface area Volume Cylinders, cones and spheres Formulas for shapes</p>
<p>M:G&M:7:10 Demonstrates conceptual understanding of spatial reasoning and visualization by sketching three-dimensional solids; and draws nets of rectangular and triangular prisms, cylinders, and pyramids and uses the nets as a technique for finding surface area.</p>	<p>2-D representations of 3-D shapes Constructing nets Surface area Cylinders, cones and spheres Nets</p>

Functions and Algebra	
<p>M:F&A:7:1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or in problem situations; and generalizes a linear relationship using words and symbols; generalizes a linear relationship to find a specific case; or writes an expression or equation using words or symbols to express the generalization of a nonlinear relationship.</p>	<ul style="list-style-type: none"> Graphs of functions Graphs of nonlinear functions Exploring nonlinear graphs Nonlinear equations The equation of a straight line Writing expressions Introducing formulas Using formulas Transforming formulas Deriving formulas Introducing sequences Sequences from geometrical patterns Describing and continuing sequences Generating sequences from flow charts Generating sequences and rules Finding the nth term Sequences from practical contexts Inequalities on a number line Solving linear inequalities Integer solutions for inequalities Combined linear inequalities
<p>M:F&A:7:2 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by solving problems involving the relationship between slope and rate of change, by describing the meaning of slope in concrete situations, or informally determining the slope of a line from a table or graph; and distinguishes between constant and varying rates of change in concrete situations represented in tables or graphs; or describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant rates of change.</p>	<ul style="list-style-type: none"> The equation of a straight line Direct variations Distance-time graphs Conversion graphs Reading and plotting graphs Graphs of functions Interpreting graphs
<p>M:F&A:7:3 Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write algebraic expressions (including those with whole number exponents or more than one variable); or by evaluating algebraic expressions (including those with whole number exponents or more than one variable); or by evaluating an expression within an equation.</p>	<ul style="list-style-type: none"> Writing expressions Combining like terms Factoring expressions Substitution Introducing formulas

<p>M:F&A:7:4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and righthand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving multistep linear equations of the form $ax \pm b = c$ with $a \neq 0$, $ax \pm b = cx \pm d$ with $a, c \neq 0$, and $(x/a) \pm b = c$ with $a \neq 0$, where a, b, c and d are whole numbers; or by translating a problem-solving situation into an equation consistent with the parameters of the type of equations being solved for this grade level.</p>	<p>Solving simple equations Multiplying algebraic terms Dividing algebraic terms Equations with variable on both sides Equations involving parentheses and division</p>
Data, Statistics, and Probability	
<p>M:DSP:7:1 Interprets a given representation (circle graphs, scatter plots that represent discrete linear relationships, or histograms) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.</p>	<p>Circle graphs Scatter plots Histograms</p>
<p>M:DSP:7:2 Analyzes patterns, trends, or distributions in data in a variety of contexts by solving problems using measures of central tendency (mean, median, or mode), dispersion (range or variation), or outliers to analyze situations to determine their effect on mean, median, or mode; and evaluates the sample from which the statistics were developed (bias).</p>	<p>Calculating the mean Finding the median Finding the mode Finding the range Comparing data Calculating statistics Population and sampling</p>
<p>M:DSP:7:3 Organizes and displays data using tables, line graphs, scatter plots, and circle graphs to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.</p>	<p>Line graphs Scatter plots Circle graphs Appropriate graphs</p>
<p>M:DSP:7:4 Uses counting techniques to solve problems in context involving combinations or permutations (e.g., How many different ways can eight students place first, second, and third in a race?) using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or others).</p>	<p>Probability diagrams</p>
<p>M:DSP:7:5 For a probability event in which the sample space may or may not contain equally likely outcomes, predicts the theoretical probability of an event and tests the prediction through experiments and simulations; and compares and contrasts theoretical and experimental probabilities.</p>	<p>Experimental probability</p>
<p>M:DSP:7:5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the experimental or theoretical probability of an event in a problem-solving situation.</p>	<p>Experimental probability</p>
<p>M:DSP:7:6 In response to a teacher or student-generated question or hypothesis decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested while considering the limitations that could affect interpretations; and when appropriate makes predictions; and asks new questions and makes connections to real world situations.</p>	<p>Population and sampling Collecting data Organizing data Writing a statistical report</p>

Grade 8	
Number and Operations	
<p>M:N&O:8:1 Demonstrates conceptual understanding of rational numbers with respect to absolute values, perfect square and cube roots, and percents as a way of describing change (percent increase and decrease) using explanations, models, or other representations.</p>	<ul style="list-style-type: none"> Absolute value Square roots Cubes and cube roots Percentage change Square and triangular numbers
<p>M(N&O):8:2 Demonstrates understanding of the relative magnitude of numbers by ordering or comparing rational numbers, common irrational numbers, numbers with whole number or fractional bases and whole number exponents, square roots, absolute values, integers, or numbers represented in scientific notation using number lines or equality and inequality</p>	<ul style="list-style-type: none"> Square roots Absolute value Powers Scientific notation Rational and irrational numbers Ordering integers Ordering fractions Ordering decimals Using negative numbers in context Inequalities
<p>M:N&O:8:4 Accurately solves problems involving proportional reasoning (percent increase or decrease, interest rates, markups, or rates); multiplication or division of integers; and squares, cubes, and taking square or cube roots.</p>	<ul style="list-style-type: none"> Percentage change Comparing proportion Percentages and inverse operations Powers Square roots Cubes and cube roots Ratio and rate Square and triangular numbers
<p>M:N&O:8:6 Uses a variety of mental computation strategies to solve problems (e.g., using compatible numbers, applying properties of operations, using mental imagery, using patterns) and to determine the reasonableness of answers; and mentally calculates benchmark perfect squares and related square roots; determines the part of a number using benchmark percents and related fractions.</p>	<ul style="list-style-type: none"> Mental math puzzles Mental math and place values Mental addition and subtraction Mental multiplication Mental division Estimation and approximation Calculating percentages mentally Square and triangular numbers

<p>M:N&O:8:7 Makes estimates in a given situation (including tips, discounts, tax, and the value of a nonperfect square root as between two whole numbers) by identifying when estimation is appropriate, selecting the appropriate method of estimation; determining the level of accuracy needed given the situation; analyzing the effect of the estimation method on the accuracy of results; and evaluating the reasonableness of solutions appropriate to grade level GLEs across content strands.</p>	<p>Calculating percentages mentally Estimation and approximation</p>
<p>M:N&O:8:8 Applies properties of numbers (odd, even, positive, negative, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity, distributive, inverses) to solve problems and to simplify computations, and demonstrates conceptual understanding of field properties as they apply to subsets of real numbers when addition and multiplication are not defined in the traditional ways</p>	<p>Multiples and factors Divisibility Prime factorization Using negative numbers in context Properties of numbers</p>
<p>Geometry and Measurement</p>	
<p>M:G&M:8:2 Applies the Pythagorean Theorem to find a missing side of a right triangle, or in problem solving situations.</p>	<p>Pythagorean Theorem Pythagorean triples Calculating sides of right triangles</p>
<p>M:G&M:8:5 Applies concepts of similarity to determine the impact of scaling on the volume or surface area of three dimensional figures when linear dimensions are multiplied by a constant factor; to determine the length of sides of similar triangles, or to solve problems involving growth and rate.</p>	<p>Congruence Dilation Finding missing lengths Scale drawings Surface area Volume Using scale factors</p>
<p>M:G&M:8:6 Demonstrates conceptual understanding of surface area or volume by solving problems involving surface area and volume of rectangular prisms, triangular prisms, cylinders, pyramids, or cones. Expresses all measures using appropriate units.</p>	<p>Surface area Volume Cylinders, cones and spheres</p>

Functions and Algebra	
<p>M:F&A:8:1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, graphs, or in problem situations; and generalizes a linear relationship (nonrecursive explicit equation); generalizes a linear relationship to find a specific case; generalizes a nonlinear relationship using words or symbols; or generalizes a common nonlinear relationship to find a specific case.</p>	<ul style="list-style-type: none"> Graphs of functions Graphs of nonlinear functions Exploring nonlinear graphs Nonlinear equations The equation of a straight line Writing expressions Introducing formulas Using formulas Transforming formulas Deriving formulas Introducing sequences Sequences from geometrical patterns Describing and continuing sequences Generating sequences from flow charts Generating sequences and rules Finding the nth term Sequences from practical contexts Inequalities on a number line Solving linear inequalities Integer solutions for inequalities Combined linear inequalities
<p>M:F&A:8:2 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by solving problems involving the relationship between slope and rate of change; informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations; or describing the meaning of slope and intercept in context; and distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change) represented in tables, graphs, equations, or problem situations; or describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant and varying rates of change.</p>	<ul style="list-style-type: none"> The equation of a straight line Direct variations Distance-time graphs Conversion graphs Reading and plotting graphs Graphs of functions Graphs of nonlinear functions Interpreting graphs Exploring nonlinear graphs

<p>M:F&A:8:3 Demonstrates conceptual understanding of algebraic expressions by evaluating and simplifying algebraic expressions (including those with square roots, whole number exponents, or rational numbers); or by evaluating an expression within an equation.</p>	<p>Writing expressions Combining like terms Factoring expressions Substitution Powers Square roots Nonlinear equations Nonlinear equations and spreadsheets</p>
<p>M:F&A:8:4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions (expressions consistent with the parameters of the left- and righthand sides of the equations being solved at this grade level) using models or different representations of the expressions, solving formulas for a variable requiring one transformation; by solving multi-step linear equations with integer coefficients; by showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution; and by informally solving problems involving systems of linear equations in a context.</p>	<p>Solving simple equations Multiplying algebraic terms Dividing algebraic terms Equations with variable on both sides Equations involving parentheses and division Properties of numbers Order of operations and PEMDAS Substitution Systems of linear equations</p>
<p>Data, Statistics, and Probability</p>	
<p>M:DSP:8:1 Interprets a given representation (line graphs, scatter plots, histograms, or box-and-whisker plots) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.</p>	<p>Line graphs Scatter plots Histograms Quartiles and box plots</p>
<p>M:DSP:8:2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, quartile values, or estimated line of best fit to analyze situations, or to solve problems; and evaluates the sample from which the statistics were developed (bias, random, or nonrandom).</p>	<p>Calculating the mean Finding the median Finding the mode Finding the range Interquartile range Quartiles and box plots Population and sampling Calculating statistics Scatter plots</p>
<p>M:DSP:8:3 Organizes and displays data using scatter plots to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems; or identifies representations or elements of representations that best display a given set of data or situation, consistent with the representations required in M:DSP:8:1.</p>	<p>Scatter plots</p>

<p>M:DSP:8:4 Uses counting techniques to solve problems in context involving combinations or permutations using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, orsc others).</p>	<p>Probability diagrams</p>
<p>M:DSP:8:5 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the experimental or theoretical probability of an event in a problem-solving situation; and predicts the theoretical probability of an event and tests the prediction through experiments and simulations; and compares and contrasts theoretical and experimental probabilities.</p>	<p>Experimental probability Calculating probability part 1</p>
<p>M:DSP:8:6 In response to a teacher or student generated question or hypothesis decides the most effective method (e.g., survey, observation, experimentation) to collect the data (numerical or categorical) necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the question or hypothesis being tested while considering the limitations that could affect interpretations; and when appropriate makes predictions; and asks new questions and makes connections to real world situations.</p>	<p>Population and sampling Collecting data Organizing data Appropriate graphs Writing a statistical report</p>