

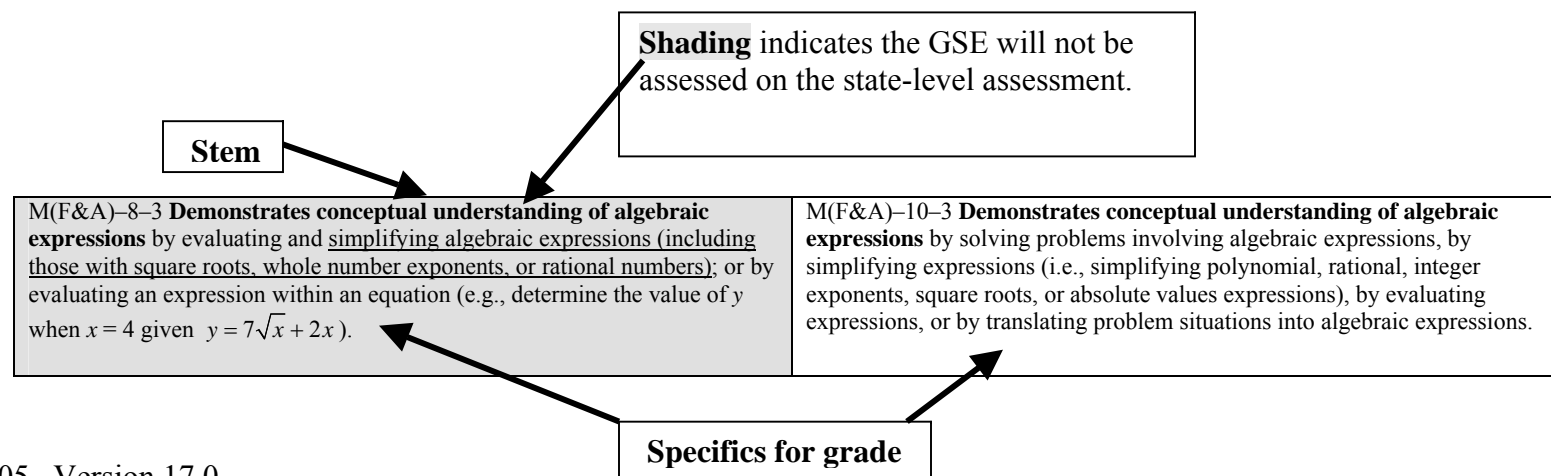
Draft New Hampshire and Rhode Island High School Grade-Span Expectations

About the Draft NH and RI GSEs:

This DRAFT set of Rhode Island and New Hampshire Grade-Span Expectations (GSEs) for grades 9–10 includes expectations that will be assessed on the state-level assessment and others that will be a local curriculum and assessment option. Those GSEs that are a local curriculum or assessment option are shaded gray. In addition, the grade 7 and grade 8 Grade-Level expectations (GLEs) are included in this document in order to see how the concepts and skills develop across middle school.

The GSEs in this document can be interpreted as describing expectations for the end of grade 10, or the beginning of grade 11. As you review the DRAFT Rhode Island and New Hampshire 9–10 GSEs in Mathematics the following are important to understand.

- 1) The GSEs and GLEs are organized into four content strands: Number and Operations; Functions and Algebra; Data, Statistics, and Probability; and Geometry and Measurement.
- 2) Problem solving, reasoning, connections, and communication are embedded throughout the set of GSEs and GLEs instead of as separate strands.
- 3) Each GSE and GLE includes a **bolded** statement called the “stem.” Each “stem” is the same or similar across the grades for a given GSE or GLE, and is meant to communicate the main curricular and instructional focus of the GSE or GLE across the grades.
- 4) The unbolded text within a GSE or GLE indicates how it is specified at a given grade level.
- 5) At grade 7 and 8 differences from previous grades are underlined. (Note: Sometimes nothing is underlined within a GLE. In these situations examine other GLEs across the strand to identify the differences or check the Depth of Knowledge table in the test specifications.)
- 6) The differences between grade 8 and the grade 9–10 GSEs are NOT underlined.
- 7) Each GSE is coded for the content strand, grade level, and the GSE “stem” number (e.g., M(F&A)–10–3: The “M” stands for mathematics, the “F&A” stands for the Functions and Algebra strand, the “10” stands for grade span 9–10, and the “3” stands for stem 3).
- 8) Unless otherwise specified the number parameters defined in the Number and Operations strand for a particular grade span or grade level apply to all GSEs at that grade span or all GLEs at that grade level.
- 9) Only number concepts identified at a grade level or grade span in the Numbers and Operations strand will be assessed and reported. However, all number concepts acquired up to a grade can be used in other content strands unless otherwise specified.
- 10) All the concepts and skills identified at a given grade level are “fair game” for assessment purposes. However, while all parts of a GSE may be assessed each year, it is more likely that all parts of a GSE will be assessed over several years.
- 11) In some places you will see “or^{sc}.” While, in general, students have choices as to the strategies that they use to solve problems, “or^{sc}” was used to explicitly state to the testing contractor that a particular strategy could not be required as in GSE M(DSP)–10–4: “...using a variety of strategies (e.g., organized lists, tables, tree diagrams, models, Fundamental Counting Principle, or^{sc} others).”
- 12) While the use of dynamic software will not be assessed on the state-level assessment at this time, it is expected, however, that students at the high school level would receive ample opportunity to solve problems using dynamic software at the local level.



Draft New Hampshire and Rhode Island High School Grade-Span Expectations

| Number and Operations | | |
|--|---|---|
| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| 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 (e.g., 8 girls in a classroom of 16 students compared to 8 girls in a classroom of 20 students, or 20% of 400 compared to 50% of 100); and percents as a way of expressing multiples of a number (e.g., 200% of 50) using models, explanations, or other representations ; and demonstrates conceptual understanding of square roots of perfect squares, rates, and proportional reasoning . | 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 . | No M(N&O)–10–1 at this grade span |
| 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., 3^3 , 4^3), integers, absolute values, or numbers represented in scientific notation using number lines or equality and inequality symbols. | M(N&O)–8–2 Demonstrates understanding of the relative magnitude of numbers by ordering or comparing rational numbers, common irrational numbers (e.g., $\sqrt{2}$, π), 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 symbols. | M(N&O)–10–2 Demonstrates understanding of the relative magnitude of real numbers by solving problems involving ordering or comparing rational numbers, common irrational numbers (e.g., $\sqrt{2}$, π), rational bases with integer exponents, square roots, absolute values, integers, or numbers represented in scientific notation using number lines or equality and inequality symbols. |
| 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. | No M(N&O)–8–3 at this grade level | No M(N&O)–10–3 at this grade span |
| M(N&O)–7–4 Accurately solves problems involving proportional reasoning; percents involving discounts, tax, or tips; and rates; and addition or subtraction of integers, raising numbers to whole number powers, and determining square roots of perfect square numbers and non-perfect square numbers . (IMPORTANT: <i>Applies the conventions of order of operations including parentheses, brackets, or exponents.</i>) | 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 . (IMPORTANT: <i>Applies the conventions of order of operations.</i>) | M(N&O)–10–4 Accurately solves problems involving rational numbers within mathematics, across content strands, disciplines or contexts (with emphasis on, but not limited to, proportions, percents, ratios, and rates). Solves problems involving compound interest. |
| No M(N&O)–7–5 at this grade level | No M(N&O)–8–5 at this grade level | No M(N&O)–10–5 at this grade span |
| M(N&O)–7–6 Mentally calculates benchmark perfect squares and related square roots (e.g., 1^2 , 2^2 ... 12^2 , 15^2 , 20^2 , 25^2 , 100^2 , 1000^2); determines the part of a number using benchmark percents and related fractions (1%, 10%, 25%, $33\frac{1}{3}\%$, 50%, $66\frac{2}{3}\%$, 75%, and 100%) (e.g., 25% of 16; $33\frac{1}{3}\%$ of 330). (IMPORTANT: <i>Mental arithmetic should be imbedded instructionally throughout all strands.</i>) | M(N&O)–8–6 Mentally calculates benchmark perfect squares and related square roots (e.g., 1^2 , 2^2 ... 12^2 , 15^2 , 20^2 , 25^2 , 100^2 , 1000^2); determines the part of a number using benchmark percents and related fractions (1%, 10%, 25%, $33\frac{1}{3}\%$, 50%, $66\frac{2}{3}\%$, 75%, and 100%) (e.g., 25% of 16; $33\frac{1}{3}\%$ of 330). (IMPORTANT: <i>Mental arithmetic should be imbedded instructionally throughout all strands.</i>) | M(N&O)–10–6 Mentally calculates benchmark perfect squares and related square roots (e.g., 1^2 , 2^2 , ..., 12^2 , 15^2 , 20^2 , 25^2 , 100^2 , 1000^2); determines or estimates the part of a number using percents (any whole number percent between 0% and 100%, $33\frac{1}{3}\%$, $66\frac{2}{3}\%$, or multiples of 100% up to 500%) and related fractions as appropriate to a problem situation. (IMPORTANT: <i>The intent of this GSE is to embed mental arithmetic throughout the instructional program, not to teach it as a separate unit.</i>) |

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| Number and Operations | | |
|---|---|--|
| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| <p>M(N&O)–7–7 Makes estimates in a given situation (<u>including tips, discounts, and tax</u>) 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 <u>to grade level GLEs</u> across content strands.</p> <p>(IMPORTANT: <i>The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.</i>)</p> | <p>M(N&O)–8–7 Makes estimates in a given situation (including tips, discounts, tax, and the value of a non-perfect 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 <u>to grade level GLEs</u> across content strands.</p> <p>(IMPORTANT: <i>The intent of this GLE is to embed estimation throughout the instructional program, not to teach it as a separate unit.</i>)</p> | <p>M(N&O)–10–7 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 GSEs across content strands; and estimates tips, discounts, and tax; and estimates the value of a non-perfect square root or cube root.</p> <p>(IMPORTANT: <i>The intent of this GSE is to embed estimation throughout the instructional program, not to teach it as a separate unit.</i>)</p> |
| <p>M(N&O)–7–8 Applies properties of numbers (odd, even, remainders, divisibility, and prime factorization) and field properties (commutative, associative, identity, distributive, <u>inverses</u>) 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>M(N&O)–8–8 Applies properties of numbers (odd, even, remainders, divisibility, and <u>prime factorization</u>) and field properties (commutative, associative, identity [<u>including the multiplicative property of one, e.g. $2^0 \times 2^3 = 2^{0+3} = 2^3$, so $2^0 = 1$</u>], distributive, inverses) to solve problems and to simplify computations, and demonstrates conceptual understanding of field properties as they apply to subsets of real numbers <u>when addition and multiplication are not defined in the traditional ways (e.g., If $a \Delta b = a + b - 1$, is Δ a commutative operation?)</u></p> | <p>M(N&O)–10–8 Applies properties of numbers to solve problems or to simplify computations; or compares and contrasts the properties of numbers and number systems.</p> |

Draft New Hampshire and Rhode Island High School Grade-Span Expectations

| Geometry and Measurement | | |
|--|---|--|
| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| 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. | No M(G&M)–8–1 at this grade | No M(G&M)–10–1 at this grade span |
| 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. | M(G&M)–8–2 Applies the Pythagorean Theorem to find a missing side of a right triangle, or in problem solving situations. | M(G&M)–10–2 Makes and defends conjectures, constructs geometric arguments, uses geometric properties, or uses theorems to solve problems involving angles, lines, polygons, circles, or right triangle ratios (sine, cosine, tangent) within mathematics or across disciplines or contexts (e.g., Pythagorean Theorem, Triangle Inequality Theorem). Uses geometric models to represent and distinguish between Euclidian and non-Euclidian systems. |
| No M(G&M)–7–3 at this grade | No M(G&M)–8–3 at this grade | No M(G&M)–10–3 at this grade span |
| M(G&M)–7–4 Applies the concepts of congruency by solving problems on a coordinate plane involving reflections, translations, or rotations. | No M(G&M)–8–4 at this grade | M(G&M)–10–4 Applies the concepts of congruency by solving problems on or off a coordinate plane involving reflections, translations, or rotations; or solves problems using congruency involving problems within mathematics or across disciplines or contexts. |
| 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 ^{sc} explanations. | 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. | M(G&M)–10–5 Applies concepts of similarity by solving problems within mathematics or across disciplines or contexts. |
| 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. | 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. | M(G&M)–10–6 Demonstrates conceptual understanding of perimeter, circumference, area, surface area, or volume of two- or three-dimensional figures (including composite figures) in problem-solving situations, including generalizing formulas for determining area, volume, or surface area of two- and three-dimensional figures. Applies the appropriate unit of measure. |

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| Geometry and Measurement | | |
|--|------------------------------|---|
| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| No M(G&M)–7–7 at this grade | No M(G&M)–8–7 at this grade | M(G&M)–10–7 Makes conversions within or across systems and makes decisions concerning an appropriate degree of accuracy in problem situations involving measurement in other GSEs. Applies informal concepts of successive approximation, upper and lower bounds, and limits in measurement situations (e.g., use successive approximation to find the area of a pond); uses measurement conversion strategies (e.g., unit/dimensional analysis). |
| No M(G&M)–7–8 at this grade | No M(G&M)–8–8 at this grade | No M(G&M)–10–8 at this grade span |
| No M(G&M)–7–9 at this grade | No M(G&M)–8–9 at this grade | M(G&M)–10–9 Solves problems on and off the coordinate plane involving distance, midpoint, perpendicular and parallel lines, or slope. |
| 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. | No M(G&M)–8–10 at this grade | M(G&M)–10–10 Demonstrates conceptual understanding of spatial reasoning and visualization by sketching or using dynamic geometric software to generate three-dimensional objects from two-dimensional perspectives, or to generate two-dimensional perspectives from three-dimensional objects, and by solving related problems. |

| Functions and Algebra | | |
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| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| 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^{sc} equation using words or^{sc} symbols to express the generalization of a nonlinear relationship. | 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 (non-recursive explicit equation); generalizes a linear relationship to find a specific case; generalizes a nonlinear relationship using words or^{sc} symbols; or generalizes a common nonlinear relationship to find a specific case. | M(F&A)–10–1 Identifies, extends, and generalizes a variety of patterns (linear and nonlinear) represented by models, tables, sequences, or graphs in problem solving situations. |
| M(F&A)–7–2 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by <u>solving problems involving the relationship between slope and rate of change</u> , by <u>describing the meaning of slope in concrete situations</u> , or <u>informally determining the slope of a line from a table or graph</u> ; 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. | 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; <u>informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations</u> ; or <u>describing the meaning of slope and intercept in context</u> ; 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 <u>varying rates of change</u> . | M(F&A)–10–2 Demonstrates conceptual understanding of linear and nonlinear functions and relations (including characteristics of classes of functions) through an analysis of constant, variable, or average rates of change, intercepts, domain, range, maximum and minimum values, increasing and decreasing intervals and rates of change (e.g., the height is increasing at a decreasing rate); describes how change in the value of one variable relates to change in the value of a second variable; or works between and among different representations of functions and relations (e.g., graphs, tables, equations, function notation). |
| 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 (e.g., determine the value of y when $x = 4$ given $y = 5x^3 - 2$). | M(F&A)–8–3 Demonstrates conceptual understanding of algebraic expressions by evaluating and <u>simplifying algebraic expressions (including those with square roots, whole number exponents, or rational numbers)</u> ; or by evaluating an expression within an equation (e.g., determine the value of y when $x = 4$ given $y = 7\sqrt{x} + 2x$). | M(F&A)–10–3 Demonstrates conceptual understanding of algebraic expressions by solving problems involving algebraic expressions, by simplifying expressions (e.g., simplifying polynomial or rational expressions, or expressions involving integer exponents, square roots, or absolute values), by evaluating expressions, or by translating problem situations into algebraic expressions. |
| M(F&A)–7–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions (<u>expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level</u>) using models or different representations of the expressions, solving multi-step 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 <u>translating a problem-solving situation into an equation consistent with the parameters of the type of equations being solved for this grade level</u> . | M(F&A)–8–4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions (<u>expressions consistent with the parameters of the left- and right-hand sides of the equations being solved at this grade level</u>) using models or different representations of the expressions, <u>solving formulas for a variable requiring one transformation (e.g., $d = rt$; $d/r = t$)</u> ; by solving multi-step linear equations with integer coefficients; by <u>showing that two expressions are or are not equivalent by applying commutative, associative, or distributive properties, order of operations, or substitution</u> ; and by <u>informally solving problems involving systems of linear equations in a context</u> . | M(F&A)–10–4 Demonstrates conceptual understanding of equality by solving problems involving algebraic reasoning about equality; by translating problem situations into equations or inequalities; by solving linear equations or inequalities (symbolically and graphically) and expressing the solution set symbolically or graphically, or provides the meaning of the graphical interpretations of solution(s) in problem-solving situations; or by solving problems involving systems of linear equations in a context (using equations or graphs) or using models or representations. Works with a wide variety of equations. |

Draft New Hampshire and Rhode Island High School Grade-Span Expectations

| Data, Statistics, and Probability | | |
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| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| <p>M(DSP)–7–1 Interprets a given representation (circle graphs, <u>scatter plots that represent discrete linear relationships</u>, or <u>histograms</u>) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems;</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in <i>M(DSP)–7–2</i>.)</p> | <p>M(DSP)–8–1 Interprets a given representation (line graphs, <u>scatter plots</u>, histograms, or <u>box-and-whisker plots</u>) to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems.</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in <i>M(DSP)–8–2</i>.)</p> | <p>M(DSP)–10–1 Interprets a given representation(s) (e.g., box-and-whisker plots, scatter plots, bar graphs, line graphs, circle graphs, histograms, frequency charts) to make observations, to answer questions, to analyze the data to formulate or justify conclusions, critique conclusions, make predictions, or to solve problems within mathematics or across disciplines or contexts (e.g. media, workplace, social and environmental situations).</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in <i>M(DSP)–10–2</i>.)</p> |
| <p>M(DSP)–7–2 Analyzes patterns, trends, or distributions in data in a variety of contexts <u>by solving problems</u> using measures of central tendency (mean, median, or mode), dispersion (range or variation), or <u>outliers</u> to analyze situations to <u>determine their effect on mean, median, or mode</u>; and <u>evaluates the sample from which the statistics were developed (bias)</u>.</p> | <p>M(DSP)–8–2 Analyzes patterns, trends, or distributions in data in a variety of contexts <u>by determining or using</u> measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, <u>quartile values</u>, or <u>estimated line of best fit</u> to analyze situations, or to solve problems; and evaluates the sample from which the statistics were developed (bias, <u>random</u>, or <u>non-random</u>).</p> | <p>M(DSP)–10–2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining, using, or analyzing measures of central tendency (mean, median, or mode), dispersion (range or variation), outliers, or quartile values to solve problems; and solve problems involving conceptual understanding of the sample from which the statistics were developed.</p> <p>By informally estimating and interpreting a correlation coefficient as strong positive, strong negative or no correlation and providing explanations about the meaning of the correlation coefficient in context of the data.</p> |
| <p>M(DSP)–7–3 Identifies or describes representations or elements of representations that best display a given set of data or situation, consistent with the representations required in <i>M(DSP)–7–1</i>; and organizes and displays data using tables, line graphs, <u>scatter plots</u>, and <u>circle graphs</u> 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>(IMPORTANT: Analyzes data consistent with concepts and skills in <i>M(DSP)–6–2</i>.)</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 <i>M(DSP)–8–1</i>.</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in <i>M(DSP)–8–2</i>.)</p> | <p>M(DSP)–10–3 Organizes and displays one- and two-variable data using a variety of representations (e.g., box-and-whisker plots, scatter plots, bar graphs, line graphs, circle graphs, histograms, frequency charts) to analyze the data to formulate or justify conclusions, make predictions, or to solve problems; or identifies representations that best display a given set of data or situation.</p> |
| <p>M(DSP)–7–4 Uses counting techniques to solve problems in context involving combinations or <u>permutations</u> (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^{sc} others).</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, or^{sc} others).</p> | <p>M(DSP)–10–4 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, or^{sc} others).</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; and predicts the theoretical probability of an event and tests the prediction through experiments and simulations; and <u>compares and contrasts theoretical and experimental probabilities</u>.</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>M(DSP)–10–5 Solves problems involving experimental or theoretical probability.</p> <p>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> |

| Data, Statistics, and Probability | | |
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| Grade 7 | Grade 8 | Grade 9–10 GSEs |
| <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 <u>considering the limitations that could affect interpretations</u>; and when appropriate makes predictions; and asks new questions and makes connections to real world situations.</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–7–2.)</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 <u>considering the limitations that could affect interpretations</u>; and when appropriate makes predictions; and asks new questions and makes connections to real world situations.</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–8–2.)</p> | <p>M(DSP)–10–6 In response to a teacher or student generated question or hypothesis decides the most effective method (e.g., survey, observation, research, experimentation) and sampling techniques (e.g., random sample, stratified random sample) to collect the data necessary to answer the question; collects, organizes, and appropriately displays the data; analyzes the data to draw conclusions about the questions or hypothesis being tested while considering the limitations of the data that could affect interpretations; and when appropriate makes predictions, asks new questions, or makes connections to real-world situations.</p> <p>(IMPORTANT: Analyzes data consistent with concepts and skills in M(DSP)–10–2.)</p> |