Spring 2019 Standards-Based Transition Assessment of Mathematics and English Language Arts *

*The *Spring 2019 New Mexico Standards-Based Transition Assessment of Math and ELA* is fully aligned to state adopted New Mexico Common Core State Standards (NMCCSS). This is a transition assessment created with linking items that have undergone educator reviews for content, bias and sensitivity, and field testing. Linking items are items that have been utilized on prior operational forms or were field tested on the spring 2018 forms to allow for comparability, rather than starting from a new baseline. This results in parents, educators, and public officials being able to compare spring 2018 and prior scores to spring 2019 scores. The Spring 2019 transition assessment will still be administered in TestNav and continue to be managed through PearsonAccess^{next}. All publicly available resources (e.g., online practice sites) for prior administrations are still appropriate for use as preparation and practice for the Spring 2019 transition assessment.

Mathematics Evidence Tables

Grade 3 Mathematics Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
05/10/18	1.2	Grammatical edits to 3.OA.3-1, 3.OA.3-2, 3.OA.3-3, 3.OA.3-4, 3.OA.7-1, 3.OA.8, 3.NBT.2, 3.NF.2, 3.NF.3a-1, 3.NF.3a-2, 3.NF.3b-1, 3.NF.3c, 3.MD.1-1, 3.MD.3-3, 3.Int.1, 3.Int.2, 3.Int.5, 3.C.1-1, 3.C.4-1, 3.C.4-3, 3.C.5-1, 3.C.5-3, 3.C.6-1, 3.C.6-2	Jennifer Novak - Pearson

Grade 3 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster – 3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
  - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
  - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
  - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 3 Evidence Statements
Listing by Type 1, Type II, and Type III

The Evidence Statements for Grade 3 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to the Type II items.

Aqua – Evidence Statement is applicable to the Type III items.

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.OA.1	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.*	i) Tasks involve interpreting rather than calculating products in terms of equal groups, arrays, area, and/or measurement quantities. (See CCSSM, Table 2, Common multiplication and division situations, p. 89.) For example, "the total number of books if 5 shelves each have 7 books" can be represented by the expression 5x7 rather than "Marcie placed 7 books on each of 5 shelves. How many books does she have?" ii) Tasks do not require students to interpret products in terms of repeated addition, skip-counting, or jumps on the number line. iii) The italicized example refers to describing a real-world context, but describing a context is not the only way to meet the standard. For example, another way to meet the standard would be to identify contexts in which a total can be expressed as a specified product.	MP.2, MP.4
A	3.OA.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*	i) Tasks involve interpreting rather than calculating quotients in terms of equal groups, arrays, area, and/or measurement quantities. (See CCSSM, Table 2, Common multiplication and division situations, p. 89.) For example, "35 books are placed equally on 7 shelves" can be represented by the expression 35 ÷ 7 rather than "Marcie has 35 books. She placed the same number on each of 7 shelves. How many books did she place on each shelf?" ii) Tasks do not require students to interpret quotients in terms of repeated subtraction, skip-counting, or jumps on the number line. iii) The italicized example refers to describing a real-world context, but describing a context is not the only way to meet the standard. For example, another way to meet the standard would be to identify contexts in which a number of objects can be expressed as a specified quotient. iv) Half the tasks require interpreting quotients as a number of objects in each share and half require interpreting quotients as a number of equal shares.	MP.2, MP.4
A	3.OA.3-1	Use multiplication within 100 (both factors less than or equal to 10) to solve word problems in situations involving equal groups, arrays, or area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All products come from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) 75% of tasks involve multiplying to find the total number (equal groups, arrays); 25% involve multiplying to find the area. iii) For more information see CCSSM Table 2, Common multiplication and division situations, p. 89 and the OA Progression.	MP.1, MP.4

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.OA.3-2	Use multiplication within 100 (both factors less than or equal to 10) to solve word problems in situations involving measurement quantities other than area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All products come from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) Tasks involve multiplying to find a total measure (other than area). iii) For more information see CCSSM Table 2, Common multiplication and division situations, p. 89 and the OA Progression.	MP.1, MP.4
A	3.OA.3-3	Use division within 100 (quotients related to products having both factors less than or equal to 10) to solve word problems in situations involving equal groups, arrays, or area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All quotients are related to products from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) Tasks using this Evidence Statement will be created equally among the following: • dividing to find the number in each equal group or in each equal row/column of an array; • dividing to find the number of equal groups or the number of equal rows/columns of an array; and • dividing an area by a side length to find an unknown side length. iii) For more information see CCSSM Table 2, Common multiplication and division situations, p. 89 and the OA Progression.	MP.1, MP.4
A	3.OA.3-4	Use division within 100 (quotients related to products having both factors less than or equal to 10) to solve word problems in situations involving measurement quantities other than area, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	i) All quotients are related to products from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). ii) Half the tasks involve finding the number of equal pieces and half involve finding the measure of each piece. iii) For more information see CCSSM Table 2, Common multiplication and division situations, p. 89 and the OA Progression.	MP.1, MP.4
A	3.OA.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations* $8 \times ? = 48$, $5 = \square \div 3$, $6 \times 6 = ?$.	i) Tasks do not have a context. ii) Only the answer is required. iii) All products and related quotients are from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$).	-
A	3.OA.6	Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	i) All products and related quotients are from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$).	-

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.OA.7-1	Fluently multiply and divide within 25. By end of Grade 3, know from memory all products of two one-digit numbers.	i) Tasks do not have a context. ii) Only the answer is required. iii) Tasks require finding products and related quotients accurately. For example, each 1-point task might require four or more computations, two or more multiplication and two or more division. iv) Tasks are not timed.	-
A	3.OA.7-2	Fluently multiply and divide within 100. By the end of Grade 3, know from memory all products of two one-digit numbers.	i) Tasks do not have a context. ii) Only the answer is required. iii) Tasks require finding products and related quotients accurately. For example, each 1-point task might require four or more computations, two or more multiplication and two or more division. iv) 75% of tasks are from the harder three quadrants of the times table ($a \times b$ where $a > 5$ and/or $b > 5$). v) Tasks are not timed.	-
A	3.OA.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	i) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. ii) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. iii) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression).	MP.1, MP.4
B	3.NBT.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	i) Tasks have no context. ii) Tasks are not timed.	-
B	3.NBT.3	Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80, 5×60) using strategies based on place value and properties of operations.	i) Tasks have no context.	MP.7
A	3.NF.1	Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	i) Tasks do not involve the number line. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8.	MP.2

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	i) Fractions may be greater than 1. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) Fractions equal whole numbers in 20% of these tasks. iv) Tasks have "thin context"[2] or no context. v) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8.	MP.5
A	3.NF.3a-1	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size.	i) Tasks do not involve the number line. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. iv) The explanation aspect of 3.NF.3 is not assessed here.	MP.5
A	3.NF.3a-2	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same point on a number line.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) The explanation aspect of 3.NF.3 is not assessed here.	MP.5
A	3.NF.3b-1	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3).	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) The explanation aspect of 3.NF.3 is not assessed here.	MP.7
A	3.NF.3c	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) The explanation aspect of 3.NF.3 is not assessed here.	MP.3, MP.5, MP.7
A	3.NF.3d	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) Fractions equivalent to whole numbers are limited to 0 through 5. iii) Justifying is not assessed here. For this aspect of 3.NF.3d, see 3.C.3-1 and 3.C.4-4. iv) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.7

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.NF.A.Int.1	In a contextual situation involving a whole number and two fractions not equal to a whole number, represent all three numbers on a number line diagram, then choose the fraction closest in value to the whole number.	i) Fractions equivalent to whole numbers are limited to 0 through 5. ii) Fraction denominators are limited to 2, 3, 4, 6 and 8.	MP.2, MP.4, MP.5
A	3.MD.1-1	Tell and write time to the nearest minute and measure time intervals in minutes.	i) Time intervals are limited to 60 minutes. ii) No more than 20% of items require determining a time interval from clock readings having different hour values. iii) Acceptable interval: Start time 1:20, end time 2:10 – time interval is 50 minutes. Unacceptable interval: Start time 1:20, end time 2:30 – time interval exceeds 60 minutes.	-
A	3.MD.1-2	Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	i) Only the answer is required. ii) Tasks do not involve reading start/stop times from a clock nor calculating elapsed time.	MP.1, MP 2, MP.4, MP.5
A	3.MD.2-1	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).	i) Estimates are the result of reading a scale.	-
A	3.MD.2-2	Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	i) Only the answer is required (methods, representations, etc. are not assessed here). ii) Units of grams (g), kilograms (kg), and liters (l).	MP.1, MP.2, MP.4, MP.5
A	3.MD.2-3	Measure or estimate liquid volumes or masses of objects using standard units of grams (g), kilograms (kg), and liters (l), then use the estimated value(s) to estimate the answer to a one-step word problem by using addition, subtraction, multiplication, or division. Content Scope: 3.MD.2	-	MP.5, MP.6 (in the case of measuring)
B	3.MD.3-1	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*	i) Tasks involve no more than 10 items in 2-5 categories. ii) Categorical data should not take the form of a category that could be represented numerically (e.g. ages of students). iii) Tasks do not require students to create the entire graph, but might ask students to complete a graph or otherwise demonstrate knowledge of its creation.	MP.2

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
B	3.MD.3-3	Solve a put-together problem using information presented in a scaled bar graph, then use the result to answer a "how many more" or "how many less" problem using information presented in the scaled bar graph. Content Scope: 3.MD.3	i) Tasks do not require computations beyond the Grade 3 expectations.	MP.4
B	3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.	-	MP.2, MP.5
A	3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	-	MP.7
A	3.MD.6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	-	MP.7
A	3.MD.7b-1	Relate area to the operations of multiplication and addition. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems.	i) Products are limited to the 10x10 multiplication table. ii) This ES is different from 3.OA.3-1 in the following ways: • 3.MD.7b-1 emphasizes application/skill while the emphasis of 3.OA.3-1 is on demonstration of understanding of multiplication using not only area but also equal groups and arrays by modeling. • 3.MD.7b-1 permits mathematical problems while 3.OA.3-1 is restricted to word problems. • 3.MD.7b-1 allows for factors less than or equal to 5 while the factors used in 3.OA.3-1 are restricted to the harder three quadrants.	MP.4, MP.5

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.MD.7d	Relate area to the operations of multiplication and addition. d. Recognize area as additive. Find areas of rectilinear[3] figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	-	MP.7
B	3.MD.8	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	-	MP.2, MP.4, MP.5
B	3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	-	-
B	3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*	-	-
A	3.Int.1	Given a two-step problem situation with the four operations, round the values in the problem, then use the rounded values to produce an approximate solution. Content Scope: 3.OA.8, 3.NBT.1, 3.NBT.2, 3.NBT.3	i) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. ii) Tasks do not require computations beyond the Grade 3 expectations. iii) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. iv) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. v) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression).	MP.4, MP.6

Grade 3 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	3.Int.2	Solve two-step word problems using the four operations requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.OA.8, 3.NBT.2, and 3.NBT.3	i) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. ii) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. iii) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. iv) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression). Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.	MP.1, MP.4
B	3.Int.3	Solve real world and mathematical problems involving perimeters of polygons requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.MD.8, 3.NBT.2, and 3.NBT.3	i) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.	MP.1 (if the problem has a real world context), MP.4
B	3.Int.4	Use information presented in a scaled bar graph to solve a two-step "how many more" or "how many less" problem requiring a substantial addition, subtraction, or multiplication step, drawing on knowledge and skills articulated in 3.NBT. Content Scope: 3.MD.3, 3.NBT.2, and 3.NBT.3	i) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.	MP.1, MP.2, MP.4
A	3.Int.5	Add, subtract, or multiply to solve a one-step word problem involving masses or volumes that are given in the same units, where a substantial addition, subtraction, or multiplication step is required drawing on knowledge and skills articulated in 3.NBT, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. Content Scope: 3.MD.2, 3.NBT.2, and 3.NBT.3	i) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope. Substantial (def.) – Values should be towards the higher end of the numbers identified in the standards.	MP.1, MP.2, MP.4

Sub-Claim	Evidence Statement Key	Evidence Statement (ES) Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	3.C.1-1	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 3.OA.5	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*. ii) Products and related quotients are limited to the 10x10 multiplication table. iii) These tasks may not exceed the content limits of Grade 3. For example, 2 x 4 x 5, would be acceptable as students can use the associative property to rewrite the expression as 8 x 5 which falls within the content limits of Grade 3. The problem 7 x 4 x 5 would exceed the content limits of Grade 3 because any use of the associative property would result in a 2-digit multiplier.	MP.3, MP.6, MP.7
C	3.C.1-2	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 3.OA.9	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*.	MP.3, MP.6, MP.7, MP.8
C	3.C.1-3	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 3.MD.7	i) Tasks may include those with and without real-world contexts. ii) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*.	MP.3, MP.5, MP.6, MP.7
C	3.C.2	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 3.OA.6	i) Products and related quotients are limited to the 10 x 10 multiplication table.	MP.3, MP.6, MP.7
C	3.C.3-1	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 3.NF.3b, 3.NF.3d	i) Tasks may present realistic or quasi-realistic images of a contextual situation (e.g., a drawing of a partially filled graduated cylinder). However, tasks do not provide the sort of abstract drawings that help the student to represent the situation mathematically (e.g., a number line diagram or other visual fraction model). ii) Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8. iii) For fractions equal to a whole number, values are limited to 0 through 5.	MP.3 MP.5 MP.6
C	3.C.3-2	Base explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 3.MD.5, 3.MD.6, 3.MD.7	i) Tasks may include those with and without real-world contexts. ii) Tasks with a context may present realistic or quasi-realistic images of a contextual situation (e.g., a drawing of a meadow). However, tasks do not provide the sort of abstract drawings that help the student to represent the situation mathematically (e.g., a tiling of the meadow).	MP.3, MP.5, MP.6

Sub-Claim	Evidence Statement Key	Evidence Statement (ES) Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	3.C.4-1	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.5	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*. ii) Products and related quotients are limited to the 10x10 multiplication table.	MP.3, MP.6, MP.7
C	3.C.4-2	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.6	i) Products and related quotients are limited to the 10x10 multiplication table.	MP.3, MP.6
C	3.C.4-3	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.8	i) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. ii) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. iii) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression).	MP.3, MP.5, MP.6
C	3.C.4-4	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.NF.3b, 3.NF.3d	i) Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) For fractions equal to a whole number, values are limited to 0 through 5.	MP.3, MP.5, MP.6
C	3.C.4-5	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.MD.7	i) Tasks may include those with and without real-world contexts.	MP.3, MP.5, MP.6
C	3.C.4-6	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.9	-	MP.3, MP.6, MP.8

Sub-Claim	Evidence Statement Key	Evidence Statement (ES) Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	3.C.4-7	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 2.NBT	i) Tasks may have scaffolding[1], if necessary, in order to yield a degree of difficulty appropriate to Grade 3.	MP.3, MP.6
C	3.C.5-1	Present solutions to two-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to two-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 3.OA.8	i) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. ii) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. iii) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression).	MP.2, MP.3, MP.5, MP.6
C	3.C.5-2	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 3.MD.7b, 3.MD.7d	i) Tasks may include those with and without real-world contexts. ii) Multi-step problems have at least 3 steps.	MP.2, MP.3, MP.5, MP.6
C	3.C.6-1	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content scope: Knowledge and skills articulated in 3.NF.2	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. ii) Fractions equivalent to whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
C	3.C.6-2	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content scope: Knowledge and skills articulated in 3.MD.1	-	MP.3, MP.5, MP.6

Sub-Claim	Evidence Statement Key	Evidence Statement (ES) Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
D	3.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding[1]. ii) Multi-step problems must have at least 3 steps.	MP.4
D	3.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 3, requiring application of knowledge and skills articulated in 2.OA.A, 2.OA.B, 2.NBT, and/or 2.MD.B.	i) Tasks may have scaffolding[1], if necessary, in order to yield a degree of difficulty appropriate to Grade 3. ii) Multi-step problems must have at least 3 steps.	MP.4

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for being given a set of fractional measurements such as, "The fractions represent lengths of ribbon."

[3] A rectilinear figure is a polygon in which all angles measure 90 or 270 degrees.

Grade 4 Mathematics Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
05/10/18	1.2	Grammatical edits made to 4.OA.1-1, 4.OA.2, 4.NBT.4-2, 4.NBT.5-1, 4.NBT.5-2, 4.NBT.6-1, 4.NBT.6-2, 4.NF.2-1, 4.NF.3c, 4.NF.4a, 4.NF.Int.2, 4.Int.7, 4.Int.8, 4.C.5-6, 4.C.6-2, 4.C.6-3, 4.D.2	Jennifer Novak - Pearson

Grade 4 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 4 Evidence Statements
Listing by Type I, Type II, and Type III

The Evidence Statements for Grade 4 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to the Type II items.

Aqua – Evidence Statement is applicable to the Type III items.

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.OA.1-1	Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.	i) Tasks have "thin context"[1] or no context.	MP.2, MP.4
A	4.OA.1-2	Represent verbal statements of multiplicative comparisons as multiplication equations.	i) Tasks have "thin context" or no context.	MP.2, MP.4
A	4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	i) See the OA Progression document, especially p. 29 and Table 2, Common Multiplication and Division situations on page 89 of CCSSM. ii) Tasks sample equally the situations in the **third row** of Table 2 on page 89 of CCSSM.	MP.1, MP.4, MP.5
A	4.OA.3-1	Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations.	i) Assessing reasonableness of answer is not assessed here. ii) Tasks do not involve interpreting remainders.	MP.1, MP.2, MP.7
A	4.OA.3-2	Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, in which remainders must be interpreted.	i) Assessing reasonableness of answer is not assessed here. ii) Tasks involve interpreting remainders. iii) See p. 30 of the OA Progression document. iv) Multi-step problems must have at least 3 steps.	MP.1, MP.2, MP.4, MP.7
B	4.OA.4-1	Find all factor pairs for a whole number in the range 1–100.	-	MP.7
B	4.OA.4-2	Recognize that a whole number is a multiple of each of its factors.	-	MP.2
B	4.OA.4-3	Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.	-	MP.8
B	4.OA.4-4	Determine whether a given whole number in the range 1–100 is prime or composite.	-	MP.7, MP.8

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
B	4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	i) Tasks do not require students to determine a rule; the rule is given. ii) 75% of patterns should be number patterns.	MP.8
A	4.NBT.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	-	MP.7
A	4.NBT.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	i) Tasks assess conceptual understanding, e.g. by including a mixture of expanded form, number names, and base ten numerals within items.	MP.7
A	4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.	i) Grade 4 expectations are limited to whole numbers less than or equal to 1,000,000.	MP.7
A	4.NBT.4-1	Fluently add multi-digit whole numbers using the standard algorithm.	i) The given addends are such as to require an efficient/standard algorithm (e.g., 7263 + 4875). Addends in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 16,999 + 3,501). ii) Tasks do not have a context. iii) Grade 4 expectations in CCSSM are limited to whole numbers less than or equal to 1,000,000; for purposes of assessment, both of the given numbers should have 4 digits. iv) Tasks are not timed.	-
A	4.NBT.4-2	Fluently subtract multi-digit whole numbers using the standard algorithm.	i) The given subtrahend and minuend are such as to require an efficient/standard algorithm (e.g., 7263 – 4875 or 7406 – 4637). The subtrahend and minuend do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7300 – 6301). ii) Tasks do not have a context. iii) Grade 4 expectations in CCSSM are limited to whole numbers less than or equal to 1,000,000; for purposes of assessment, both of the given numbers should have 4 digits. iv) Tasks are not timed.	-

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.NBT.5-1	Multiply a whole number of up to four digits by a one-digit whole number using strategies based on place value and the properties of operations.	i) Tasks do not have a context. ii) For the illustrate/explain aspect of 4.NBT.5, see 4.C.1-1.	MP.7
A	4.NBT.5-2	Multiply two two-digit numbers, using strategies based on place value and the properties of operations.	i) Tasks do not have a context. ii) For the illustrate/explain aspect of 4.NBT.5, see 4.C.1.1.	MP.7
A	4.NBT.6-1	Find whole-number quotients and remainders with three-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	i) Tasks do not have a context. ii) Tasks may include remainders of 0 in no more than 20% of the tasks. iii) For the illustrate/explain aspect of 4.NBT.6, see 4.C.1-2 and 4.C.2.	MP.7, MP.8
A	4.NBT.6-2	Find whole-number quotients and remainders with four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	i) Tasks do not have a context. ii) Tasks may include remainders of 0 in no more than 20% of the tasks. iii) For the illustrate/explain aspect of 4.NBT.6, see 4.C.1-2 and 4.C.2.	MP.7, MP.8
A	4.NBT.Int.1	Perform computations by applying conceptual understanding of place value, rather than by applying multi-digit algorithms.	i) Tasks do not have a context.	MP.1, MP.7
A	4.NF.1-2	Use the principle a/b = (nxa)/(nxb) to recognize and generate equivalent fractions.	i) The explanation aspect of 4.NF.1 is not assessed here. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.7
A	4.NF.2-1	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or by comparing to a benchmark fraction such as 1/2. Record the results of comparisons with symbols >, =, or <.	i) Only the answer is required. ii) Tasks require the student to choose the comparison strategy autonomously. iii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iv) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.6, MP.7
A	4.NF.A.Int.1	Apply conceptual understanding of fraction equivalence and ordering to solve simple word problems requiring fraction comparison. Content Scope: 4.NF.A	i) Tasks have "thin context." ii) Tasks do not require adding, subtracting, multiplying, or dividing fractions. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iv) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. v) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.1, MP.4, MP.5

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.NF.3a	Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.2, MP.7, MP.8
A	4.NF.3b-1	Understand a fraction a/b with a > 1 as a sum of fractions 1/b. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. *Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*	i) Only the answer is required. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.7, MP.8
A	4.NF.3c	Understand a fraction a/b with a > 1 as a sum of fractions 1/b. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition **and** subtraction.	i) Tasks do not have a context. ii) Denominators are limited to Grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower.	MP.7
A	4.NF.3d	Understand a fraction a/b with a>1 as a sum of fractions 1/b. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ii) Addition and subtraction situations are limited to the dark- or medium-shaded types in Table 2, p. 9 of the OA Progression document; these situations are sampled equally. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.4, MP.5
A	4.NF.4a	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).*	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.5, MP.7
A	4.NF.4b-1	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b. Understand a multiple of a/b as a multiple of 1/b. *For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5).*	i) Tasks do not have a context. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). iv) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.5, MP.7

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.NF.4b-2	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. b. Use the understanding that a multiple of a/b is a multiple of 1/b to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 x (2/5) as 6/5. (In general, n x (a/b) = (nxa)/b.)*	i) Tasks do not have a context. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Tasks involve expressing a/b as a multiple of a/b as a fraction. iv) Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). v) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.5, MP.7
A	4.NF.4c	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ii) Situations are limited to those in which the product is unknown (situations do not include unknown factors). iii) Situations involve a whole number of fractional quantities—not a fraction of a whole-number quantity. iv) Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5). v) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.1, MP.4, MP.5
A	4.NF.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*	i) Tasks do not have a context.	MP.7
A	4.NF.6	Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	i) Measuring to the nearest mm or cm is equivalent to measuring on the number line.	MP.7
A	4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	i) Tasks have "thin context" or no context. ii) Justifying conclusions is not assessed here. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.5, MP.7

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.NF.Int.1	Solve one-step word problems requiring integration of knowledge and skills articulated in 4.NF. Content Scope: 4.NF	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.1, MP.4
A	4.NF.Int.2	Solve one-step addition word problems. Content Scope: 4.NF.5, 4.NF.6	i) Tasks are one of two kinds: Add To with result unknown, or Put Together with result unknown. ii) See Table 2, p. 9 of the OA Progression document; these situations are sampled equally.	MP.1
B	4.MD.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two- column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*	-	MP.5, MP.8
B	4.MD.2-1	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, in problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	i) Situations involve whole number measurements and require expressing measurements given in a larger unit in terms of a smaller unit. ii) Tasks may present number line diagrams featuring a measurement scale. iii) Tasks may include measuring distances to the nearest cm or mm. iv) Units of mass are limited to grams and kilograms.	MP.4, MP.5
B	4.MD.2-2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, in problems involving simple fractions. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	i) Situations involve two measurements given in the same units, one a whole-number measurement and the other a non-whole-number measurement (given as a fraction). ii) Tasks may present number line diagrams featuring a measurement scale. iii) Tasks may include measuring distances to the nearest cm or mm. iv) Units of mass are limited to grams and kilograms. v) Tasks will not include division of fractions.	MP.4, MP.5

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
B	4.MD.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring* and *the length, by viewing the area formula as a multiplication equation with an unknown factor.*	-	MP.2, MP.5
B	4.MD.4-1	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).	i) Tasks may include mixed numbers with stated denominators. ii) Fractions equivalent to whole numbers are limited to 0 through 5.	MP.5
B	4.MD.4-2	Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	-	MP.4, MP.5
B	4.MD.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement. a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. b. An angle that turns through *n* one-degree angles is said to have an angle measure of n degrees.	-	MP.2
B	4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	-	MP.2, MP.5
B	4.MD.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	-	MP.1, MP.7

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
B	4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	-	MP.5
B	4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	i) A trapezoid is defined as "A quadrilateral with at least one pair of parallel sides." ii) Tasks may include terminology: *equilateral*, *isosceles*, *scalene*, *acute*, *right*, and *obtuse*.	MP.7
B	4.G.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	-	-
A	4.Int.2	Solve one-step word problems involving multiplying two two-digit numbers.	i) The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 63 x 44). ii) Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
A	4.Int.3	Solve one-step word problems involving multiplying a four-digit number by a one-digit number.	i) The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 2392 x 8). ii) Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
A	4.Int.4	Solve one-step word problems involving dividing a four-digit number by a one-digit number.	i) The given numbers are such as to require a general strategy based on place value and the properties of operations (e.g., 2328 ÷ 8). ii) Quotients are whole numbers (i.e., there are no remainders). iii) Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
A	4.Int.5	Solve multi-step word problems posed with whole numbers and involving computations best performed by applying conceptual understanding of place value, perhaps involving rounding. Content Scope: 4.OA.3, 4.NBT	i) Multi-step problems must have at least 3 steps. ii) Tasks must be aligned to the first standard and 1 or more of the subsequent standards listed in the content scope.	MP.1, MP.2, MP.7

Grade 4 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	4.Int.6	Solve real-world and mathematical problems about perimeter involving grade-level addition and subtraction of fractions, such as finding an unknown side of a rectangle. Content Scope: 4.NF.3, 4.MD.3	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ii) Tasks must be aligned to both standards listed in the content scope.	MP.1, MP.2, MP.5
A	4.Int.7	Solve one-step word problems involving adding or subtracting two four-digit numbers.	i) The given numbers are such as to require an efficient/standard algorithm (e.g., 7263 + 4875, 7263 – 4875, 7406 – 4637). The given numbers do not suggest any obvious ad hoc or mental strategy (as would be present, for example, in a case such as 6999 + 3501 or 7300 – 6301). ii) Word problems shall include a variety of grade-level appropriate applications and contexts.	-
A	4.Int.8	Solve addition and subtraction word problems involving three four-digit addends, or two four-digit addends and a four-digit subtrahend.	i) The given numbers are such as to require an efficient/standard algorithm (e.g., 7263 + 4875 + 6901). The given numbers do not suggest any obvious ad hoc or mental strategy (as would be present, for example, in a case such as 6999 + 3501 - 5000).	-

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	4.C.1-1	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 4.NBT.5	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*. ii) Tasks do not have a context. iii) Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2).	MP.3, MP.6, MP.7
C	4.C.1-2	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 4.NBT.6	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*. ii) Tasks do not have a context. iii) Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2).	MP.3, MP.6, MP.7, MP.8
C	4.C.2	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 4.NBT.6	i) Tasks do not have a context.	MP.3, MP.6, MP.7
C	4.C.3	Reason about the place value system itself. Content Scope: Knowledge and skills articulated in 4.NBT.A	i) Tasks have "thin context"[1] or no context.	MP.3, MP.6, MP.7
C	4.C.4-1	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.A	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.3, MP.5, MP.6
C	4.C.4-2	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.3a, 4.NF.3b	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	4.C.4-3	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.4a	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
C	4.C.4-4	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.4b	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.2, MP.3, MP.5, MP.6
C	4.C.4-5	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 4.NF.C	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.2, MP.3, MP.5, MP.6
C	4.C.5-1	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.OA.3	i) Reasoning in these tasks centers on interpretation of remainders.	MP.1, MP.2, MP.3, MP.6, MP.7
C	4.C.5-2	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.1	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.6, MP.7
C	4.C.5-3	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.2	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. iii) Tasks may include fractions that equal whole numbers. Whole numbers are limited to 0 through 5.	MP.3, MP.6, MP.7

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	4.C.5-4	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.B	i) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100. ii) Results may equal fractions greater than 1 (including fractions equal to whole numbers limited to 0 through 5).	MP.3, MP.5, MP.6
C	4.C.5-5	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NF.C	i) Tasks have "thin context" or no context. ii) Tasks are limited to denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.	MP.3, MP.5, MP.6
C	4.C.5-6	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 3.OA.B, 3.NF, 3.MD.C	i) Tasks may have scaffolding[2], if necessary, in order to yield a degree of difficulty appropriate to Grade 4.	MP.3, MP.6
C	4.C.6-1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.OA.3	i) Tasks may involve interpreting remainders. ii) Multi-step problems must have at least 3 steps.	MP.1,MP.2, MP.3, MP.5, MP.6, MP.7
C	4.C.6-2	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.NF.3c	i) Tasks have "thin context" or no context. ii) Denominators are limited to Grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower. iii) Multi-step problems must have at least 3 steps.	MP.2, MP.3, MP.6, MP.7

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	4.C.6-3	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 4.NF.3d,4.NF.4c	i) Denominators are limited to Grade 3 possibilities (2, 3, 4, 6, 8) so as to keep computational difficulty lower. ii) Multi-step problems must have at least 3 steps.	MP.2, MP.3, MP.5, MP.6
C	4.C.7-1	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.1	i) Fractions equivalent to whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
C	4.C.7-2	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.2	i) Fractions equivalent to whole numbers are limited to 0 through 5.	MP.3, MP.5, MP.6
C	4.C.7-3	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.3a	-	MP.3, MP.5, MP.6
C	4.C.7-4	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response) Content Scope: Knowledge and skills articulated in 4.NF.4a, 4.NF.4b	-	MP.3, MP.5, MP.6

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
D	4.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 4, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding. ii) Multi-step problems must have at least 3 steps.	MP.4
D	4.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4, requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8, 3.NBT, and/or 3.MD.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 4. ii) Multi-step problems must have at least 3 steps. iii) Tasks do not require a student to write a single equation with a letter standing for the unknown quantity in a two-step problem, and then solve that equation. iv) Tasks may require students to write an equation as part of their work to find a solution, but students are not required to use a letter for the unknown. v) Addition, subtraction, multiplication and division situations in these problems may involve any of the basic situation types with unknowns in various positions (see CCSSM, Table 1, Common addition and subtraction situations, p. 88; CCSSM, Table 2, Common multiplication and division situations, p. 89; and the OA Progression document.	MP.4

[1] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for being given a set of fractional measurements such as, "The fractions represent lengths of ribbon."

[2] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

Grade 5 Mathematics Change History Log

Date	Version	Change Description	Author
11/1/17	1.2	5.Int.1 and 5.Int.2 were changed to sub-claim A	Linda Kaniecki – New Meridian
05/11/18	1.3	Minor edits to 5.NBT.2-2, 5.NBT.6, 5.NBT.7-1, 5.NBT.7-3, 5.NF.2-1, 5.nF.2-2, 5.NF.6-1, 5.NF.7c	Jennifer Novak - Pearson

Grade 5 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster – 3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 5 Evidence Statements
Listing by Type I, Type II, and Type III

The Evidence Statements for Grade 5 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to the Type I items.

Lavender – Evidence Statement is applicable to the Type II items.

Aqua – Evidence Statement is applicable to the Type III items.

Grade 5 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
B	5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	i) Expressions have depth no greater than two, e.g., 3×[5 + (8 ÷ 2)] is acceptable but 3×[5 + (8 ÷ {4—2})] is not.	MP.7
B	5.OA.2-1	Write simple expressions that record calculations with numbers. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7).*	-	MP.7
B	5.OA.2-2	Interpret numerical expressions without evaluating them. *For example, recognize that 3 x (18932 + 921) is three times as large as 18932 + 921 without having to calculate the indicated sum or product.*	-	MP.7
B	5.OA.3	Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*	-	MP.3, MP.8
A	5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	i) Tasks have "thin context" [2] or no context. ii) Tasks involve the decimal point in a substantial way (e.g., by involving a comparison of a tenths digit to a thousandths digit or a tenths digit to a tens digit).	MP.2, MP.7
A	5.NBT.2-2	Use whole-number exponents to denote powers of 10.	i) For the explain aspect of 5.NBT.2, see 5.C.3.	MP.7
A	5.NBT.3a	Read, write and compare decimals to the thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000).	i) Tasks have "thin context" or no context. ii) Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.	MP.7

Grade 5 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NBT.3b	Read, write and compare decimals to the thousandths. b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	i) Tasks have "thin context" or no context. ii) Tasks assess conceptual understanding, e.g., by including a mixture (both within and between items) of expanded form, number names, and base ten numerals.	MP.7
A	5.NBT.4	Use place value understanding to round decimals to any place.	i) Tasks have "thin context" or no context.	MP.2
A	5.NBT.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	i) Tasks assess accuracy. The given factors are such as to require an efficient/standard algorithm (e.g., 26×4871). ii) Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7250×40). iii) Tasks do not have a context. iv) For purposes of assessment, the possibilities are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, or 2-digit x 4-digit v) Tasks are not timed.	-
A	5.NBT.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	i) For the illustrate/explain aspect of 5.NBT.6, see 5.C.1-1, 5.C.2-1, and 5.C.4-3. ii) Tasks involve 3- or 4-digit dividends and one- or two-digit divisors.	MP.1, MP.5
A	5.NBT.7-1	Add two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	i) Tasks do not have a context. ii) Only the sum is required. For the explain aspect of 5.NBT.7-1, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the addends as numbers, and the answer sought is a number, not a picture. iv) Each addend is greater than or equal to 0.01 and less than or equal to 99.99. v) 20% of cases involve a whole number—either the sum is a whole number, or else one of the addends is a whole number presented without a decimal point. (The addends cannot both be whole numbers.)	MP.5

Grade 5 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NBT.7-2	Subtract two decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	i) Tasks do not have a context. ii) Only the difference is required. For the explain aspect of 5.NBT.7-2, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the subtrahend and minuend as numbers, and the answer sought is a number, not a picture. iv) The subtrahend and minuend are each greater than or equal to 0.01 and less than or equal to 99.99. Positive differences only. (Every included subtraction problem is an unknown-addend problem included in 5.NBT.7-1.) v) 20% of cases involve a whole number—either the difference is a whole number, or the subtrahend is a whole number presented without a decimal point, or the minuend is a whole number presented without a decimal point. (The subtrahend and minuend cannot both be whole numbers.)	MP.5, MP. 7
A	5.NBT.7-3	Multiply tenths with tenths or tenths with hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	i) Tasks do not have a context. ii) Only the product is required. For the explain aspect of 5.NBT.7-3, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the factors as numbers, and the answer sought is a number, not a picture. iv) Each factor is greater than or equal to 0.01 and less than or equal to 99.99.The product must not have any non-zero digits beyond the thousandths place. (For example, 1.67 x 0.34 = 0.5678 is excluded because the product has an 8 beyond the thousandths place; cf. 5.NBT.3, and see p. 17 of the Number and Operations in Base Ten Progression document.) v) Problems are 2-digit x 2-digit or 1-digit x 3- or 4-digit. (For example, 7.8 x 5.3 or 0.3 x 18.24.) vi) 20% of cases involve a whole number—either the product is a whole number, or else one factor is a whole number presented without a decimal point. (The factors cannot both be whole numbers.)	MP.5, MP.7

Grade 5 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NBT.7-4	Divide in problems involving tenths and/or hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	i) Tasks do not have a context. ii) Only the quotient is required. For the explain aspect of 5.NBT.7-4, see 5.C.1-2, 5.C.2-2, and 5.C.4-4. iii) Prompts may include visual models, but prompts must also present the dividend and divisor as numbers, and the answer sought is a number, not a picture. iv) Divisors are of the form XY, X0, X, X.Y, 0.XY, 0.X, or 0.0X (cf. 5.NBT.6), where X and Y represent non-zero digits. Dividends are of the form XY, X0, X, XYZ.W, XY0.Z, X00.Y, XY.Z, X0.Y, X.YZ, X.Y, X.0Y, 0.XY, or 0.0X, where X, Y, Z, and W represent non-zero digits. v) Quotients are either whole numbers or else decimals terminating at the tenths or hundredths place. (Every included division problem is an unknown-factor problem included in 5.NBT.7-3.) vi) 20% of cases involve a whole number—either the quotient is a whole number, or the dividend is a whole number presented without a decimal point, or the divisor is a whole number presented without a decimal point. (If the quotient is a whole number, then neither the divisor nor the dividend can be a whole number.)	MP.5, MP.7
A	5.NBT.A.Int.1	Demonstrate understanding of the place value system by combining or synthesizing knowledge and skills articulated in 5.NBT.A.	-	MP.1, MP.7
A	5.NBT.Int.1	Perform exact or approximate multiplications and/or divisions that are best done mentally by applying concepts of place value, rather than by applying multi-digit algorithms or written strategies.	i) Tasks do not have a context.	MP.1, MP.7.
A	5.NF.1-1	Add two fractions with unlike denominators, or subtract two fractions with unlike denominators, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,* 2/3 + 5/4 = 8/12 + 15/12 = 23/12. *(In general, a/b + c/d = (ad+bc)/bd.)*	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. iv) Tasks may involve fractions greater than 1 (including fractions equal to whole numbers). v) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NF.1-2	Add three fractions with no two denominators equal by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum of fractions with like denominators. *For example, 1/2 + 1/3 + 1/4 = (3/6 + 2/6) + 1/4 = 5/6 + 1/4 = 10/12 + 3/12 = 13/12 or alternatively 1/2 + 1/3 + 1/4 = 6/12 + 4/12 + 3/12 = 13/12.*	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Tasks do not include mixed numbers. iv) Tasks may involve fractions greater than 1. v) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
A	5.NF.1-3	Compute the result of adding two fractions and subtracting a third, where no two denominators are equal, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 1/2 + 1/3 – 1/4 or 7/8 – 1/3 + 1/2.*	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Subtraction may be either the first or second operation. The fraction being subtracted must be less than both the other two. iv) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
A	5.NF.1-4	Add two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum with like denominators. *For example, 3 1/2 + 2 2/3 = (3 + 2) + (1/2 + 2/3) = 5 + (3/6 + 4/6) = 5 + 7/6 = 5 + 1 + 1/6 = 6 1/6.*	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7
A	5.NF.1-5	Subtract two mixed numbers with unlike denominators, expressing the result as a mixed number, by replacing given fractions with equivalent fractions in such a way as to produce an equivalent difference with like denominators.	i) Tasks have no context. ii) Tasks ask for the answer or ask for an intermediate step that shows evidence of using equivalent fractions as a strategy. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.6, MP.7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NF.2-1	Solve word problems involving addition and subtraction of fractions referring to the same whole, in cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem.	i) The situation types are those shown in Table 2, Common multiplication and division situations, p. 9 of the OA Progression document, sampled equally. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Tasks may involve fractions greater than one, including mixed numbers.	MP.1, MP.4, MP.5
A	5.NF.2-2	Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers to word problems involving addition and subtraction of fractions referring to the same whole in cases of unlike denominators. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*	i) The situation types are those shown in Table 2, Common multiplication and division situations, p. 9 of the OA Progression document, sampled equally. ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. iii) Tasks may involve fractions greater than one, including mixed numbers.	MP.2, MP.5, MP.7
A	5.NF.A.Int.1	Solve word problems involving knowledge and skills articulated in 5.NF.A.	i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.4, MP.5
A	5.NF.3-1	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$).	i) Tasks do not have a context.	MP.2
A	5.NF.3-2	Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	i) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy. ii) Note that one of the italicized examples in standard 5.NF.3 is a two-prompt problem.	MP.1, MP.4, MP.5

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NF.4a-1	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. For a whole number q, interpret the product *(a/b) × q* as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations *a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*	i) Tasks require finding a fractional part of a whole number quantity. ii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7. iii) Tasks have "thin context" or no context.	MP.7
A	5.NF.4a-2	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. For a fraction q, interpret the product *(a/b) × q* as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations *a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*	i) Tasks have "thin context" or no context. ii) Tasks require finding a product of two fractions (neither of the factors equal to a whole number). iii) The result is equal to a whole number in 20% of tasks; these are practice-forward for MP.7.	MP.7
A	5.NF.4b-1	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. b. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	i) 50% of the tasks present students with the rectangle dimensions and ask students to find the area; 50% of the tasks give the factions and the product and ask students to show a rectangle to model the problem.	MP.2, MP.5
A	5.NF.5a	Interpret multiplication as scaling (resizing), by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	i) Insofar as possible, tasks are designed to be completed without performing the indicated multiplication. ii) Products involve at least one factor that is a fraction or mixed number.	MP.7, MP.8

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NF.6-1	Solve real world problems involving multiplication of fractions, e.g., by using visual fraction models or equations to represent the problem.	i) Tasks do not involve mixed numbers. ii) Situations include area and comparison/times as much, with product unknown. (See Table 2, Common multiplication and division situations, p. 89 of CCSSM.) iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.4, MP.5
A	5.NF.6-2	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	i) Tasks present one or both factors in the form of a mixed number. ii) Situations include area and comparison/times as much, with product unknown. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.1, MP.2, MP.5
A	5.NF.7a	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. *a.* Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*	-	MP.5, MP.7
A	5.NF.7b	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*	-	MP.5, MP.7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	i) Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.NF.7c	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*	i) Tasks involve equal group (partition) situations with part size unknown and number of parts unknown. (See Table 2, Common multiplication and division situations, CCSSM p. 89.) ii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.2, MP.5, MP.7
B	5.MD.1-1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m).	-	MP.5, MP.6
B	5.MD.1-2	Solve multi-step, real world problems requiring conversion among different-sized standard measurement units within a given measurement system.	i) Multi-step problems must have at least 3 steps.	MP.1, MP.6
B	5.MD.2-2	Use operations on fractions for this grade (knowledge and skills articulated in 5.NF) to solve problems involving information in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	i) Tasks requiring students to produce a line plot should only involve fractions 1/2, 1/4, or 1/8.	MP.5
A	5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	i) Measures may include those in whole cubic cm or cubic in.	MP.7
A	5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	i) Tasks assess conceptual understanding of volume (see 5.MD.3) as applied to a specific situation—not applying a volume formula.	MP.7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	i) Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.MD.5b	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	i) Tasks are with and without contexts. ii) 50% of tasks involve use of $V = l \times w \times h$ and 50% of tasks involve use of $V = B \times h$. iii) Tasks may require students to measure to find edge lengths to the nearest cm, mm or in.	MP5, MP.7
A	5.MD.5c	Relate the operations of multiplication and addition and solve real world and mathematical problems involving volume. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	i) Tasks require students to solve a contextual problem by applying the indicated concepts and skills.	MP.2, MP.5
B	5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	i) Tasks assess student understanding of the coordinate plane as a representation scheme, with essential features as articulated in standard 5.G.1. ii) It is appropriate for tasks involving only plotting of points to be aligned to this evidence statement. iii) Coordinates must be whole numbers only.	MP.2, MP.5
B	5.G.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	-	MP.1, MP.5
B	5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*	i) A trapezoid is defined as "A quadrilateral with at least one pair of parallel sides."	MP.5, MP.7
B	5.G.4	Classify two-dimensional figures in a hierarchy based on properties.	i) A trapezoid is defined as "A quadrilateral with at least one pair of parallel sides."	MP.5, MP.7

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Sub-Claim	Evidence Statement Key	Evidence Statement Text	iv) Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
A	5.Int.1	Solve one-step word problems involving multiplying multi-digit whole numbers.	i) The given factors are such as to require an efficient/standard algorithm (e.g., 726×4871). Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as 7250×400). ii) For purposes of assessment, the possibilities for multiplication are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, or 3-digit x 3-digit. iii) Word problems shall include a variety of grade-level appropriate applications and contexts.	MP.1, MP.7
A	5.Int.2	Solve word problems involving multiplication of three two-digit numbers.	i) The given factors are such as to require an efficient/standard algorithm (e.g., $76 \times 48 \times 39$). Factors in the task do not suggest any obvious ad hoc or mental strategy (as would be present for example in a case such as $50 \times 20 \times 15$). ii) Word problems shall include a variety of grade-level appropriate applications and contexts.	MP 1, MP 7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	5.C.1-1	Base explanations/reasoning on place value and/or understanding of operations. Content Scope: Knowledge and skills articulated in 5.NBT.6	i) Tasks do not have a context.	MP.3, MP.5, MP.6, MP.7
C	5.C.1-2	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 5.NBT.7	i) Tasks do not have a context. ii) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*. iii) Unneeded parentheses should not be used. For example, use 4 + 3 x 2 rather than 4 + (3 x 2).	MP.3, MP.6, MP.7, MP.8
C	5.C.1-3	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 5.MD.5a	i) Students need not use technical terms such as *commutative*, *associative*, *distributive*, or *property*.	MP.2, MP.3, MP.6, MP.7
C	5.C.2-1	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NBT.6	-	MP.3, MP.5, MP.6, MP.7
C	5.C.2-2	Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NBT.7	-	MP.3, MP.6, MP.7
C	5.C.2-3	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NF.3, 5.NF.4a	-	MP.2, MP.3, MP.6, MP.7
C	5.C.2-4	Base explanations/reasoning on the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 5.NF.7	-	MP.3, MP.5, MP.6, MP.7

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	5.C.3	Reason about the place value system itself. Content Scope: Knowledge and skills articulated in 5.NBT.A	i) Tasks do not involve reasoning about place value in service of some other goal (e.g., to multiply multi-digit numbers). Rather, tasks involve reasoning directly about the place value system, in ways consistent with the indicated content scope.	MP.3, MP.6, MP.7
C	5.C.4-1	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NF.2	-	MP.3, MP.5, MP.6
C	5.C.4-2	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NF.4b	-	MP.2, MP.3, MP.5, MP.6
C	5.C.4-3	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NBT.6	-	MP.3, MP.5, MP.6
C	5.C.4-4	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 5.NBT.7	-	MP.3, MP.5, MP.6
C	5.C.5-1	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 5.NF.2	-	MP.2, MP.3, MP.5, MP.6, MP.7
C	5.C.5-2	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 5.NF.4a	-	MP.3, MP 6, MP.7

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Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	5.C.5-3	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 5.NF.7a, 5.NF.7b	-	MP.3, MP.5, MP.6, MP.7
C	5.C.6	Base explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 5.MD.C	-	MP.3, MP.5, MP.6
C	5.C.7-1	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NF.5b	-	MP.3, MP.6, MP.7, MP.8
C	5.C.7-2	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NF.2	-	MP.3, MP.6, MP.7
C	5.C.7-3	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NF.1	-	MP.3, MP.6

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Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
C	5.C.7-4	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 4.NBT, 4.NF.A, 4.NF.B	i) Tasks may have scaffolding [1], if necessary, in order to yield a degree of difficulty appropriate to Grade 5.	MP.3, MP.6
C	5.C.8-2	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 5.MD.5c	i) Multi-step problems must have at least 3 steps.	MP.3, MP.5, MP.6

Grade 5 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices
D	5.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding. ii) Multi-step problems must have at least 3 steps. iii) For purposes of assessment, the possibilities for multiplication are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, or 3-digit x 3-digit.	MP.4
D	5.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 5, requiring application of knowledge and skills articulated in 4.OA, 4.NBT, 4.NF, 4.MD	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 5. ii) Multi-step problems must have at least 3 steps.	MP.4

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for being given a set of fractional measurements such as, "The fractions represent lengths of ribbon."

Grade 6 Mathematics Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
5/7/18	1.2	Minor edits made to 6.RP.2, 6RP.3c-1, 6.NS.1-2, 6.C.1.1.	Jennifer Novak - Pearson

Grade 6 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 6 Evidence Statements
Listing by Type 1, Type II, and Type III

The Evidence Statements for Grade 6 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to the Type III items.

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2	No
A	6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*	i) Expectations for unit rates in this grade are limited to non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2	No
A	6.RP.3a	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers	MP.2 MP.4 MP.5 MP.7 MP.8	Yes
A	6.RP.3b	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*	i) Expectations for unit rates in this grade are limited to non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.8	Yes
A	6.RP.3c-1	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity).	i) Tasks may or may not contain context. ii) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.7 MP.8	Yes
A	6.RP.3c-2	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. Solve problems involving finding the whole, given a part and the percent.	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.7 MP.8	Yes

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.RP.3d	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	i) Tasks may or may not contain context. ii) Tasks require students to multiply and/or divide dimensioned quantities. iii) Half of the tasks require students to correctly express the units of the result. iv) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.5 MP.6 MP.7 MP.8	Yes
A	6.NS.1-2	Solve word problems involving division of fractions by fractions. *For example, How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*	i) Only the answer is required. For the explanations and representations aspect of 6.NS.1-2, see 6.C.2 and 6.C.3. ii) Note that the italicized examples correspond to three meanings/uses of division: (1) equal sharing; (2) measurement; (3) unknown factor. These meanings/uses of division should be sampled equally. iii) Tasks may involve fractions and mixed numbers but not decimals.	MP.4	No
B	6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.	i) The given dividend and divisor require an efficient/standard algorithm (e.g., 40584 ÷ 76). ii) Tasks do not have a context. iii) Only the answer is required. iv) Tasks have a maximum of five-digit dividends and a maximum of two-digit divisors. v) Tasks may or may not have a remainder. Students understand that remainders can be written as fractions or decimals.	-	No
B	6.NS.3-1	Fluently add multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the sum is required iii) The given addends require an efficient/standard algorithm (e.g., 72.63 + 4.875). iv) Each addend is greater than or equal to 0.001 and less than or equal to 99.999.	-	No
B	6.NS.3-2	Fluently subtract multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the difference is required. iii) The given subtrahend and minuend require an efficient/standard algorithm (e.g., 177.3 – 72.635). iv) The subtrahend and minuend are each greater than or equal to 0.001 and less than or equal to 99.999. Positive differences only.	-	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	6.NS.3-3	Fluently multiply multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the product is required. iii) The given factors require an efficient/standard algorithm (e.g., 72.3 × 4.8). iv) For purposes of assessment, the possibilities are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, or 2-digit x 5-digit.	-	No
B	6.NS.3-4	Fluently divide multi-digit decimals using the standard algorithm.	i) Tasks do not have a context. ii) Only the quotient is required. iii) The given dividend and divisor require an efficient/standard algorithm (e.g., 177.3 ÷ 0.36). iv) Tasks are either 4-digit ÷ 2-digit or 3-digit ÷ 3-digit. (For example, 14.28 ÷ 0.68 or 2.39 ÷ 0.684). v) Every quotient is a whole number or a decimal terminating at the tenths, hundredths, or thousandths place.	-	No
B	6.NS.4-1	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.	i) Tasks do not have a context.	-	No
B	6.NS.4-2	Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4(9 + 2).*	i) Tasks do not have a context. ii) Tasks require writing or finding the equivalent expression with the greatest common factor.	MP.7	No
A	6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	i) Tasks do not require students to perform any computations. ii) Students may be asked to recognize the meaning of 0 in the situation, but will not be asked to explain.	MP.2 MP.5	No
A	6.NS.6a	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.	i) Tasks have "thin context"[2] or no context.	MP.5 MP.8	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.NS.6b-1	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane.	i) Tasks have "thin context" or no context. ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV). iii) Coordinates are not limited to integers.	MP.5	No
A	6.NS.6b-2	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. b. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes	i) Tasks have "thin context" or no context. ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV). iii) Coordinates are not limited to integers.	MP.5 MP.8	No
A	6.NS.6c-1	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram	i) Tasks have "thin context" or no context. ii) Coordinates are not limited to integers.	MP.5	No
A	6.NS.6c-2	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position pairs of integers and other rational numbers on a coordinate plane.	i) Tasks have "thin context" or no context. ii) Students need not recognize or use traditional notation for quadrants (such as I, II, III, IV). iii) Coordinates are not limited to integers.	MP.5	No
A	6.NS.7a	Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.*	i) Tasks do not have a context. ii) Tasks are not limited to integers.	MP.2 MP.5	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.NS.7b	Understand ordering and absolute value of rational numbers. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write –3 °C > –7 °C to express the fact that –3 °C is warmer than –7 °C.*	i) Tasks are not limited to integers. ii) For the explain aspect of 6.NS.7b, see 6.C.4.	MP.2 MP.3 MP.5	No
A	6.NS.7c-1	Understand ordering and absolute value of rational numbers. c. Understand the absolute value of a rational number as its distance from 0 on the number line.	i) Tasks do not have a context. ii) Tasks are not limited to integers.	MP.2 MP.5	No
A	6.NS.7c-2	Understand ordering and absolute value of rational numbers. c. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*	i) Tasks have a context. ii) Tasks are not limited to integers.	MP.2	No
A	6.NS.7d	Understand ordering and absolute value of rational numbers. d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*	i) Tasks may or may not contain context. ii) Tasks are not limited to integers. iii) Prompts do not present students with a number line diagram, but students may draw a number line diagram as a strategy.	MP.2 MP.5	No
A	6.NS.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	i) Tasks may or may not contain context. ii) Finding distances is limited to points with integer coordinates.	MP.1 MP.2 MP.5	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.EE.1-1	Write numerical expressions involving whole-number exponents.	i) Tasks involve expressing *b*-fold products $a \cdot a \cdot \ldots \cdot a$ in the form a^b, where *a* and *b* are non-zero whole numbers ii) Tasks do not require use of the laws of exponents	MP. 8	No
A	6.EE.1-2	Evaluate numerical expressions involving whole-number exponents.	i) Tasks may involve simple fractions raised to small whole-number powers, e.g. $(1/2)^3$, $(2/3)^2$. ii) Tasks may involve nonnegative decimals raised to whole-number powers. iii) Tasks do not have a context.	MP.8	Yes
A	6.EE.2a	Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y.*	i) Tasks do not have a context. ii) Numerical values in these expressions may include whole numbers, fractions, and decimals.	MP.8	Yes
A	6.EE.2b	Write, read, and evaluate expressions in which letters stand for numbers. b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*	i) Tasks do not have a context. ii) Numerical values in these expressions may include whole numbers, fractions, and decimals.	MP.7	Yes
A	6.EE.2c-1	Write, read, and evaluate expressions in which letters stand for numbers. c. Evaluate expressions at specific values of their variables. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).	i) Tasks do not have a context. ii) Numerical values in these expressions may include whole numbers, fractions, and decimals. iii) Task will not require operations on negative numbers.	MP.7	Yes
A	6.EE.2c-2	Write, read, and evaluate expressions in which letters stand for numbers. c. Evaluate expressions that arise from formulas used in real-world problems at specific values of their variables. *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*	i) Tasks are simple applications of formulas that are provided in the prompt. ii) Tasks do not require the student to manipulate the formula or isolate variables to solve an equation. iii) Tasks have "thin context" or no context. iv) Numerical values in these expressions may include whole numbers, fractions, and decimals. v) Task will not require operations on negative numbers.	MP.7	Yes

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*	-	MP.7	No
A	6.EE.5-1	Understand solving an equation as a process of answering a question: which values from a specified set, if any, make the equation true?	-	MP.5 MP.6	Yes
A	6.EE.5-2	Use substitution to determine whether a given number in a specified set makes an inequality true.	i) Most of the tasks involve values from an infinite set of nonnegative numbers (e.g., even numbers; whole numbers; fractions). Some tasks involve values from a finite set of nonnegative numbers (e.g., {2, 5, 7, 9}).	MP.5 MP.6	Yes
A	6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	i) Tasks may require students to write an expression to represent a real-world or mathematical problem. Tasks do not require students to find a solution. ii) Tasks may require students to interpret a variable as a specific unknown number, or, as a number that could represent any number in a specified set.	MP.2 MP.6 MP.7	No
A	6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.	i) Tasks are algebraic, not arithmetic. See *Progression* for Expressions and Equations, pp. 3, 4. ii) Half of the tasks involve whole-number values of p and q; and half of the tasks involve fraction or decimal values of p and q. iii) Fractions and decimals should not appear together in the same problem. iv) These tasks only involve equations with addition and multiplication. v) A valid equation and the correct answer are both required for full credit.	MP.1 MP.2 MP.6 MP.7	Yes
A	6.EE.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	i) Values of c are not limited to integers. ii) Tasks involve < and >, not ≤ and ≥.	MP.2 MP.6 MP.7	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*	i) Tasks that involve writing an equation should not go beyond the equation types described in 6.EE.7 (x+p =q and px = q where p, q, and x are all nonnegative rational numbers).	MP.2 MP.4 MP.6 MP.8	Yes
B	6.G.1	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.2 MP.5 MP.7	Yes
B	6.G.2-1	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism.	i) Tasks do not have a context. ii) Tasks require focusing on the connection between packing the solid figure and computing the volume.	MP.2	No
B	6.G.2-2	Apply the formulas $V = l\,w\,h$ and $V = B\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	i) Tasks focus on using the formulas in problem-solving contexts.	MP.1 MP.4 MP.5	Yes
B	6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.5	Yes
B	6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	-	MP.1 MP.4 MP.5	Yes

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	6.SP.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*	i) Tasks do not assess mode and range.	-	No
B	6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape.	i) Tasks might present several distributions graphically and ask which two have nearly the same center, nearly the same spread, or nearly the same overall shape. ii) Tasks do not assess mode and range.	MP.4	No
B	6.SP.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	i) Tasks might ask students to rate statements True/False/Not Enough Information, such as, "The average height of trees in Watson Park is 65 feet. Are there any trees in Watson Park taller than 65 feet?" ii) Tasks do not assess mode and range.	MP.4	No
B	6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	i) Tasks ask students to identify which display corresponds to a given set of data. ii) Tasks do not assess mode and range.	MP.2 MP.5	No
B	6.SP.5	Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	i) Tasks have a text-based and a graphics-based overview of a numerical data set. ii) Tasks require students to identify/select from unambiguously true or false statements such as, "About half of the values are greater than the average"; "If this point were deleted from the data set, the median would not change"; etc. iii) Tasks do not assess mode and range.	MP.4	Yes
B	6.Int.1	Solve two-step word problems requiring operations on multi-digit whole numbers or decimals.	i) Operations are no more complex than those specified for 6.NS.2, 6.NS.3-1, 6.NS.3-2, 6.NS.3-3, and 6.NS.3-4 with the exception of 3-digit x 3-digit. ii) For purposes of assessment, the possibilities for multiplication are 1-digit x 2-digit, 1-digit x 3-digit, 2-digit x 3-digit, 2-digit x 4-digit, 2-digit x 5-digit, or 3-digit x 3-digit (For example, 7.68 x 15.3 or 0.35 x 18.241).	MP.1	No

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	6.C.1.1	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 6.EE.3, 6.EE.4	i) Tasks should not require students to identify or name properties.	MP.3 MP.6 MP.7	Yes
C	6.C.2	Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 6.NS.1	-	MP.2 MP.3 MP.4 MP.6	Yes
C	6.C.3	Base arithmetic explanations/reasoning on concrete referents such as diagrams (whether provided in the prompt or constructed by the student in her response), connecting the diagrams to a written (symbolic) method. Content Scope: Knowledge and skills articulated in 6.NS.1	-	MP.2 MP.3 MP.4 MP.5 MP.6	Yes
C	6.C.4	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.7	-	MP.3 MP.5 MP.6	Yes
C	6.C.5	Base explanations/reasoning on a coordinate plane diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 6.NS.6, 6.NS.8	-	MP.3 MP.4 MP.5 MP.6	Yes
C	6.C.6	Given an equation, present the solution steps as a logical argument that concludes with a solution. Content Scope: Knowledge and skills articulated in 6.EE.B	i) Tasks do not require students to write an equation or inequality.	MP.3 MP.6	Yes
C	6.C.7	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 6.EE.4	-	MP.3 MP.6	Yes
C	6.C.8.1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 6.RP.A	i) Expectations for ratios in this grade are limited to ratios of non-complex fractions. The initial numerator and denominator should be whole numbers.	MP.2 MP.3 MP.6	Yes

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	6.C.8.2	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 6.EE.9	i) Tasks that involve writing an equation should not go beyond the equation types described in 6.EE.7 ($x+p=q$ and $px=q$ where p, q, and x are all nonnegative rational numbers).	MP.2 MP.3 MP.6	Yes
C	6.C.9	Distinguish correct explanation/reasoning from that which is flawed, and – if there is a flaw in the argument – present corrected reasoning. (For example, some flawed 'student' reasoning is presented and the task is to correct and improve it.) Content Scope: Knowledge and skills articulated in 5.NBT, 5.MD.C	i) Tasks may have scaffolding[1], if necessary, in order to yield a degree of difficulty appropriate to Grade 6.	MP.3 MP.6	Yes

Grade 6 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
D	6.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	6.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to Grade 6, requiring application of knowledge and skills articulated in 5.NBT.B, 5.NF, 5.MD, and 5.G.A.	i) Tasks may have scaffolding, if necessary, in order yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	6.D.3	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 6.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for the use of scientific notation such as, "The number represents the distance between two planets."

Grade 7 Mathematics Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
5/7/18	1.2	Edits to 7.SP.7a, 7.SP.8a, and 7.SP.8c	Linda Kaniecki – New Meridian, Heather Brown - MOWG
5/9/18	1.3	Minor edits to 7.NS.1c-1, 7.NS.1d, 7.NS.2b-2, 7.SP.8a, and all 7.D evidence statements, minor edit to 7.RP.2d	Jennifer Novak - Pearson

Grade 7 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 7 Evidence Statements
Listing by Type 1, Type II, and Type III

The Evidence Statements for Grade 7 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items.

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*	i) Tasks have a real-world context. ii) Tasks do not assess unit conversions.	MP.2 MP.4 MP.6	Yes
A	7.RP.2a	Recognize and represent proportional relationships between quantities: a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	i) Tasks have "thin context"[2] or no context. ii) Tasks are not limited to ratios of whole numbers. iii) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.5	Yes
A	7.RP.2b	Recognize and represent proportional relationships between quantities: b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	i) Tasks may or may not have a context. ii) Tasks sample equally across the listed representations (graphs, equations, diagrams, and verbal descriptions). iii) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.5 MP.8	No
A	7.RP.2c	Recognize and represent proportional relationships between quantities: c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*	i) Tasks have a context. ii) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.8	No
A	7.RP.2d	Recognize and represent proportional relationships between quantities. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	i) Tasks require students to interpret a point (x, y) on the graph of a proportional relationship in terms of the situation. For the explain aspect of 7.RP.2d, see 7.C.6.1. ii) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.4	No

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	7.RP.3-1	Use proportional relationships to solve multistep ratio problems.	i) Tasks will include proportional relationships that only involve positive numbers.	MP.1 MP.2 MP.6	Yes
A	7.RP.3-2	Use proportional relationships to solve multistep percent problems. *Examples: simple interest, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*	-	MP.1 MP.2 MP.5 MP.6	Yes
A	7.NS.1a	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*	-	MP.5	No
A	7.NS.1b-1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative.	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks involve a number line. iv) Tasks do not require students to show in general that a number and its opposite have a sum of 0; for this aspect of 7.NS.1b-1, see 7.C.1.1 and 7.C.2.	MP.5 MP.7	No
A	7.NS.1b-2	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. b. Interpret sums of rational numbers by describing real-world contexts.	i) Tasks require students to produce or recognize real-world contexts that correspond to given sums of rational numbers. ii) Tasks are not limited to integers. iii) Tasks do not require students to show in general that a number and its opposite have a sum of 0; for this aspect of 7.NS.1b-1, see 7.C.1.1 and 7.C.2	MP.2 MP.3 MP.5	No

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	7.NS.1c-1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Apply this principle in real-world contexts.	i) Tasks may or may not have a context. ii) Tasks are not limited to integers. iii) Contextual tasks might, for example, require students to create or identify a situation described by a specific equation of the general form p – q = p + (–q) such as 3 – 5 = 3 + (–5). iv) Non-contextual tasks are not computation tasks but rather require students to demonstrate conceptual understanding, for example, by identifying a difference that is equivalent to a given difference. For example, given the difference –1/3 – (1/5 + 5/8), the student might be asked to recognize the equivalent expression –1/3 + –(1/5 + 5/8).	MP.2 MP.5 MP.7	No
A	7.NS.1d	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks may involve sums and differences of 2 or 3 rational numbers. iv) Tasks require students to demonstrate conceptual understanding, for example, by producing or recognizing an expression equivalent to a given sum or difference. For example, given the sum –8.1 + 7.4, the student might be asked to recognize or produce the equivalent expression –(8.1 – 7.4).	MP.5 MP.7	No
A	7.NS.2a-1	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers.	i) Tasks do not have a context. ii) Tasks require students to demonstrate conceptual understanding, for example by providing students with a numerical expression and requiring students to produce or recognize an equivalent expression using properties of operations. For example, given the expression (–3)(6 + –4 + –3), the student might be asked to recognize that the given expression is equivalent to (–3)(6 + –4) + (–3)(–3).	MP.7	No
A	7.NS.2a-2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Interpret products of rational numbers by describing real-world contexts.	-	MP.2 MP.4	No

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	7.NS.2b-1	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then -(p/q) = (–p)/q =p/(–q).	i) Tasks do not have a context. ii) Tasks require students to demonstrate conceptual understanding, for example, by providing students with a numerical expression and requiring students to produce or recognize an equivalent expression.	MP.7	No
A	7.NS.2b-2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. b. Interpret quotients of rational numbers by describing real-world contexts.	-	MP.2 MP.4	No
A	7.NS.2c	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks may involve products and quotients of 2 or 3 rational numbers. iv) Tasks require students to compute a product or quotient, or demonstrate conceptual understanding, for example, by producing or recognizing an expression equivalent to a given expression. For example, given the expression (−8)(6)/(−3), the student might be asked to recognize or produce the equivalent expression −(8/3)(−6).	MP.7	No
A	7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	i) Tasks are one-step word problems. ii) Tasks sample equally between addition/subtraction and multiplication/division. iii) Tasks involve at least one negative number. iv) Tasks are not limited to integers.	MP.1 MP.4	No
A	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	i) Tasks are not limited to integer coefficients. ii) Tasks may involve issues of strategy, e.g., by providing a factored expression such as y(3+x+k) and a fully expanded expression 3y + xy + ky, and requiring students to produce or identify a new expression equivalent to both (such as y(3+x) + yk).	MP.7	No
A	7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	-	MP.7	No

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	7.EE.3	*Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*	-	MP.5	Yes
A	7.EE.4a-1	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers.	i) Comparison of an algebraic solution to an arithmetic solution is not assessed here; for this aspect of 7.EE.4a, see 7.C.5.	MP.1 MP.2 MP.6 MP.7	No
A	7.EE.4a-2	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Fluently solve equations of the form $px + q = r$ and $p(x+q) = r$, where p, q, and r are specific rational numbers.	i) Each task requires students to solve two equations (one of each of the given two forms). Only the answer is required. ii) Comparison of an algebraic solution to an arithmetic solution is not assessed here; for this aspect of 7.EE.4a, see 7.C.5.	MP.6 MP.7	No
A	7.EE.4b	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*	i) Tasks may involve <, >, ≤ or ≥.	MP.1 MP.2 MP.5 MP.6 MP.7	No

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	i) Tasks may or may not have context.	MP.2 MP.5	Yes
B	7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	i) Tasks do not have a context. ii) Most of the tasks should focus on the drawing component of this evidence statement.	MP.3 MP.5 MP.6	Yes
B	7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	i) Tasks have "thin context" or no context.	MP.5	Yes
B	7.G.4-1	Know the formulas for the area and circumference of a circle and use them to solve problems.	i) Tasks may or may not have context. ii) Tasks may require answers to be written in terms of π.	MP.4 MP.5	Yes
B	7.G.4-2	Give an informal derivation of the relationship between the circumference and area of a circle	i) Tasks require students to identify or produce a logical conclusion about the relationship between the circumference and the area of a circle.	MP.2 MP.5	Yes
B	7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	i) Tasks may or may not have context. ii) Tasks involving writing or solving an equation should not go beyond the equation types described in 7.EE.4a. [px +q = r and p(x + q) = r where p, q, and r are specific rational numbers.]	MP.5 MP.6	Yes
B	7.G.6	Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	i) Tasks may or may not have context.	MP.1 MP.5	Yes
B	7.SP.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	-	MP.4	Yes

Grade 7 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*	-	MP.4	Yes
B	7.SP.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*	i) Tasks may use mean absolute deviation, range, or interquartile range as a measure of variability.	MP.4	Yes
B	7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh grade science book are generally longer than the words in a chapter of a fourth grade science book.*	-	MP.4	Yes
B	7.SP.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	i) Tasks may involve probabilities that are certain (1) or impossible (0).	MP.4	Yes
B	7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*	i) Tasks require the student to make a prediction based on long-run relative frequency in data from a chance process.	MP.4	Yes

Grade 7 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	7.SP.7a	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*	i) Simple events only. ii) Simple events can be defined as the single outcome of the performed experiment or it is an event, which cannot be broken down any more.	MP.4	Yes
B	7.SP.7b	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*	-	MP.4	Yes
B	7.SP.8a	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	i) Compound events are the combination of two or more simple events. It can also be defined as an event that contains more than one sample points in it, such as rolling a 2 or 3 on a 6-sided number cube.	MP.4 MP.5	Yes
B	7.SP.8b	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space, which compose the event.	-	MP.4 MP.5	Yes
B	7.SP.8c	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	i) Items addressing the use of a simulation should define the situation that is being simulated.	MP.4 MP.5	Yes

Grade 7 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	7.C.1.1	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 7.NS.1 and 7.NS.2.	i) Tasks should not require students to identify or name properties.	MP.1 MP.2 MP.3 MP.5 MP.6 MP.7	Yes
C	7.C.1.2	Base explanations/reasoning on the properties of operations. Content Scope: Knowledge and skills articulated in 7.EE.1.	i) Tasks should not require students to identify or name properties.	MP.3 MP.6 MP.7	Yes
C	7.C.2	Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division. Content Scope: Knowledge and skills articulated in 7.NS.1 and 7.NS.2.	-	MP.1 MP.2 MP.3 MP.5 MP.6 MP.7	Yes
C	7.C.3	Base explanations/reasoning on a number line diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 7.NS.A.	-	MP.1 MP.2 MP.3 MP.5 MP.6 MP.7	Yes
C	7.C.4	Base explanations/reasoning on a coordinate plane diagram (whether provided in the prompt or constructed by the student in her response). Content Scope: Knowledge and skills articulated in 7.RP.A.	i) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.3 MP.5 MP.6	Yes
C	7.C.5	Given an equation, present the solution steps as a logical argument that concludes with the set of solutions (if any). Content Scope: Knowledge and skills articulated in 7.EE.4a.	-	MP.1 MP.2 MP.3 MP.6 MP.7	Yes

Grade 7 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	7.C.6.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 7.RP.2.	i) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.2 MP.3 MP.6	Yes
C	7.C.7.1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 7.RP.3.	i) Tasks use only coordinates in Quadrant 1 and use only a positive constant of proportionality.	MP.1 MP.3 MP.6 MP.7 MP.8	Yes
C	7.C.7.2	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 7.NS.2d.	i) Tasks focus on demonstrating understanding that a number is rational. ii) Tasks do not directly assess the ability to divide two whole numbers.	MP.1 MP.3 MP.6 MP.7 MP.8	Yes
C	7.C.7.3	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 7.NS.3.	-	MP.1 MP.3 MP.6 MP.7 MP.8	Yes

Grade 7 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	7.C.7.4	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 7.EE.3.	-	MP.1 MP.3 MP.6 MP.7 MP.8	Yes
C	7.C.8	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 6.NS.C, 6.EE.A, 6.EE.B.	i) Tasks may have scaffolding[1], if necessary, in order to yield a degree of difficulty appropriate to Grade 7.	MP.3 MP.6	Yes

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
D	7.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 7, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 7. ii) Tasks involving writing or solving an equation should not go beyond the equation types described in 7.EE.4a. [px +q = r and p(x + q) = r where p, q, and r are specific rational numbers.]	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	7.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to grade 7, requiring application of knowledge and skills articulated in 6.RP.A, 6.EE.C, and 6.G.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 7.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	7.D.3	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature). Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 7.	MP.1 MP.2 MP.4, MP.5 MP.7	Yes
D	7.D.4	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Tasks may have scaffolding, if necessary, in order to yield a degree of difficulty appropriate to Grade 7.	MP.1 MP.2 MP.4 MP.5 MP.7	Yes

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for the use of scientific notation such as, "The number represents the distance between two planets."

Grade 8 Mathematics Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
5/10/18	1.2	Minor edits to 8.EE.1, 8.EE.4-2, 8.EE.C.Int.1, 8.F.4, 8.C.5.3	Jennifer Novak - Pearson

Grade 8 Mathematics Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 8 Evidence Statements
Listing by Type 1, Type II, and Type III

The Evidence Statements for Grade 8 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items.

Grade 8 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	8.NS.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion, which repeats eventually into a rational number.	i) Tasks do not have a context. ii) An equal number of tasks require students to write a fraction a/b as a repeating decimal, or write a repeating decimal as a fraction. iii) For tasks that involve writing a repeating decimal as a fraction, the given decimal should include no more than two repeating decimals without non-repeating digits after the decimal point (i.e. 2.16666…, 0.23232323…).	MP.7 MP.8	No
B	8.NS.2	Use rational approximations of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g. π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*	i) Tasks do not have a context.	MP.5 MP.7 MP.8	No
A	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 1/3^3 = 1/27$.*	i) Tasks do not have a context. ii) Tasks focus on the properties and equivalence, not on simplification. iii) Half of the expressions involve one property; half of the expressions involve two or three properties. iv) Tasks should involve a single common base or a potential common base, such as, a task that includes 3, 9 and 27.	MP.7	No
A	8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	i) Tasks may or may not have a context. ii) Students are not required to simplify expressions such as $\sqrt{8}$ to $2\sqrt{2}$. Students are required to express the square roots of 1, 4, 9, 16, 25, 36, 49, 64, 81 and 100; and the cube roots of 1, 8, 27, and 64.	MP.7	No
A	8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*	-	MP.4	No
A	8.EE.4-1	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.	i) Tasks have "thin context" [2] or no context. ii) Rules or conventions for significant figures are not assessed. iii) Some of the tasks involve both decimal and scientific notation.	MP.6 MP.7 MP.8	No
A	8.EE.4-2	Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	i) Tasks have "thin context" [2]. ii) Tasks require students to recognize 3.7E-2 (or 3.7e-2) from technology as 3.7×10^{-2}.	MP.6 MP.7 MP.8	Yes
A	8.EE.5-1	Graph proportional relationships, interpreting the unit rate as the slope of the graph.	i) Tasks may or may not contain context.	MP.1 MP.5	Yes

Grade 8 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.EE.5-2	Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.*	i) Tasks may or may not contain context.	MP.7	Yes
A	8.EE.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.	i) Tasks do not have a context. ii) Given a non-vertical line in the coordinate plane, tasks might for example require students to choose two pairs of points and record the rise, run, and slope relative to each pair and verify that they are the same. iii) For the explain aspect of 8.EE.6, see 8.C.5.1. iv) Tasks may assess simple graphing of lines from a linear equation in slope-intercept form.	MP.2 MP.7	Yes
A	8.EE.7b	Solve linear equations in one variable. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms	i) Tasks do not have a context.	MP.6 MP.7	No
A	8.EE.8a	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersections of their graphs, because points of intersection satisfy both equations simultaneously.	i) Tasks do not have a context.	MP.2 MP.5 MP.6 MP.7	No
A	8.EE.8b-1	Analyze and solve pairs of simultaneous linear equations. b. Solve systems of two linear equations in two variables algebraically.	i) An equal number of tasks have: • a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$, or; • non-zero whole-number coefficients, and whole-number solutions, or; • non-zero whole-number coefficients, and at least one fraction among the solutions, or; • non-zero integer coefficients (with at least one coefficient negative), or; • non-zero rational coefficients (with at least one coefficient negative and at least one coefficient a non-integer).	MP.1 MP.6 MP.7	No
A	8.EE.8b-2	Analyze and solve pairs of simultaneous linear equations. b. Estimate solutions [to systems of two linear equations in two variables] by graphing the equations.	i) An equal number of tasks have: • a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$, or; • non-zero whole-number coefficients, and whole-number solutions, or; • non-zero whole-number coefficients, and at least one fraction among the solutions, or; • non-zero integer coefficients (with at least one coefficient negative), or; • non-zero rational coefficients (with at least one coefficient negative and at least one coefficient a non-integer).	MP.5 MP.6 MP.7	No

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.EE.8b-3	Analyze and solve pairs of simultaneous linear equations. b. Solve simple cases [of systems of two linear equations in two variables] by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*	i) Tasks have whole number or integer coefficients, one coefficient in either or both equations possibly zero. ii) Equal number of tasks involve: • inconsistent systems, where the inconsistency is plausibly visible by inspection as in the italicized example, or; • degenerate systems (infinitely many solutions), where the degeneracy is plausibly visible by inspection, as for example in 3x + 3y = 1, 6x + 6y = 2, or; • systems with a unique solution and one coefficient zero, where the solution is plausibly visible by inspection, as for example in y = 1, 3x + y = 1. iii) Tasks assess solving by inspection.	MP.7	No
A	8.EE.8c	Analyze and solve pairs of simultaneous linear equations. c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	i) Tasks may have three equations, but students are only required to analyze two equations at a time.	MP.1 MP.5 MP.6 MP.7	Yes
A	8.EE.C.Int.1	Solve word problems leading to linear equations in one variable whose solutions require expanding expressions using the distributive property and collecting like terms.	i) Most of the tasks involve contextual real-world word problems.	MP.4 MP.6 MP.7	Yes
A	8.F.1-1	Understand that a function is a rule that assigns to each input exactly one output.	i) Tasks do not involve the coordinate plane or the "vertical line test." ii) Some of the functions in tasks are non-numerical. iii) Tasks should involve clearly defined inputs and outputs.	MP.2	No
A	8.F.1-2	[Understand that] the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	i) Functions are limited to those with inputs and outputs in the real numbers. ii) Most of the tasks require students to graph functions in the coordinate plane or read inputs and outputs from the graph of a function in the coordinate plane. iii) Some of the tasks require students to tell whether a set of points in the plane represents a function. iv) Tasks should involve clearly defined inputs and outputs.	MP.2 MP.5	No
A	8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greatest rate of change.*	i) Tasks have "thin context"[2] or no context. ii) Equations can be presented in forms other than y = mx + b, for example, 2x + 2y = 7.	MP.2 MP.5	Yes

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.F.3-1	Interpret the equation, y=mx + b as defining a linear function, whose graph is a straight line.	i) Tasks have "thin context"[2] or no context. ii) Equations can be presented in forms other than y = mx + b, for example, 2x + 2y =7.	MP.2 MP.7	No
A	8.F.3-2	Give examples of functions that are not linear and prove that they are not linear.	i) Tasks have "thin context"[2] or no context. ii) Tasks may require students to give examples of equations that are non-linear or pairs of points to show a function is non-linear. iii) Students are not required to produce a formal proof. For this aspect of 8.F.3, see 8.C.3.1.	MP.7	No
B	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph.	i) Tasks may or may not have a context.	MP.2 MP.4	Yes
B	8.F.5-1	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).	i) Tasks may or may not have a context.	MP.2 MP.5	No
B	8.F.5-2	Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	i) Tasks may or may not have a context.	MP.2 MP.5 MP.7	No
A	8.G.1a	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.1b	Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.1c	Verify experimentally the properties of rotations, reflections, and translations: c. Parallel lines are taken to parallel lines.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	i) Tasks do not have a context. ii) Figures may be drawn in the coordinate plane, but do not include the use of coordinates. iii) Tasks require students to make connections between congruence and transformations.	MP.2 MP.7	No

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	i) Tasks have "thin context" [2] no context. ii) Tasks require the use of coordinates in the coordinate plane. iii) For items involving dilations, tasks must state the center of dilation. iv) Centers of dilation can be the origin, the center of the original shape or the vertices of the original shape.	MP.2 MP.3 MP.5	No
A	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	i) Tasks do not have a context. ii) Figures may be drawn in the coordinate plane, but do not include the use of coordinates. iii) Tasks require students to make connections between similarity and transformations.	MP.2 MP.7	No
A	8.G.7-1	Apply the Pythagorean Theorem in a simple planar case.	i) Tasks have "thin context" [2] or no context. ii) An equal number of tasks require the answer to be given as a whole number or as an irrational number written to approximately three decimal places.	-	Yes
A	8.G.7-2	Apply the Pythagorean Theorem in a simple three-dimensional case.	i) Tasks have "thin context" [2] or no context. ii) An equal number of tasks require the answer to be given as a whole number or as an irrational number written to approximately three decimal places.	-	Yes
A	8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	-	-	Yes
B	8.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	-	MP.1 MP.5	Yes
B	8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	-	MP.3 MP.5 MP.7	No

Grade 8 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	-	MP.2 MP.5 MP.7	No
B	8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	-	MP.2 MP.4 MP.6 MP.7	Yes
B	8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	i) An equal number of tasks require students to: • Answer basic comprehension questions about a two-way table, or; • To compute marginal sums or marginal percentages, or; • To interpret patterns or association.	MP.2 MP.4 MP.5 MP.7	Yes

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	8.C.1.1	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: Knowledge and skills articulated in 8.EE.6.	i) Tasks require students to derive the equation y=mx for a line through the origin and the equation *y*=m*x*+b for a line intersecting the vertical axis at b.	MP.2 MP.3 MP.7 MP.8	Yes
C	8.C.1.2	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: Knowledge and skills articulated in 8.EE.8a.	-	MP.2 MP.3 MP.5 MP.6 MP.7	Yes
C	8.C.2	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any). Content Scope: Knowledge and skills articulated in 8.EE.7a, 8.EE.7b, 8.EE.8b.	i) Tasks may have three equations, but students are only required to analyze two equations at a time.	MP.3 MP.6	Yes
C	8.C.3.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.F.3-2.	i) Tasks require students to justify whether a given function is linear or nonlinear.	MP.3 MP.6	Yes
C	8.C.3.2	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4.	-	MP.3 MP.5 MP.6	Yes
C	8.C.3.3	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.5.	-	MP.3 MP.5 MP.6	Yes
C	8.C.4.1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 8.EE.8c.	-	MP.1 MP.2 MP.3 MP.6 MP.7	Yes

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	8.C.5.1	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.EE.6.	-	MP.2 MP.3 MP.5	Yes
C	8.C.5.2	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4.	-	MP.2 MP.3 MP.5	Yes
C	8.C.5.3	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.B.	i) Some of the tasks require students to use the converse of the Pythagorean Theorem.	MP.2 MP.3 MP.5	Yes
C	8.C.6	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 7.RP.A, 7.NS.A, 7.EE.A.	i) Some of the tasks may use scaffolding[1].	MP.3 MP.6	Yes

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
D	8.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 8, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to grade 8, requiring application of knowledge and skills articulated in 7.RP.A, 7.NS.3, 7.EE, 7.G, and 7.SP.B.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.3	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature). Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.4	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements .	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for the use of scientific notation such as, "The number represents the distance between two planets."

Algebra I Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Algebra I Evidence Statements
Listing by Type I, Type II, and Type III

The Evidence Statements for Algebra I are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items.

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-APR.1-1	Add, subtract, and multiply polynomials.	i) The "understand" part of the standard is not assessed here; it is assessed under Sub-claim C.	-	Z
B	A-APR.3-1	Identify zeros of quadratic and cubic polynomials in which linear and quadratic factors are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	i) For example, find the zeros of $(x - 2)(x^2 - 9)$. ii) Sketching graphs is limited to quadratics. iii) For cubic polynomials, at least one linear factor must be provided or one of the linear factors must be a GCF.	MP.7	N
A	A-CED.3-1	Solve multi-step contextual problems that require writing and analyzing systems of linear inequalities in two variables to find viable solutions.	i) Tasks have hallmarks of modeling as a mathematical practice (less defined tasks, more of the modeling cycle, etc.). ii) Scaffolding in tasks may range from substantial to very little or none.	MP.1, MP.2, MP.4	X
A	A-CED.4-1	Rearrange linear formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*	i) Tasks have a real-world context. ii) The quantity of interest is linear in nature.	MP.2, MP.6, MP.7	Z
A	A-CED.4-2	Rearrange formulas that are quadratic in the quantity of interest to highlight the quantity of interest, using the same reasoning as in solving equations.	i) Tasks have a real-world context.	MP.2, MP.6, MP.7	Z
A	A-REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	i) Tasks do not include absolute value equations or compound inequalities.	MP.7	X
A	A-REI.4a-1	Solve quadratic equations in one variable. a) Use the method of completing the square to transform any quadratic equation in *x* into an equation of the form $(x - p)^2 = q$ that has the same solutions.	i) The derivation part of the standard is not assessed here; it is assessed under Sub-Claim C.	MP.1, MP.7	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-REI.4b-1	Solve quadratic equations in one variable. b) Solve quadratic equations with rational number coefficients by inspection (e.g., for x^2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.	i) Tasks should exhibit variety in initial forms. Examples of quadratic equations with real solutions: $t^2 = 49, 3a^2 = 4, 7 = x^2, r^2 = 0, \frac{1}{2}y^2 = \frac{1}{5}, y^2 - 8y + 15 = 0, 2x^2 - 16x + 30 = 0, 2p = p^2 + 1, t^2 = 4t, 7x^2 + 5x - 3 = 0, \frac{3}{4}c(c-1) = c, (3c-2)^2 = 6x - 4$ ii) Methods are not explicitly assessed; strategy is assessed indirectly by presenting students with a variety of initial forms. iii) For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly. iv) Prompts integrate mathematical practices by not indicating that the equation is quadratic. (e.g., "Find all real solutions of the equation $t^2 = 4t$"... not, "Solve the quadratic equation $t^2 = 4t$")	MP.5, MP.7	X
A	A-REI.4b-2	Solve quadratic equations in one variable. b) Recognize when the quadratic formula gives complex solutions.	i) Writing solutions in the form a ± bi is not assessed here. (Assessed under N-CN.7.)	MP.5, MP.7	X
B	A-REI.6-1	Solve multi-step contextual problems that require writing and analyzing systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	i) Tasks have hallmarks of modeling as a mathematical practice (less defined tasks, more of the modeling cycle, etc.). ii) Scaffolding in tasks may range from substantial to very little or none.	MP.1, MP.2, MP.4	X
A	A-REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	-	MP.7	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-REI.11-1	Find the solutions of where the graphs of the equations *y= f(x)* and *y= g(x)* intersect, e.g. using technology to graph the functions, make tables of values or find successive approximations. Limit *f(x)* and/or *g(x)* to linear and quadratic functions.★	i) The "explain" part of standard A-REI.11 is not assessed here. For this aspect of the standard, see Sub-Claim C.	MP.1, MP.5	Y
A	A-REI.12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	-	MP.1, MP.5, MP.6	N
A	A-SSE.1-1	Interpret exponential expressions, including related numerical expressions that represent a quantity in terms of its context.★ a) Interpret parts of an expression, such as terms, factors, and coefficients. b) Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret* $P(1+r)^n$ *as the product of P and a factor not depending on P.*	i) See illustrations for A-SSE.1 at http://illustrativemathematics.org e.g., http://illustrativemathematics.org/illustrations/390	MP.7	Z
A	A-SSE.1-2	Interpret quadratic expressions that represent a quantity in terms of its context.★ a) Interpret parts of an expression, such as terms, factors, and coefficients. b) Interpret complicated expressions by viewing one or more of their parts as a single entity.	i) See illustrations for A-SSE.1 at http://illustrativemathematics.org, e.g., http://illustrativemathematics.org/illustrations/90	MP.7	Z
A	A-SSE.2-1	Use the structure of numerical expressions and polynomial expressions in one variable to identify ways to rewrite it.	i) Examples: Recognize $53^2 - 47^2$ as a difference of squares and see an opportunity to rewrite it in the easier-to-evaluate form (53 + 47)(53 – 47). ii) Limit to problems intended to be solved with one step. iii) Tasks do not have a context.	MP.7	Z

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-SSE.2-4	Use the structure of a numerical expression or polynomial expression in one variable to rewrite it, in a case where two or more rewriting steps are required.	i) Example: Factor completely: $\boldsymbol{x^2 - 1 + (x-1)^2}$. (A first iteration might give $\boldsymbol{(x+1)(x-1) + (x-1)^2}$, which could be rewritten as $\boldsymbol{(x+1)(x+1+x-1)}$ on the way to factoring completely as $\boldsymbol{2x(x-1)}$. Or the student might first expand, as: $\boldsymbol{x^2 - 1 + x^2 - 2x + 1}$, rewriting as $\boldsymbol{2x^2 - 2x}$, then factoring as $\boldsymbol{2x(x-1)}$.) ii) Tasks do not have a real-world context.	MP.1, MP.7	Z
B	A-SSE.3a	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★ a) Factor a quadratic expression to reveal the zeros of the function it defines.	i) The equivalent form must reveal the zeroes of the function. ii) Tasks require students to make the connection between the equivalent forms of the expression.	MP.7	Z
B	A-SSE.3b	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★ a) Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	i) Tasks require students to make the connection between the equivalent forms of the expression.	MP.7	Z
B	A-SSE.3c-1	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression, where exponentials are limited to integer exponents. ★ c) Use the properties of exponents to transform expressions for exponential functions.	i) Tasks have a real-world context. ii) The equivalent form must reveal something about the real-world context. iii) Tasks require students to make the connection between the equivalent forms of the expression.	MP.1, MP.2, MP.4, MP.7	X
B	F-BF.3-1	Identify the effect on the graph of replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of *k* given the graphs limiting the function types to linear and quadratic functions.	i) Tasks do not involve recognizing even and odd functions. ii) Experimenting with cases and illustrating an explanation are not assessed here. They are assessed under Sub-claim C. iii) Tasks may involve more than one transformation.	MP.3, MP.5, MP.7	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
B	F-BF.3-4	Identify the effect on the graph of a quadratic function of replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of *k* given the graphs. Experiment with cases using technology.	i) Illustrating an explanation is not assessed here. Explanations are assessed under Sub-claim C.	MP.3, MP.5, MP.8	X
A	F-IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then $f(x)$ denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation $y=f(x)$.	-	MP.2	Z
A	F-IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	i) See illustrations for F-IF.2 at http://illustrativemathematics.org	MP.6, MP.7	X
A	F-IF.4-1	For a linear or quadratic function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; end behavior; and symmetries.*★	i) See illustrations for F-IF.4 at http://illustrativemathematics.org, e.g. http://illustrativemathematics.org/illustrations/649 http://illustrativemathematics.org/illustrations/637 http://illustrativemathematics.org/illustrations/639	MP.4, MP.6	X
A	F-IF.5-1	Relate the domain of a function to a graph and, where applicable, to the quantitative relationship it describes, limiting to linear functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute-value functions), and exponential functions with domains in the integers. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for this function.*★	i) Tasks have a real-world context.	MP.2	Z
A	F-IF.5-2	Relate the domain of a function to a graph and, where applicable, to the quantitative relationship it describes, limiting to quadratic functions. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for this function.*★	i) Tasks have a real-world context.	MP.2	Z
A	F-IF.6-1a	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval with functions limited to linear, exponential (with domains in the integers), and quadratic functions.★	i) Tasks have a real-world context. ii) Tasks must include the interpret part of the evidence statement.	MP.1, MP.4, MP.5, MP.7	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	F-IF.6-1b	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval with functions limited to square root, cube root, and piecewise-defined (including step and absolute value functions) functions.★	i) Tasks have a real-world context. ii) Tasks must include the interpret part of the evidence statement.	MP.1, MP.4, MP.5, MP.7	X
A	F-IF.6-6a	Estimate the rate of change from a graph of linear functions and quadratic functions.★	i) Tasks have a real-world context.	MP.1, MP.4, MP.5, MP.7	X
A	F-IF.6-6b	Estimate the rate of change from a graph of linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and/or exponential functions with domains in the integers.★	i) Tasks have a real-world context.	MP.1, MP.4, MP.5, MP.7	X
B	F-IF.7a-1	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★ a) Graph linear functions and show intercepts.	-	MP.1, MP.5, MP.6	X
B	F-IF.7a-2	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★ a) Graph quadratic functions and show intercepts, maxima, and minima.	-	MP.1, MP.5, MP.6	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
B	F-IF.7b	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★ b) Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	i) Discontinuities are allowed as key features of the graph.	MP.1, MP.5, MP.6	X
B	F-IF.8a	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a) Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	i) Tasks have a real-world context.	MP.2	Y
B	F-IF.9-1	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.* Function types should be limited to linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers.	i) Tasks may have a real-world context.	MP.1, MP.3, MP.5, MP.6, MP.8	X
A	F-IF.A.Int.1	Understand the concept of a function and use function notation.	i) Tasks require students to use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a real-world context. ii) About a quarter of tasks involve functions defined recursively on a domain in the integers.	MP.2	X
B	F-LE.2-1	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	i) Tasks are limited to constructing linear and exponential functions with domains in the integers, in simple real-world context (not multi-step).	MP.1, MP.2, MP.5	X
B	F-LE.2-2	Solve multi-step contextual problems with degree of difficulty appropriate to the course by constructing linear and/or exponential function models, where exponentials are limited to integer exponents.★	i) Prompts describe a scenario using everyday language. Mathematical language such as "function," "exponential," etc. is not used. ii) Students autonomously choose and apply appropriate mathematical techniques without prompting. For example, in a situation of doubling, they apply techniques of exponential functions. iii) For some illustrations, see tasks at http://illustrativemathematics.org under F-LE.	MP.1, MP.2, MP.4, MP.6	X

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
Ψ	F-Int.1-1	Given a verbal description of a linear or quadratic functional dependence, write an expression for the function and demonstrate various knowledge and skills articulated in the Functions category in relation to this function.	i) Given a verbal description of a functional dependence, the student would be required to write an expression for the function and then, e.g., identify a natural domain for the function given the situation; use a graphing tool to graph several input-output pairs; select applicable features of the function, such as linear, increasing, decreasing, quadratic, nonlinear; and find an input value leading to a given output value. - e.g., a functional dependence might be described as follows: "The area of a square is a function of the length of its diagonal." The student would be asked to create an expression such as $f(x) = \frac{1}{2}x^2$ for this function. The natural domain for the function would be the positive real numbers. The function is increasing and nonlinear. And so on. - e.g., a functional dependence might be described as follows: "The slope of the line passing through the points (1, 3) and (7, y) is a function of y." The student would be asked to create an expression such as $s(y) = (3 - y)/(1 - 7)$ for this function. The natural domain for this function would be the real numbers. The function is increasing and linear. And so on.	MP.1, MP.2, MP.8	X
Ψ	S-ID.Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID, excluding normal distributions and limiting function fitting to linear functions and exponential functions with domains in the integers.	i) Tasks should go beyond 6.SP.4. ii) For tasks that use bivariate data, limit the use of time series. Instead use data that may have variation in the y-values for given x-values, such as pre and post test scores, height and weight, etc. iii) Predictions should not extrapolate far beyond the set of data provided. iv) Line of best fit is always based on the equation of the least squares regression line either provided or calculated through the use of technology. v) To investigate associations, students may be asked to evaluate scatter plots that may be provided or created using technology. Evaluation includes shape, direction, strength, presence of outliers, and gaps. vi) Analysis of residuals may include the identification of a pattern in a residual plot as an indication of a poor fit. vii) Exponential models may assess rate of growth, intercepts, etc.	MP.1, MP.2, MP.4, MP.5, MP.6	Y

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
Ψ	S-ID.Int.2	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID, excluding normal distributions and limiting function fitting to quadratic, linear, and exponential (with domains in the integers) functions with an emphasis on quadratic functions.	i) Tasks should go beyond 6.SP.4 ii) For tasks that use bivariate data, limit the use of time series. Instead use data that may have variation in the y-values for given x-values, such as pre and post test scores, height and weight, etc. iii) Predictions should not extrapolate far beyond the set of data provided. iv) To investigate associations, students may be asked to evaluate scatter plots that may be provided or created using technology. Evaluation includes shape, direction, strength, presence of outliers, and gaps. v) Analysis of residuals may include the identification of a pattern in a residual plot as an indication of a poor fit. Quadratic models may assess minimums/maximums, intercepts, etc.	MP.1, MP.2, MP.4, MP.5, MP.6	Y
B	S-ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	i) Tasks must have at least one of the categorical variables with more than two sub-categories. ii) "Total" rows and columns will be provided but may be missing the data. iii) Associations should be investigated based on relative frequencies, not counts.	MP.1, MP.5, MP.7	Y
B	N-RN.B-1	Apply properties of rational and irrational numbers to identify rational and irrational numbers.	i) Tasks should go beyond asking students to only identify rational and irrational numbers. ii) This evidence statement is aligned to the cluster heading. This allows other cases besides the three cases listed in N-RN.3 to be assessed. iii) Quotients of rational and irrational numbers can be assessed.	MP.6	N

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
Ψ	HS-Int.1	Solve multi-step contextual problems with degree of difficulty appropriate to the course by constructing quadratic function models and/or writing and solving quadratic equations.	i) A scenario might be described and illustrated with graphics (or even with animations in some cases). ii) Solutions may be given in the form of decimal approximations. For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly. Some examples: - A company sells steel rods that are painted gold. The steel rods are cylindrical in shape and 6 cm long. Gold paint costs $0.15 per square inch. Find the maximum diameter of a steel rod if the cost of painting a single steel rod must be $0.20 or less. You may answer in units of centimeters or inches. Give an answer accurate to the nearest hundredth of a unit. - As an employee at the Gizmo Company, you must decide how much to charge for a gizmo. Assume that if the price of a single gizmo is set at *P* dollars, then the company will sell $1000 - 0.2P$ gizmos per year. Write an expression for the amount of money the company will take in each year if the price of a single gizmo is set at P dollars. What price should the company set in order to take in as much money as possible each year? How much money will the company make per year in this case? How many gizmos will the company sell per year? (Students might use graphical and/or algebraic methods to solve the problem.) - At $t = 0$, a car driving on a straight road at a constant speed passes a telephone pole. From then on, the car's distance from the telephone pole is given by $C(t) = 30t$, where *t* is in seconds and *C* is in meters. Also at $t = 0$, a motorcycle pulls out onto the road, driving in the same direction, initially 90 m ahead of the car. From then on, the motorcycle's distance from the telephone pole is given by $M(t) = 90 + 2.5\,t^2$, where *t* is in seconds and *M* is in meters. At what time *t* does the car catch up to the motorcycle? Find the answer by setting *C* and *M* equal. How far are the car and the motorcycle from the telephone pole when this happens? (Students might use graphical and/or algebraic methods to solve the problem.)	MP.1, MP.2, MP.4, MP.5, MP.6	Y

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
Ψ	HS-Int.2	Solve multi-step mathematical problems with degree of difficulty appropriate to the course that requires analyzing quadratic functions and/or writing and solving quadratic equations.	i) Tasks do not have a real-world context. ii) Exact answers may be required or decimal approximations may be given. Students might choose to take advantage of the graphing utility to find approximate answers or clarify the situation at hand. For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required. Some examples: - Given the function $f(x) = x^2 + x$, find all values of *k* such that $f(3-k) = f(3)$. (Exact answers are required.) - Find a value of *c* so that the equation $2x^2 - cx + 1 = 0$ has a double root. Give an answer accurate to the tenths place.	MP.1, MP.2, MP.5, MP.6	Y
Ψ	HS-Int.3-1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-LE, A-CED.1, A-SSE.3, F-IF.B, F-IF.7, limited to linear functions and exponential functions with domains in the integers.★	i) F-LE.A, Construct and compare linear, quadratic, and exponential models and solve problems, is the primary content and at least one of the other listed content elements will be involved in tasks as well.	MP.2, MP.4	Y
Ψ	HS-Int.3-2	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-LE, A-CED.1, A-SSE.3, F-IF.B, F-IF.7, limited to linear, quadratic, and exponential functions.★	i) F-LE.A, Construct and compare linear, quadratic, and exponential models and solve problems, is the primary content and at least one of the other listed content elements will be involved in tasks as well. For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly.	MP.2, MP.4	Y

★ Modeling standards appear throughout the CCSSM. Evidence statements addressing these modeling standards are indicated by a star symbol (★)

Ψ - These integrated evidence statements will be reported in the Master Claim which is used to determine if a student is college or career ready.

*Calculator Key:
Y – Yes; Assessed on Calculator Section
X – Calculator is Specific to Item
N – No; Assessed on Non-Calculator Sections
Z – Calculator Neutral (Could Be on Calculator or Non-Calculator Sections)

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
C	HS-C.2.1	Base explanations/reasoning on the properties of rational and irrational numbers. Content scope: N-RN.3	i) For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly.	MP.3	Y
C	HS-C.5.5	Given an equation or system of equations, reason about the number or nature of the solutions. Content scope: A-REI.4a, A-REI.4b, limited to real solutions only.		MP.3	Y
C	HS-C.5.6	Given a system of equations, reason about the number or nature of the solutions. Content scope: A-REI.5	i) In a system of linear equations, if the two given equations are simultaneous, the solution could be described by students as infinitely many solutions, infinitely many solutions on the line, or all real numbers on the line. A solution of "all real numbers" alone is not sufficient for credit because all points in space are not solutions, only the points on the line.	MP.3	Y
C	HS-C.5.10-1	Given an equation or system of equations, reason about the number or nature of the solutions. Content scope: A-REI.11, limited to equations of the form $f(x) = g(x)$ where *f* and *g* are linear or quadratic.	-	MP.3	Y
C	HS-C.6.1	Base explanations/reasoning on the principle that the graph of an equation and inequalities in two variables is the set of all its solutions plotted in the coordinate plane. Content scope: A-REI.D, excluding exponential and logarithmic functions.	-	MP.3	Y
C	HS-C.8.1	Construct, autonomously, chains of reasoning that will justify or refute algebraic propositions or conjectures. Content scope: A-APR.1	-	MP.3	Y
C	HS-C.9.1	Express reasoning about transformations of functions. Content scope: F-BF.3, limited to linear and quadratic functions. Tasks will not involve ideas of even or odd functions.	-	MP.3	Y

Algebra I Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
C	HS-C.10.1	Express reasoning about linear and exponential growth. Content scope: F-LE.1a	-	MP.3	Y
C	HS-C.12.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about functions Content scope: F-IF.8a	i) Tasks involve using algebra to prove properties of given functions. For example, prove algebraically that the function $h(t) = t(t-1)$ has minimum value $\frac{1}{4}$; prove algebraically that the graph of $g(x) = x^2 - x + \frac{1}{4}$ is symmetric about the line $x = \frac{1}{2}$; prove that $x^2 + 1$ is never less than $-2x$. ii) Scaffolding is provided to ensure tasks have appropriate level of difficulty. (For example, the prompt could show the graphs of $x^2 + 1$ and $-2x$ on the same set of axes, and say, "From the graph, it looks as if $x^2 + 1$ is never less than $-2x$. In this task, you will use algebra to prove it." And so on, perhaps with additional hints or scaffolding.) iii) Tasks may have a mathematical or real-world context.	MP.3	Y
C	HS-C.16.2	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any). Tasks are limited to quadratic equations. Content scope: A-REI.1, A-REI.4a, A-REI.4b, limited to real solutions only.	-	MP.3, MP.6	Y
C	HS-C.18.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about linear equations in one or two variables. Content scope: 8.EE.B	i) For both Algebra1 and Math 1, we are revisiting content initially introduced in grade 8, from a more mature reasoning perspective.	MP.3, MP.6	Y

*Calculator Key:
Y – Yes; Assessed on Calculator Section
X – Calculator is Specific to Item
N – No; Assessed on Non-Calculator Sections
Z – Calculator Neutral (Could Be on Calculator or Non-Calculator Sections

Algebra I Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
D	HS-D.1-1	Solve multi-step contextual problems with degree of difficulty appropriate to the course, requiring application of knowledge and skills articulated in 7.RP.A, 7.NS.3, 7.EE, and/or 8.EE.	-	MP.4, may involve MP 1, MP.2, MP.5	Y
D	HS-D.2-5	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in A-CED, N-Q, A-SSE.3, A-REI.6, A-REI.12, A-REI.11-1, limited to linear equations and exponential equations with integer exponents.	i) A-CED is the primary content; other listed content elements may be involved in tasks as well.	MP.2, MP.4	Y
D	HS-D.2-6	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in A-CED, N-Q.2, A-SSE.3, A-REI.6, A-REI.12, A-REI.11-1, limited to linear and quadratic equations.	i) A-CED is the primary content; other listed content elements may be involved in tasks as well.	MP.2, MP.4	Y
D	HS-D.2-8	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-BF.1a, F-BF.3, A-CED.1, A-SSE.3, F-IF.B, F-IF.7, limited to linear functions and exponential functions with domains in the integers.	i) F-BF.1a is the primary content; other listed content elements may be involved in tasks as well.	MP.2, MP.4	Y
D	HS-D.2-9	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-BF.1a, F-BF.3, A-CED.1, A-SSE.3, F-IF.B, F-IF.7, limited to linear and quadratic functions.	i) F-BF.1a is the primary content; other listed content elements may be involved in tasks as well.	MP.2, MP.4	Y
D	HS-D.3-1a	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature). Content Scope: Knowledge and skills articulated in the Algebra I Type I, Sub-Claim A Evidence Statements.	-	MP.4, may involve MP 1, MP.2, MP.5, MP.7	Y
D	HS-D.3-3a	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in the Algebra I Type I, Sub-Claim A Evidence Statements.	-	MP.4, may involve MP 1, MP.2, MP.5, MP.7	Y

*Calculator Key:
Y – Yes; Assessed on Calculator Section
X – Calculator is Specific to Item
N – No; Assessed on Non-Calculator Sections
Z – Calculator Neutral (Could Be on Calculator or Non-Calculator Sections

Algebra II Change History Log

Date	Version	Change Description	Author
11/01/17	1.2	S.ID.4 Removed clarification #1	Linda Kaniecki – New Meridian
05/07/18	1.3	Changed clarifications for S.ID.4, HS-D.2-13 (ix), F-BF.Int.2, HS.C.6.4, S.IC.3-1, and HS-D.3-5	Linda Kaniecki – New Meridian, Heather Brown - MOWG
05/08/18	1.4	Minor formatting, spacing, punctuation edits throughout. Updated Math Practices for F-BF.3-2 and HS-C.18.4	Jennifer Ramirez - Pearson
10/24/18	1.5	HS-D.2-7 clarification: A-CED.2, A-CED.3, and A-CED.4 is securely-held knowledge that may be assessed in this evidence statement.	Jennifer Novak - Pearson

Algebra II Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS-D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Algebra II Evidence Statements
Listing by Type I, Type II, and Type III

The Evidence Statements for Algebra II are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-APR.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number *a*, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	-	MP.6	N
B	A-APR.6	Rewrite simple rational expressions in different forms; write $\frac{a(x)}{b(x)}$ in the form $q(x) + \frac{r(x)}{b(x)}$, where $a(x), b(x), q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	i) Examples will be simple enough to allow inspection or long division. ii) Simple rational expressions are limited to numerators and denominators that have degree at most 2.	MP.1	Z
A	A-REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	i) Simple rational equations are limited to numerators and denominators that have degree at most 2.	MP.3, MP.6	N
B	A-REI.4b-2	Solve quadratic equations in one variable. b) Recognize when the quadratic formula gives complex solutions.	i) Writing solutions in the form a ± bi is not assessed here (assessed under N-CN.7).	MP.5, MP.7	X
B	A-REI.6-2	Solve algebraically a system of three linear equations in three unknowns.	i) Coefficients are rational numbers. ii) Tasks do not require any specific method to be used (e.g., prompts do not direct the student to use elimination or any other particular method).	MP.1, MP.7	X
B	A-REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.	i) Tasks have thin context or no context.	MP.1	X
A	A-REI.11-2	Find the solutions of where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect, e.g. using technology to graph the functions, make tables of values or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, quadratic, polynomial, rational, absolute value, exponential, and/or logarithmic functions. ★	i) The "explain" part of standard A-REI.11 is not assessed here.	MP.1, MP.5	X

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	A-SSE.2-3	Use the structure of polynomial, rational or exponential expressions to identify ways to rewrite it. *For example, see* $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$ *, thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$.	i) Additional examples: In the equation $x^2 + 2x + 1 + y^2 = 9$, see an opportunity to rewrite the first three terms as $(x + 1)^2$. See $(x^2 + 4)/(x^2 + 3)$ as $((x^2 + 3) + 1)/(x^2 + 3)$, thus recognizing an opportunity to write it as $1 + 1/(x^2 + 3)$. ii) Tasks will not include sums and differences of cubes.	MP.7	Z
A	A-SSE.2-6	Use the structure of a polynomial, rational, or exponential expression to rewrite it, in a case where two or more rewriting steps are required.	i) Factor completely: $6cx - 3cy - 2dx + dy$. (A first iteration might give $3c(2x - y) + d(-2x + y)$, which could be recognized as $3c(2x - y) - d(2x - y)$ on the way to factoring completely as $(3c - d)(2x - y)$.) ii) Tasks do not have a context.	MP.1, MP.7	Z
A	A-SSE.3c-2	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression, where exponentials are limited to rational or real exponents. c) Use the properties of exponents to transform expressions for exponential functions. *For example, the expression* $1.15t$ *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*★	i) Tasks have a real-world context. ii) The equivalent form must reveal something about the real-world context. iii) Tasks require students to make the connection between the equivalent forms of the expression.	MP.1, MP.2, MP.4, MP.7	X
A	A-SSE.4-2	Use the formula for the sum of a finite geometric series to solve multi-step contextual problems.	i) In a multi-step task, students may be expected to calculate the value of a single term as well as the sum.	MP.1, MP.7	Y
A	A-Int.1	Solve equations that require seeing structure in expressions.	i) Tasks do not have a context. ii) Equations simplify considerably after appropriate algebraic manipulations are performed. iii) For example, $x^4 - 17x^2 + 16 = 0$, $2^{3x} = 7(2^{2x}) + 2^{2x}$, $x - \sqrt{x} = 3\sqrt{x}$ iv) Tasks should be course level appropriate.	MP.1, MP.7	N
A	F-BF.1b-1	Represent arithmetic combinations of standard function types algebraically.	i) Tasks may or may not have a context. ii) For example, given $f(x) = e^x$ and $g(x) = 5$, write an expression for $h(x) = 2f(-3x) + g(x)$.	MP.7	Z

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	F-BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. ★	-	MP.7, MP.8	X
B	F-BF.3-2	Identify the effect on the graph of replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of *k* given the graphs, limiting the function types to polynomial, exponential, logarithmic, and trigonometric functions.	i) Experimenting with cases and illustrating an explanation are not assessed here.	MP.5, MP.7	X
B	F-BF.3-3	Recognize even and odd functions from their graphs and algebraic expressions for them, limiting the function types to polynomial, exponential, logarithmic, and trigonometric functions.	i) Experimenting with cases and illustrating an explanation are not assessed here.	MP.7	X
B	F-BF.3-5	Identify the effect on the graph of a polynomial, exponential, logarithmic, or trigonometric function of replacing $f(x)$ by $f(x)+k$, $kf(x)$, $f(kx)$, and $f(x+k)$ for specific values of *k* (both positive and negative); find the value of *k* given the graphs. Experiment with cases using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	i) Illustrating an explanation is not assessed here.	MP.3, MP.5, MP.8	X
B	F-BF.Int.2	Find inverse functions to solve contextual problems. a) Solve an equation of the form $f(x)=c$ for a simple function *f* that has an inverse and write an expression for the inverse. *For example,* $f(x)=2x^3$ *or* $f(x)=\frac{x+1}{x-1}$ *for* $x \neq 1$.	i) For example, see http://illustrativemathematics.org/illustrations/234. ii) As another example, given a function $C(L) = 750L^2$ for the cost $C(L)$ of planting seeds in a square field of edge length *L*, write a function for the edge length $L(C)$ of a square field that can be planted for a given amount of money *C*; graph the function, labeling the axes. iii) This is an integrated evidence statement because it adds solving contextual problems to standard F-BF.4a. iv) Notation such as f^{-1} should be used to represent inverse functions, such as $p=f(n)=\cdots$ therefore $n = f^{-1}(p) - \ldots$	MP.1, MP.6, MP.8	X
A	F-IF.4-2	For an exponential, polynomial, trigonometric, or logarithmic function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; end behavior; symmetries; and periodicity.*★	i) See illustrations for F-IF.4 at http://illustrativemathematics.org, e.g., http://illustrativemathematics.org/illustrations/649, http://illustrativemathematics.org/illustrations/637, http://illustrativemathematics.org/illustrations/639 ii) Key features may also include discontinuities.	MP.4, MP.6	x

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
A	F-IF.6-2	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval with functions limited to polynomial, exponential, logarithmic, and trigonometric functions. ★	i) Tasks have a real-world context. ii) Tasks must include the interpret part of the evidence statement.	MP.1, MP.4, MP.5, MP.7	X
A	F-IF.6-7	Estimate the rate of change from a graph. ★	i) Tasks have a real-world context. ii) Tasks may involve polynomial, exponential, logarithmic, and trigonometric functions.	MP.1, MP.4, MP.5, MP.7	X
B	F-IF.7c	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★ c) Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	-	MP.1, MP.5, MP.6	X
B	F-IF.7e-1	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★ e) Graph exponential functions, showing intercepts and end behavior.	-	MP.1, MP.5, MP.6	X
B	F-IF.7e-2	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★ e) Graph logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	i) About half of tasks involve logarithmic functions, while the other half involves trigonometric functions.	MP.1, MP.5, MP.6	X
B	F-IF.8b	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. b) Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*	-	MP.7	X

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
B	F-IF.9-2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Function types are limited to polynomial, exponential, logarithmic, and trigonometric functions.	i) Tasks may or may not have a real-world context.	MP.1, MP.3, MP.5, MP.6, MP.8	X
B	F-LE.2-3	Solve multi-step contextual problems with degree of difficulty appropriate to the course by constructing linear and/or exponential function models.	i) Prompts describe a scenario using everyday language. Mathematical language such as "function," "exponential," etc. is not used. ii) Students autonomously choose and apply appropriate mathematical techniques without prompting. For example, in a situation of doubling, they apply techniques of exponential functions. iii) For some illustrations, see tasks at http://illustrativemathematics.org under F-LE.	MP.1, MP.2, MP.4, MP.6	X
B	F-TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	-	MP.6	X
B	F-TF.8-2	Use the Pythagorean identity $\sin^2\theta + \cos^3\theta = 1$ to find $\sin\theta$, $\cos\theta$, or $\tan\theta$, given $\sin\theta$, $\cos\theta$, or $\tan\theta$,and the quadrant of the angle.	i) The "prove" part of standard F-TF.8 is not assessed here.	MP.5, MP.7	X
Ψ	F-Int.1-2	Given a verbal description of a polynomial, exponential, trigonometric, or logarithmic functional dependence, write an expression for the function and demonstrate various knowledge and skills articulated in the Functions category in relation to this function.	i) Given a verbal description of a functional dependence, the student would be required to write an expression for the function and then, e.g., identify a natural domain for the function given the situation; use a graphing tool to graph several input-output pairs; select applicable features of the function, such as linear, increasing, decreasing, quadratic, periodic, nonlinear; and find an input value leading to a given output value.	MP.1, MP.2, MP.8	X
B	F-Int.3	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-TF.5, F-IF.B, F-IF.7, limited to trigonometric functions.	i) F-TF.5 is the primary content and at least one of the other listed content elements will be involved in tasks as well.	MP.2, MP.4	Y
B	S-CP.Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-CP.	i) Calculating expected values of a random variable is a plus standard and not assessed; however, the word "expected" may be used informally (e.g., if you tossed a fair coin 20 times, how many heads would you expect?).	MP.1, MP.2, MP.4, MP.5, MP.6	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
B	S-IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*	i) Tasks might ask the students to look at the results of a simulation and decide how plausible the observed value is with respect to the simulation. For an example, see question 7 on the calculator section of the online practice test.	MP.2, MP.4	Z
A	S-IC.3-1	Recognize the purposes of and differences among sample surveys, experiments, and observational studies.	i) The "explain" part of standard S-IC.3 is not assessed here. ii) Purposes and distinctions are as follows: a) Survey: To estimate or make a decision about a characteristic of a population based on a random sample. A sample survey is a type of observational study. b) Experiment: To estimate or compare the effects of different treatments based on randomized assignment of treatments to units for the purpose of establishing a cause and effect relationship. c) Observational study: To suggest patterns and/or associations among variables where treatments or conditions are inherent and not assigned to units.	MP.4	Z
ψ	S-IC.Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-IC.	i) If the task addresses S-IC.4, the margin of error can be estimated as being 2 standard deviations of the sampling distribution of the statistic.	MP.1, MP.2, MP.4, MP.5, MP.6	Y
B	S-ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	i) Use of a z-score table will not be required. ii) Tasks may involve finding a value at a given percentile based on a normal distribution, such as the percentages of 68%, 95%, and 99.7% for standard deviations but do not need to be more precise than this.	MP.2, MP.4	Y
B	S-ID.6a-1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID.6a, excluding normal distributions and limiting function fitting to exponential functions.	-	MP.1, MP.2, MP.4, MP.5, MP.6	Y
B	S-ID.6a-2	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID.6a, excluding normal distributions and limiting function fitting to trigonometric functions.	-	MP.1, MP.2, MP.5, MP.6	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
B	N-CN.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	-	MP.7	X
B	N-CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	-	MP.6, MP.7	N
B	N-CN.7	Solve quadratic equations with real coefficients that have complex solutions.	i) Tasks are limited to equations with non-real solutions.	MP.5	X
A	N-RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	-	MP.7	X
B	HS-Int.3-3	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-LE, A-CED.1, A-SSE.3, F-IF.B, F-IF.7★	i) F-LE.A, Construct and compare linear, quadratic, and exponential models and solve problems, is the primary content and at least one of the other listed content elements will be involved in tasks as well.	MP.2, MP.4	Y

★ Modeling standards appear throughout the CCSSM. Evidence statements addressing these modeling standards are indicated by a star symbol (★).

Ψ - These integrated evidence statements will be reported in the Master Claim which is used to determine if a student is college or career ready.

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Y – Yes; Assessed on Calculator Sections
N – No; Assessed on Non-Calculator Sections
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Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
C	HS-C.3.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about numbers or number systems. Content Scope: N-RN, N-CN	-	MP.3	Y
C	HS-C.3.2	Base explanations/reasoning on the properties of exponents. Content Scope: N-RN.A	-	MP.3, MP.8	Y
C	HS-C.4.1	Derive and use a formula. Content Scope: A-SSE.4	-	MP.3, MP.6	Y
C	HS-C.5.4	Given an equation or system of equations, reason about the number or nature of the solutions. Content Scope: A-REI.2	i) Simple rational equations are limited to numerators and denominators that have degree at most 2.	MP.3	Y
C	HS-C.5.11	Given an equation or system of equations, reason about the number or nature of the solutions. Content Scope: A-REI.11, involving any of the function types measured in the standards.	i) For example, students might be asked how many positive solutions there are to the equation $e^x = x + 2$ or the equation $e^x = x + 1$, explaining how they know. The student might use technology strategically to plot both sides of the equation without prompting.	MP.3	Y
C	HS-C.6.2	Base explanations/reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: A-REI.D	-	MP.3	Y
C	HS-C.6.4	Base explanations/reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: G-GPE.2	i) Items may assess the converse of this evidence statement.	MP.3	Y
C	HS-C.7.1	Base explanations/reasoning on the relationship between zeros and factors of polynomials. Content Scope: A-APR.B	-	MP.3	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
C	HS-C.8.2	Construct, autonomously, chains of reasoning that will justify or refute algebraic propositions or conjectures. Content Scope: A-APR.4	-	MP.3	Y
C	HS-C.8.3	Construct, autonomously, chains of reasoning that will justify or refute algebraic propositions or conjectures. Content Scope: A-APR	-	MP.3	Y
C	HS-C.9.2	Express reasoning about transformations of functions. Content scope: F-BF.3, which may involve polynomial, exponential, logarithmic, or trigonometric functions. Tasks also may involve even and odd functions.	-	MP.3	Y
C	HS-C.11.1	Express reasoning about trigonometric functions and the unit circle. Content scope: F-TF.2, F-TF.8	i) For example, students might explain why the angles $\frac{151\pi}{3}$ and $\frac{\pi}{3}$ have the same cosine value; or use the unit circle to prove that $\sin^2\left(\frac{3\pi}{4}\right) + \cos^2\left(\frac{3\pi}{4}\right) = 1$; or compute the tangent of the angle in the first quadrant having sine equal to $\frac{1}{3}$.	MP.3	Y
C	HS-C.12.2	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about functions. Content scope: F-IF.8b	-	MP.3	Y
C	HS-C.16.3	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any). Tasks are limited to simple rational or radical equations. Content scope: A-REI.1	i) Simple rational equations are limited to numerators and denominators that have degree at most 2. ii) A rational or radical function may be paired with a linear function. A rational function may not be paired with a radical function.	MP.3, MP.6	Y
C	HS-C.17.2	Make inferences and justify conclusions from data. Content scope: S-IC	i) For tasks that address simple random sample: A simple random sample requires that every possible group of the given sample size has an equal chance of being selected, not that every unit in the population has an equal chance of being selected. ii) For tasks that address comparing two data distributions: Comparisons of center, shape, and spread are required.	MP.2, MP.3, MP.4, MP.6	Y
C	HS-C.17.3	Make inferences and justify conclusions from data. Content scope: S-IC.3	i) For tasks that address simple random sample: A simple random sample requires that every possible group of the given sample size has an equal chance of being selected, not that every unit in the population has an equal chance of being selected.	MP.2, MP.3, MP.5, MP.6	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
C	HS-C.17.4	Make inferences and justify conclusions from data. Content scope: S-IC.5	i) For tasks that address comparing two data distributions: Comparisons of center, shape, and spread are required. ii) Tasks may use the terms "variability" and "spread".	MP.2, MP.3, MP.4, MP.6	Y
C	HS-C.17.5	Make inferences and justify conclusions from data. Content scope: S-IC.6	i) Reports should be based on content from S-IC. ii) For tasks that address simple random sample: A simple random sample requires that every possible group of the given sample size has an equal chance of being selected, not that every unit in the population has an equal chance of being selected. iii) For tasks that address comparing two data distributions: Comparisons of center,	MP.2, MP.3, MP.4, MP.6	Y
C	HS-C.18.4	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about polynomials, rational expressions, or rational exponents. Content scope: N-RN, A-APR.(2, 3, 4, 6)	-	MP.3, MP.6	Y
C	HS-C.CCR	Solve multi-step mathematical problems requiring extended chains of reasoning and drawing on a synthesis of the knowledge and skills articulated across: 7-RP.A.3, 7-NS.A.3, 7-EE.B.3, 8-EE.C.7B, 8-EE.C.8c, N-RN.A.2, A-SSE.A.1b, A-REI.A.1, A-REI.B.3, A-REI.B.4b, F-IF.A.2, F-IF.C.7a, F-IF.C.7e, G-SRT.B.5 and G-SRT.C.7.	i) Tasks will draw on securely held content from previous grades and courses, including down to Grade 7, but that are at the Algebra II/Mathematics III level of rigor. ii) Tasks will synthesize multiple aspects of the content listed in the evidence statement text, but need not be comprehensive. iii) Tasks should address at least A-SSE.A.1b, A-REI.A.1, and F-IF.A.2 and either F-IF.C.7a or F-IF.C.7e (excluding trigonometric and logarithmic functions). Tasks should also draw upon additional content listed for grades 7 and 8 and from the remaining standards in the Evidence Statement Text.	MP.1, MP.2, MP.3, MP.6, MP.7	Y

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Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
D	HS-D.2-4	Solve multi-step contextual problems with degree of difficulty appropriate to the course that require writing an expression for an inverse function, as articulated in F.BF.4a.	i) Refer to F-BF.4a for some of the content knowledge relevant to these tasks.	MP.4	Y
D	HS-D.2-7	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in A-CED, N-Q.2, A-SSE.3, A-REI.6, A-REI.7, A-REI.12, A-REI.11-2.	i) A-CED is the primary content; other listed content elements may be involved in tasks as well. A-CED.2, A-CED.3, and A-CED.4 is securely-held knowledge that may be assessed in this evidence statement.	MP.2, MP.4	Y
D	HS-D.2-10	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-BF.A, F-BF.3, F-IF.3, A-CED.1, A-SSE.3, F-IF.B, F-IF.7.	i) F-BF.A is the primary content; other listed content elements may be involved in tasks as well.	MP.2, MP.4	Y
D	HS-D.2-13	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-ID and S-IC.	i) If the content is only S-ID, the task must include Algebra II / Math III content (S-ID.4 or S-ID.6). ii) Longer tasks may require some or all of the steps of the modeling cycle (CCSSM, pp. 72, 73); for example, see ITN Appendix F, "Karnataka" task (Section A "Illustrations of innovative task characteristics," subsection 7 "Modeling/Application," subsection f "Full Models"). As in the Karnataka example, algebra and function skills may be used. iii) Predictions should not extrapolate far beyond the set of data provided. iv) Line of best fit is always based on the equation of the least squares regression line either provided or calculated through the use of technology. Tasks may involve linear, exponential, or quadratic regressions. If the linear regression is in the task, the task must be written to allow students to choose the regression. v) To investigate associations, students may be asked to evaluate scatterplots that may be provided or created using technology. Evaluation includes shape, direction, strength, presence of outliers, and gaps. vi) Analysis of residuals may include the identification of a pattern in a residual plot as an indication of a poor fit. vii) Models may assess key features of the graph of the fitted model. viii) Task that involve S-IC.2 might ask the students to look at the results of a simulation and decide how plausible the observed value is with respect to the simulation. For an example, see question 7 on the calculator section of the online practice test. ix) For tasks that involve S-ID.4, should know the percentages of 68%, 95%, and 99.7% for standard deviations but do not need to be more precise than this. x) Tasks may involve finding a value at a given percentile based on a normal distribution.	MP.1, MP.2, MP.4, MP.5, MP.6	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator*
D	HS-D.3-5	Decisions from data: Identify relevant data in a data source, analyze it, and draw reasonable conclusions from it. Content scope: Knowledge and skills articulated in Algebra II.	i) Tasks may result in an evaluation or recommendation. ii) The purpose of tasks is not to provide a setting for the student to demonstrate breadth in data analysis skills (such as box-and-whisker plots and the like). Rather, the purpose is for the student to draw conclusions in a realistic setting using basic techniques.	MP 4, may involve MP.1, MP.2, MP.5, MP.7	Y
D	HS-D.3-6	Full models: Identify variables in a situation, select those that represent essential features, formulate a mathematical representation of the situation using those variables, analyze the representation and perform operations to obtain a result, interpret the result in terms of the original situation, validate the result by comparing it to the situation, and either improve the model or briefly report the conclusions. Content scope: Knowledge and skills articulated in the Standards in grades 6-8, Algebra I and Math I (excluding statistics).	i) See CCSSM, pp. 72, 73 for more information on the modeling cycle. ii) Task prompts describe a scenario using everyday language. Mathematical language such as "function," "equation," etc. is not used. iii) Tasks require the student to make simplifying assumptions autonomously in order to formulate a mathematical model. For example, the student might autonomously make a simplifying assumption that every tree in a forest has the same trunk diameter, or that water temperature is a linear function of ocean depth. iv) Tasks may require the student to create a quantity of interest in the situation being described (N-Q.2). For example, in a situation involving population and land area, the student might decide autonomously that population density is a key variable, and then choose to work with persons per square mile. In a situation involving data, the student might autonomously decide that a measure of center is a key variable in a situation, and then choose to work with the mean. v) Tasks may involve choosing a level of accuracy appropriate to limitations of measurement or limitations of data when reporting quantities (N-Q.3, first introduced in AI/MI).	MP 4, may involve MP.1, MP.2, MP.5, MP.7	Y
D	HS-D.CCR	Solve problems using modeling: Identify variables in a situation, select those that represent essential features, formulate a mathematical representation of the situation using those variables, analyze the representation and perform operations to obtain a result, interpret the result in terms of the original situation, validate the result by comparing it to the situation, and either improve the model or briefly report the conclusions. Content scope: Knowledge and skills articulated in the Standards as described in previous courses and grades, with a particular emphasis on 7-RP, 8-EE, 8-F, N-Q, A-CED, A-REI, F-BF, G-MG, Modeling, and S-ID.	i) Tasks will draw on securely held content from previous grades and courses, include down to Grade 7, but that are at the Algebra II/Mathematics III level of rigor. ii) Task prompts describe a scenario using everyday language. Mathematical language such as "function," "equation," etc. is not used. iii) Tasks require the student to make simplifying assumptions autonomously in order to formulate a mathematical model. For example, the student might make a simplifying assumption autonomously that every tree in a forest has the same trunk diameter, or that water temperature is a linear function of ocean depth. iv) Tasks may require the student to create a quantity of interest in the situation being described.	MP 4; may involve MP.1, MP 2, MP.5, MP. 6, MP.7	Y

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Geometry Change History Log

Date	Version	Change Description	Author
10/1/17	1.1	Reviewed – no edits	Linda Kaniecki – New Meridian
5/7/18	1.2	G.CO.C – edit clarifications	Linda Kaniecki – New Meridian, Heather Brown - MOWG
5/14/18	1.3	Minor formatting, spacing, punctuation edits throughout. Added a separate row for 1.2 and 1.4 items for G-SRT.8.	Jennifer Ramirez – Pearson

Geometry Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the Common Core State Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that the assessment covers the full range and depth of the standards which can be downloaded from http://www.corestandards.org/Math/.

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2§** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1§** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1§** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1§** (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2[§] -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
    - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1[§] – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
    - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2[§] – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS-D.5[§] - Given an equation or system of equations, reason about the number or nature of the solutions.
    - Content scope: A-REI.11, involving any of the function types measured in the standards.

[§] The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Geometry Evidence Statements
Listing by Type I, Type II, and Type III

The Evidence Statements for Geometry are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items.

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
B	G-C.2	Identify and describe relationships among inscribed angles, radii, and chords and apply these concepts in problem solving situations.	i) Include the relationship between central, inscribed, and circumscribed angles: inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle. ii) This does not include angles and segment relationships with tangents and secants. Tasks will not assess angle relationships formed outside the circle using secants and tangents. iii) Tasks may involve the degree measure of an arc.	MP.1, MP.5	X
B	G-C.B	Find arc lengths and areas of sectors of circles.	i) Tasks involve computing arc lengths or areas of sectors given the radius and the angle subtended; or vice versa.	-	X
B	G-CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	i) Definitions are limited to those in the evidence statement. ii) Plane is also considered an undefined notion.	MP.6	Z
B	G-CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	-	MP.5, MP.6, MP.7	Z
B	G-CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	-	MP.5, MP.6, MP.7	Z
A	G-CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide	-	MP.3	Z
A	G-CO.C	Prove geometric theorems as detailed in G-CO.C.	i) About 75% of tasks align to G.CO.9 or G.CO.10. ii) Theorems include but are not limited to the examples listed in standards G-CO.9,10,11. iii) Multiple types of proofs are allowed (e.g., two-column proof, indirect proof, paragraph proof, flow diagrams, proofs by contradictions).	MP.3, MP.6	Z

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
B	G-CO.D	Make and understand geometric constructions as detailed in G-CO.D.	i) About 75% of tasks align to G.CO.12. ii) Tasks may include requiring students to justify steps and results of a given construction.	MP.3, MP.5, MP.6	Z
B	G-GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*	-	MP.3, MP.6, MP.7	Z
B	G-GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. ★	-	MP. 4	X
B	G-GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	i) If the cross section is a conic section it will be limited to circles, ellipses, and parabolas. (It will not include hyperbolas.)	MP.7	Z
B	G-GPE.1-1	Complete the square to find the center and radius of a circle given by an equation.	i) The "derive" part of standard G-GPE.1 is not assessed here.	MP.6	Z
B	G-GPE.1-2	Understand or complete a derivation of the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	i) Tasks must go beyond simply finding the center and radius of a circle.	MP.6	Z
A	G-GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	-	MP.1, MP.5	X
A	G-SRT.1a	Verify experimentally the properties of dilations given by a center and a scale factor. a) A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	-	MP.1, MP.3, MP.5, MP.8	Z
A	G-SRT.1b	Verify experimentally the properties of dilations given by a center and a scale factor. b) The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	-	MP.1, MP.3, MP.5,MP.8	Z

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
A	G-SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar.	i) The "explain" part of standard G-SRT.2 is not assessed here. See Sub-Claim C for this aspect of the standard.	MP.7	Z
A	G-SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	i) For example, find a missing angle or side in a triangle.	MP.7	Z
A	G-SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	i) Trigonometric ratios include sine, cosine, and tangent only.	MP.7	Z
A	G-SRT.7-2	Use the relationship between the sine and cosine of complementary angles.	i) The "explain" part of standard G-SRT.7 is not assessed here; See Sub-Claim C for this aspect of the standard.	MP.7	Z
A	G-SRT.8 (1.1)	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.	i) The task may have a real world or mathematical context. ii) For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly.	MP.1, MP.2, MP.5, MP.6	X
A	G-SRT.8 (1.2, 1.4)	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. ★	i) Tasks have multiple steps. ii) The task may have a real world or mathematical context. iii) For rational solutions, exact values are required. For irrational solutions, exact or decimal approximations may be required. Simplifying or rewriting radicals is not required; however, students will not be penalized if they simplify the radicals correctly.	MP.1, MP.2, MP.4, MP.5, MP.6	Y
A	G-Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in G-MG and G-GPE.7.	i) MG is the primary content ii) See examples at https://www.illustrativemathematics.org/ for G-MG.	MP.1, MP.2, MP.4, MP.5, MP.6	X

★ Modeling standards appear throughout the CCSSM. Evidence statements addressing these modeling standards are indicated by a star symbol (★)

*Calculator Key:
Y – Yes; Assessed on Calculator Sections
N – No; Assessed on Non-Calculator Sections
X – Calculator is Specific to Item
Z – Calculator Neutral (Could Be on Calculator or Non-Calculator Sections)

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
C	HS-C.13.1	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content scope: G-GPE.6, G-GPE.7	-	MP.3	Y
C	HS-C.13.2	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content scope: G-GPE.4	-	MP.3	Y
C	HS-C.13.3	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content scope: G-GPE.5	-	MP.3	Y
C	HS-C.14.1	Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures. Content scope: G-CO.9, G-CO.10	i) Theorems include, but are not limited to, the examples listed in standards G-CO.9 & G-CO.10.	MP.3	Y
C	HS-C.14.2	Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures. Content scope: G-CO.A, G-CO.B	-	MP.3	Y
C	HS-C.14.3	Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures. Content scope: G-CO.D	-	MP.3	Y
C	HS-C.14.5	Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures. Content scope: G-SRT.A	-	MP.3	Y
C	HS-C.14.6	Construct, autonomously, chains of reasoning that will justify or refute geometric propositions or conjectures. Content scope: G-SRT.B	-	MP.3	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
C	HS-C.15.14	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content scope: G-SRT.C	-	MP.3, MP.6	Y
C	HS-C.18.2	Use a combination of algebraic and geometric reasoning to construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about geometric figures. Content scope: Algebra content from Algebra I course; geometry content from the Geometry course.	i) For the Geometry course, we are reaching back to Algebra 1 to help students synthesize across the two subjects.	MP.3, MP.6	Y

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Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
D	HS-D.1-2	Solve multi-step contextual problems with degree of difficulty appropriate to the course, requiring application of knowledge and skills articulated in 6.G, 7.G, and/or 8.G.	-	MP.4, may involve MP.1, MP.2, MP.5, MP.7	Y
D	HS-D.2-1	Solve multi-step contextual problems with degree of difficulty appropriate to the course involving perimeter, area, or volume that require solving a quadratic equation.	i) Tasks do not cue students to the type of equation or specific solution method involved in the task. For example: An artist wants to build a right-triangular frame in which one of the legs exceeds the other in length by 1 unit, and in which the hypotenuse exceeds the longer leg in length by 1 unit. Use algebra to show that there is one and only one such right triangle, and determine its side lengths.	MP.1, MP.4, MP.5	Y
D	HS-D.2-2	Solve multi-step contextual problems with degree of difficulty appropriate to the course involving perimeter, area, or volume that require finding an approximate solution to a polynomial equation using numerical/graphical means.	i) Tasks may have a real world or mathematical context. ii) Tasks may involve coordinates (G-GPE.7). iii) Refer to A-REI.11 for some of the content knowledge from the previous course relevant to these tasks. iv) Cubic polynomials are limited to polynomials in which linear and quadratic factors are available. v) To make the tasks involve strategic use of tools (MP.5), calculation and graphing aids are available but tasks do not prompt the student to use them.	MP.1, MP.4, MP.5	Y
D	HS-D.2-11	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in G-SRT.8, involving right triangles in an applied setting.	i) Tasks may, or may not, require the student to autonomously make an assumption or simplification in order to apply techniques of right triangles. For example, a configuration of three buildings might form a triangle that is nearly, but not quite, a right triangle; then, a good approximate result can be obtained if the student autonomously approximates the triangle as a right triangle.	MP.2 , MP.4	Y

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MP	Calculator*
D	HS-D.3-2a	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature). Content Scope: Knowledge and skills articulated in the Geometry Type I, Sub-Claim A Evidence Statements.	-	MP.4, may involve MP.1, MP.2, MP.5, MP.7	Y
D	HS-D.3-4a	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in the Geometry Type I, Sub-Claim A Evidence Statements.	-	MP.4, may involve MP.1, MP.2, MP.5, MP.7	Y

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