Evidence Statement Tables
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.

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[1]** (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1[1]** (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1[1]** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1[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[1] -- 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[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[1] – 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[1] - 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.

[1] 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 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 (sub-claims A and B), Type II items (reasoning/sub-claim C), or Type III items (modeling/sub-claim D).

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.

Geometry 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 MP	Calculator*
Sub-claim A (18 of 55 points) Sub-claim B (12 of 55 points)					
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

Geometry 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 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

Geometry 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 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)

Geometry 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 MP	Calculator*
Sub-claim C (10 of 55 points)					
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

Geometry 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 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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Geometry 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 MP	Calculator*
Sub-claim D (15 of 55 points)					
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

Geometry 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 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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Y – Yes; Assessed on Calculator Sections
N – No; Assessed on Non-Calculator Sections
X – Calculator is Specific to Item
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Evidence Statement Tables

Algebra I

Evidence Statement Keys

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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**[1] (Integrated across Grade 4)

- **Conceptual Category – F.Int.1**[1] (Integrated across the Functions Conceptual Category)
- **Domain – 4.NBT.Int.1**[1] (Integrated across the Number and Operations in Base Ten Domain)
- **Cluster** – **3.NF.A.Int.1**[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[1] -- 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[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[1] – 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[1] - 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.

[1] 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 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 (sub-claims A and B), Type II items (reasoning/sub-claim C), or Type III items (modeling/sub-claim D).

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

Peach – Evidence Statement is applicable to Type I items.

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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*
Sub-claim A (17 of 55 points) Sub-claim B (10 of 55 points) & Integrated (3 points - Mater Claim)					
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

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: $x^2 - 1 + (x-1)^2$. (A first iteration might give $(x+1)(x-1)+(x-1)^2$, which could be rewritten as $(x+1)(x+1+x-1)$ on the way to factoring completely as $2x(x-1)$. Or the student might first expand, as: $x^2 - 1 + x^2 - 2x + 1$, rewriting as $2x^2 - 2x$, then factoring as $2x(x-1)$.) 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	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, 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	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*
Sub-claim C (10 of 55 points)					
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

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.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
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*
Sub-claim D (15 of 55 points)					
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

Evidence Statement Tables
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.

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**[1] (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1**[1] (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1**[1] (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1**[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[1] -- 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[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[1] – 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[1] - 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.

[1] 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 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 (sub-claims A and B), Type II items (reasoning/sub-claim C), or Type III items (modeling/sub-claim D).

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 II 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*
Sub-claim A (17 of 55 points) Sub-claim B (12 of 55 points) & Integrated (1 point - Master Claim)					
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

Algebra II 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.2-3	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

Algebra II 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-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

Algebra II 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.6-2	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

Algebra II 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.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 $\sin^2\theta + \cos^2\theta = 1$ to find $\sin\theta$, $\cos\theta$, or $\tan\theta$, given $\sin\theta$, $\cos\theta$, or $\tan\theta$, and the quadrant 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

Algebra II 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	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

Algebra II 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	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.

*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

Algebra II 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*
Sub-claim C (10 of 55 points)					
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

Algebra II 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.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

*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)

Algebra II 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*
Sub-claim D (15 of 55 points)					
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) Tasks 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

Algebra II 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.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

Algebra II Evidence Statements

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

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

*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)