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.

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[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 - Mater 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

Evidence Statement Tables – Algebra II

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 $n = f^{-1}(p) - ...$	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

Evidence Statement Tables – Algebra II

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 $\sin^2\theta + \cos^3\theta = 1$ to find $\sin\theta$, $\cos\theta$, or $\tan\theta$, given $\sin\theta$, $\cos\theta$, or $\tan\theta$, and the quadrant of the angle.	i) The "prove" part of standard F-TF.8 is not assessed here.	MP.5, MP.7	X
Ψ	F-Int.1-2	Given a verbal description of a polynomial, exponential, trigonometric, or logarithmic functional dependence, write an expression for the function and demonstrate various knowledge and skills articulated in the Functions category in relation to this function.	i) Given a verbal description of a functional dependence, the student would be required to write an expression for the function and then, e.g., identify a natural domain for the function given the situation; use a graphing tool to graph several input-output pairs; select applicable features of the function, such as linear, increasing, decreasing, quadratic, periodic, nonlinear; and find an input value leading to a given output value.	MP.1, MP.2, MP.8	X
B	F-Int.3	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in F-TF.5, F-IF.B, F-IF.7, limited to trigonometric functions.	i) F-TF.5 is the primary content and at least one of the other listed content elements will be involved in tasks as well.	MP.2, MP.4	Y
B	S-CP.Int.1	Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in S-CP.	i) Calculating expected values of a random variable is a plus standard and not assessed; however, the word "expected" may be used informally (e.g., if you tossed a fair coin 20 times, how many heads would you expect?).	MP.1, MP.2, MP.4, MP.5, MP.6	Y

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.	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

Evidence Statement Tables – Algebra II

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

Evidence Statement Tables – Algebra II

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

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.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:
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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) Task that involve S-IC.2 might ask the students to look at the results of a simulation and decide how plausible the observed value is with respect to the simulation. 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

Evidence Statement Tables – Algebra II

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

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.CCR	Solve problems using modeling: Identify variables in a situation, select those that represent essential features, formulate a mathematical representation of the situation using those variables, analyze the representation and perform operations to obtain a result, interpret the result in terms of the original situation, validate the result by comparing it to the situation, and either improve the model or briefly report the conclusions. Content scope: Knowledge and skills articulated in the Standards as described in previous courses and grades, with a particular emphasis on 7-RP, 8-EE, 8-F, N-Q, A-CED, A-REI, F-BF, G-MG, Modeling, and S-ID.	i) Tasks will draw on securely held content from previous grades and courses, include down to Grade 7, but that are at the Algebra II/Mathematics III level of rigor. ii) Task prompts describe a scenario using everyday language. Mathematical language such as "function," "equation," etc. is not used. iii) Tasks require the student to make simplifying assumptions autonomously in order to formulate a mathematical model. For example, the student might make a simplifying assumption autonomously that every tree in a forest has the same trunk diameter, or that water temperature is a linear function of ocean depth. iv) Tasks may require the student to create a quantity of interest in the situation being described.	MP 4; may involve MP.1, MP 2, MP.5, MP. 6, MP.7	Y

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