

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra I: Content (Sub-Claim A) The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Expressions: A-SSE.1-1, A-SSE.1-2, A-SSE.2-1, A.APR.1-1			
Writes and analyzes equivalent numerical and polynomial expressions in one variable, using addition, subtraction, multiplication and factoring, including multi-step problems.	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction, multiplication and factoring.	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction and multiplication.	Writes equivalent numerical and polynomial expressions in one variable, using addition, subtraction and multiplication.
Interprets parts of complicated exponential and quadratic expressions that represent a quantity in terms of its context.	Interprets parts of exponential and quadratic expressions that represent a quantity in terms of its context.	Identifies components of exponential and quadratic expressions.	Identifies components of exponential expressions.
Interpreting Functions: F-IF.1, F-IF.2, F-IF.A.Int.1, F-IF.4-1, F-IF.5-1, F-IF.5-2, F.Int.1-1 S.ID.Int.1			
Determines if a given relation is a function.	Determines if a given relation is a function.	Determines if a given relation is a function.	Determines if a given relation is a function.
Evaluates with, uses and interprets with function notation within a context.	Evaluates with and uses function notation within a context.	Evaluates with and uses function notation.	Evaluates with and uses function notation.
Given a context, writes and analyzes a linear or quadratic function.	Given a context, writes a linear function.	Given a context, writes a linear function.	Given a context, writes a linear function.
For linear and quadratic functions that model contextual relationships, determines and interprets key features, graphs the function and solves problems.	For linear and quadratic functions that model contextual relationships, determines key features and graphs the function.	For linear and quadratic functions that model contextual relationships, determines key features.	Given the graph of linear functions that model contextual relationships, determines key features.
Determines the domain and relates it to the quantitative relationship it describes for a linear, quadratic, exponential (limited to domains in	Determines the domain and relates it to the quantitative relationship it describes for linear, quadratic and	Determines the domain of linear and quadratic functions.	

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the integers), square root, cube root, piece-wise, step and absolute value functions.	exponential (limited to domains in the integers) functions.		
Rate of Change: F-IF.6-1a, F-IF.6-1b, F-IF.6-6a, F-IF.6-6b			
Calculates and interprets the average rate of change of linear, exponential, quadratic, square root, cube root and piecewise-defined functions (presented symbolically or as a table) over a specified interval, and estimates the rate of change from a graph.	Calculates the average rate of change of linear, exponential and quadratic functions (presented symbolically or as a table) over a specified interval and estimate the rate of change from a graph.	Calculates the average rate of change of linear, exponential and quadratic functions (presented symbolically or as a table) over a specified interval.	Calculates the average rate of change of linear, exponential and quadratic functions (presented as a table) over a specified interval.
Compares rates of change associated with different intervals.			
Solving Algebraically: A-REI.3, A-REI.4a-1, A-REI.4b-1, A-REI.4b-2, A-CED.4-1, A-CED.4-2, HS-Int.1, HS-Int.2, HS-Int.3-2			
Algebraically solves linear equations, linear inequalities and quadratics in one variable (at complexity appropriate to the course), including those with coefficients represented by letters.	Algebraically solves linear equations, linear inequalities and quadratics in one variable (at complexity appropriate to the course), including those with coefficients represented by letters.	Algebraically solves linear equations, linear inequalities and quadratics in one variable (at complexity appropriate to the course).	Algebraically solves linear equations and linear inequalities in one variable (at complexity appropriate to the course).
Utilizes structure and rewriting as strategies for solving.			
Solving Graphically: A-CED.3-1, A-REI.10, A-REI.11-1a, A-REI.12			
Graphs and analyzes the solution sets of equations, linear inequalities and systems of linear inequalities.	Graphs the solution sets of equations, linear inequalities and systems of linear equations and linear inequalities.	Graphs the solution sets of equations and linear inequalities.	Graphs the solution sets of equations and linear inequalities.

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Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	Finds the solutions to two polynomial functions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	Given the graph, identify the solutions of a system of two polynomial functions.
Writes a system of linear inequalities given a context.			

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Algebra I: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Number Systems: N-RN.B-1			
Identifies rational and irrational numbers.	Identifies rational and irrational numbers.	Identifies rational and irrational numbers.	Identifies rational and irrational numbers.
Calculates sums and products of two rational and/or irrational numbers and determines whether and generalizes when the sums and products are rational or irrational.	Calculates sums and products of two rational and/or irrational numbers.		
Equivalent Expressions and Functions: A-SSE.3a, A-SSE.3b, A-SSE.3c-1, F-IF.8a			
Determines equivalent forms of quadratic and exponential (with integer domain) expressions and functions to reveal and explain their properties.	Determines equivalent forms of quadratic expressions and functions.	Identifies equivalent forms of quadratic expressions and functions.	Identifies equivalent forms of quadratic expressions and functions in cases where suitable factorizations are provided.
	Uses equivalent forms to reveal and explain zeros, extreme values and symmetry.	Identifies zeros and symmetry.	
Interpreting Graphs of Functions: A-APR.3-1, F-IF.7a-1, F-IF.7a-2 F-IF.7b			
Graphs linear, quadratic, cubic (in which linear and quadratic factors are available), square root, cube root and piecewise-defined functions, showing key features.	Graphs linear, quadratic and cubic (in which linear and quadratic factors are available) functions, showing key features.	Graphs linear and quadratic functions, showing key features.	Graphs linear functions, showing key features.
Determines a function, given a graph with key features identified.			
Function Transformations: F-BF.3-1, F-BF.3-4			
Identifies the effects of multiple transformations on graphs of linear	Identifies the effects of a single transformation on graphs of linear	Identifies the effects of a single transformation on graphs of linear	Identifies the effects of a single transformation on graphs of linear

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Algebra I: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
and quadratic functions and finds the value of k given a transformed graph.	and quadratic functions, including $f(x)+k$, $kf(x)$, $f(kx)$ and $f(x+k)$, and finds the value of k given a transformed graph.	and quadratic functions, limited to $f(x)+k$ and $kf(x)$.	and quadratic functions, limited to $f(x)+k$.
Experiments with cases using technology.			
Given the equation of a transformed linear or quadratic function, creates an appropriate graph.			
Multiple Representations of Functions: A-REI.6-1, F-LE.2-1, F-LE.2-2, F-IF.9-1, F-Int.1-1, S-ID.Int.1, S-ID.Int.2, HS-Int.1, HS-Int.2, HS-Int.3-1, HS-Int.3-2			
Writes and analyzes systems of linear equations in multi- step contextual problems.	Writes systems of linear equations in multi-step contextual problems.	Writes systems of linear equations in multi-step contextual problems.	Writes systems of linear equations in simple contextual problems.
Represents linear and exponential (with domain in the integers) functions symbolically, in real-life scenarios, graphically, with a verbal description, as a sequence and with input- output pairs to solve mathematical and contextual problems.	Represents linear and exponential (with domain in the integers) functions symbolically, graphically and with input-output pairs to solve mathematical problems.	Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear and exponential functions (with domains in the integers), solves mathematical problems.	Given a symbolic representation, real-life scenario, graph, verbal description, sequence or input-output pairs for linear functions, solves mathematical problems.
Compares the properties of two functions represented in different ways, limited to linear, quadratic, exponential (with domains in the integers), square root, absolute value cube root, piecewise and step.	Compares the properties of two functions represented in different ways, limited to linear, quadratic, and exponential (with domains in the integers).	Compares the properties of two functions represented in different ways, limited to linear and quadratic.	Compares the properties of two linear functions represented in different ways.

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Performance Level Descriptors

Algebra I: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Summarizing Representing and Interpreting Data: S-ID.5, S-ID.Int.1 S-ID.Int.2			
Determines appropriate representations of categorical and quantitative data, summarizing and interpreting the data and characteristics of the representations.	Determines appropriate representations of categorical and quantitative data, summarizing the data and characteristics of the representations.	Given representations of categorical and quantitative data, summarizes the data and characteristics of the representations.	Given representations of categorical and quantitative data, describes the characteristics of the representations.
Describes and interprets possible associations and trends in the data.			

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Performance Level Descriptors

Algebra I: Reasoning (Sub-Claim C)

In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Reasoning: HS.C.2.1, HS.C.5.5, HS.C.5.6, HS.C.5.10.1, HS.C.6.1, HS.C.8.1, HS.C.9.1, HS.C.10.1, HS.C.12.1, HS.C.16.2, HS.C.18.1			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on:</p> <ul style="list-style-type: none"> the principle that a graph of an equation in two variables is the set of all its solutions reasoning about linear and exponential growth properties of rational numbers or irrational numbers transformations of functions a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures a given equation or system of equations the number or nature of solutions by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) providing an efficient and logical 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on:</p> <ul style="list-style-type: none"> the principle that a graph of an equation in two variables is the set of all its solutions reasoning about linear and exponential growth properties of rational numbers or irrational numbers transformations of functions a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures a given equation or system of equations the number or nature of solutions by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a partial response based on:</p> <ul style="list-style-type: none"> the principle that a graph of an equation in two variables is the set of all its solutions reasoning about linear and exponential growth properties of rational numbers or irrational numbers transformations of functions a chain of reasoning to justify or refute algebraic, function, or linear-equation propositions or conjectures a given equation or system of equations the number or nature of solutions by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions providing a logical, but incomplete, progression of steps or chain of reasoning 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on:</p> <ul style="list-style-type: none"> the principle that a graph of an equation in two variables is the set of all its solutions reasoning about linear and exponential growth properties of rational numbers or irrational numbers transformations of functions a chain of reasoning to justify or refute algebraic, function or linear-equation propositions or conjectures a given equation or system of equations the number or nature of solutions by: <ul style="list-style-type: none"> using an approach based on a conjecture and/or stated or faulty assumptions providing an incomplete or illogical progression of steps or chain of reasoning

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Performance Level Descriptors

Algebra I: Reasoning (Sub-Claim C)

In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> progression of steps or chain of reasoning with appropriate justification performing precise calculations using correct grade-level vocabulary, symbols and labels providing a justification of a conclusion determining whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and providing a counter-example where applicable 	<ul style="list-style-type: none"> providing a logical progression of steps or chain of reasoning with appropriate justification performing precise calculations using correct grade-level vocabulary, symbols and labels providing a justification of a conclusion evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) 	<ul style="list-style-type: none"> performing minor calculation errors using some grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations evaluating the validity of others' approaches and conclusions 	<ul style="list-style-type: none"> making an intrusive calculation error using limited grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations

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Performance Level Descriptors

Algebra I: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: HS.D.1–1, HS.D.2–5, HS.D.2–6, HS.D.2–8, HS.D.2–9, HS.D.3–1a, HS.D.3–3a			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using state assumptions and making assumption and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusion • analyzing and/or creating constraints, relationships and goals • interpreting mathematical results in the context of the situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and making assumptions and approximations to simplify a real-world situation (include micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using state assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities • using provided tools to create models • analyzing relationship mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • using functions to describe how one quantity of interest depends on another • using statistics

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Performance Level Descriptors

Algebra I: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> reflecting on whether the results make sense improving the model if it has not served its purpose writing a complete, clear and correct algebraic expression or equation to describe a situation applying proportional reasoning and percentages justifying and defending models which lead to a conclusion using functions in any form to describe how one quantity of interest depends on another using statistics using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> writing a complete, clear and correct algebraic expression or equation to describe a situation applying proportional reasoning and percentages writing and using functions in any form to describe how one quantity of interest depends on another using statistics using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> writing an algebraic expression or equation to describe a situation applying proportional reasoning and percentages writing and using functions to describe how one quantity of interest depends on another using statistics using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> using estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

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Performance Level Descriptors

Geometry: Content (Sub-Claim A) The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Congruence Transformations: G-CO.6, G-CO.C			
Determines and uses appropriate geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve problems and prove statements about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems and prove statements about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems and reason about angle measurement, triangles, distance, line properties and congruence.	Uses given geometric theorems and properties of rigid motions, lines, angles, triangles and parallelograms to solve routine problems.
Similarity: G-SRT.1a, G-SRT.1b, G-SRT.2, G-SRT.5			
Uses transformations and congruence and similarity criteria for triangles to prove relationships among geometric figures and to solve problems.	Uses transformations to determine relationships among simple geometric figures and to solve problems.	Identifies transformation relationships in simple geometric figures.	Identifies transformation relationships in simple geometric figures in cases where an image is provided.
Similarity in Trigonometry: G-SRT.6, G-SRT.7-2, G-SRT.8			
Uses trigonometric ratios, the Pythagorean Theorem and the relationship between sine and cosine to solve right triangles in applied problems.	Uses trigonometric ratios, the Pythagorean Theorem and the relationship between sine and cosine to solve right triangles in applied problems.	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths and angle measurements of a right triangle.	Uses trigonometric ratios and the Pythagorean Theorem to determine the unknown side lengths of a right triangle.
Uses similarity transformations with right triangles to define trigonometric ratios for acute angles.			
Modeling and Applying: G-SRT.7-2, G-SRT.8, G-GPE.6 G-Int.1			
Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter and ratios of lengths.	Uses geometric relationships in the coordinate plane to solve problems involving area, perimeter and ratios of lengths.	Uses provided geometric relationships in the coordinate plane to solve problems involving area and perimeter.	Uses provided geometric relationships in the coordinate plane to solve problems involving area and perimeter.

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Geometry: Content (Sub-Claim A) The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Applies geometric concepts and trigonometric ratios to describe, model and solve applied problems (including design problems) related to the Pythagorean Theorem, density, geometric shapes, their measures and properties.	Applies geometric concepts to describe, model and solve applied problems related to the Pythagorean Theorem, geometric shapes, their measures and properties.	Applies geometric concepts to describe, model and solve applied problems related to the Pythagorean Theorem, geometric shapes, their measures and properties.	Applies geometric concepts to describe, model and solve applied problems related to geometric shapes, their measures, and properties.

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Performance Level Descriptors

Geometry: Content (Sub-Claim B) The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Transformations: G-CO.1, G-CO.3, G-CO.5			
Given a figure and a sequence of transformations, draws the transformed figure.	Given a figure and a transformation, draws the transformed figure.	Given a figure and a transformation, draws the transformed figure.	Given a figure and a transformation, identifies a transformed figure.
Uses precise geometric terminology to specify a sequence of transformations that will carry a figure onto itself or another.	Specifies a sequence of transformations that will carry a figure onto another.		
Geometric Constructions: G-CO.D			
Understands geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment.	Understands geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment.	Understands basic geometric constructions: copying a segment, copying an angle, bisecting an angle, bisecting a segment, including the perpendicular bisector of a line segment.	Understands basic geometric constructions: copying a segment and copying an angle.
Given a line and a point not on the line, uses a variety of tools and methods to construct perpendicular and parallel lines.	Given a line and a point not on the line, constructs perpendicular and parallel lines.		
Uses a variety of tools and methods to construct equilateral triangles, squares, and hexagons inscribed in circles.			
Applying Geometric Properties and Theorems: G-C.2, G-C.B, G-GPE.1-1, G-GPE.1-2			
Applies properties and theorems of angles, segments and arcs in circles to solve problems and model relationships.	Applies properties and theorems of angles, segments and arcs in circles to solve problems.	Applies properties and theorems of angles, segments and arcs in circles to solve problems.	Applies properties and theorems of angles and segments to solve problems.

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Geometry: Content (Sub-Claim B) The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Completes the square to find the center and radius of a circle given by an equation.	Completes the square to find the center and radius of a circle given by an equation.		
Geometric Formulas: G-GMD.1, G-GMD.3, G-GMD.4			
Uses volume formulas to solve mathematical and contextual problems that involve cylinders, pyramids, cones and spheres.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.	Using formulas, determines the volume of cylinders, pyramids, cones and spheres.
Uses dissection arguments, Cavalieri's principle and informal limit arguments to support the formula for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.	Gives an informal argument for the formula for the circumference of a circle and area of a circle, including dissection arguments.		
Identifies the shapes of two-dimensional cross-sections of three-dimensional objects and identifies three-dimensional objects generated by rotations of two-dimensional objects.	Identifies the shapes of two-dimensional cross-sections of three-dimensional objects.	Identifies the shapes of two-dimensional cross-sections of three-dimensional objects.	Identifies the shapes of two-dimensional cross-sections of three-dimensional objects, when cross sections are parallel or perpendicular to a base/face.

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Performance Level Descriptors

Geometry: Reasoning (Sub-Claim C) In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Reasoning: HS.C.13.1, HS.C.13.2, HS.C.13.3, HS.C.14.1, HS.C.14.2, HS.C.14.3, HS.C.14.5, HS.C.14.6, HS.C.15.14, HS.C.18.2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on:</p> <ul style="list-style-type: none"> a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures geometric reasoning in a coordinate setting, OR a response to a multi-step problem, by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) providing an efficient and logical progression of steps or chain of reasoning with appropriate justification performing precise calculation using correct grade-level vocabulary, symbols and labels providing a justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on:</p> <ul style="list-style-type: none"> a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures geometric reasoning in a coordinate setting, OR a response to a multi-step problem, by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) providing a logical progression of steps or chain of reasoning with appropriate justification performing precise calculations using correct grade-level vocabulary, symbols and labels providing a justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a partial response based on:</p> <ul style="list-style-type: none"> a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures geometric reasoning in a coordinate setting, OR a response to a multi-step problem, by: <ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions providing a logical, but incomplete, progression of steps or chain of reasoning performing minor calculation errors using some grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on:</p> <ul style="list-style-type: none"> a chain of reasoning to justify or refute algebraic and/or geometric propositions or conjectures geometric reasoning in a coordinate setting, OR a response to a multi-step problem, by: <ul style="list-style-type: none"> using an approach based on a conjecture and/or stated or faulty assumptions providing an incomplete or illogical chain of reasoning, or progression of steps making an intrusive calculation error using limited grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations

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Performance Level Descriptors

Geometry: Reasoning (Sub-Claim C) In connection with content, the student expresses course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> determining whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and providing a counter example where applicable. 	<ul style="list-style-type: none"> evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate). 	<ul style="list-style-type: none"> evaluating the validity of others' approaches and conclusions 	

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Performance Level Descriptors

Geometry: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: HS.D.1–2, HS.D.2–1, HS.D.2–2, HS.D.2–11, HS.D.3–2a, HS.D.3–4a			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and making assumptions and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusion • analyzing and/or creating constraints, relationships and goals • interpreting mathematical results in the context of the situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and making assumptions and approximations to simplify a real-world situation (includes micro-models) • mapping relationships between important quantities • selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises and enacts a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities • using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an algebraic expression or equation to describe a situation • applying proportional reasoning and percentages • applying common geometric principles and theorems • using functions to describe how one quantity of interest depends on another

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Geometry: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> reflecting on whether the results make sense improving the model if it has not served its purpose writing a complete, clear and correct algebraic expression or equation to describe a situation applying proportional reasoning and percentages justifying and defending models which lead to a conclusion applying geometric principles and theorems writing and using functions in any form to describe how one quantity of interest depends on another using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> improving the model if it has not served its purpose writing a complete, clear and correct algebraic expression or equation to describe a situation applying proportional reasoning and percentages applying geometric principles and theorems writing and using functions in any form to describe how one quantity of interest depends on another using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> writing an algebraic expression or equation to describe a situation applying proportional reasoning and percentages applying geometric principles and theorems writing and using functions to describe how one quantity of interest depends on another using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity 	<ul style="list-style-type: none"> using estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Content (Sub-Claim A)			
The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Equivalent Expressions: N-RN.2 A.Int.1, A-REI.2, A-SSE.2-3, A-SSE.2-6, A-SSE.3c-2			
Uses mathematical properties and structure of polynomial, exponential, rational and radical expressions to create equivalent expressions that aid in solving mathematical and contextual problems.	Uses mathematical properties and structure of polynomial, exponential and rational expressions to create equivalent expressions.	Uses provided mathematical properties and structure of polynomial and exponential expressions to create equivalent expressions.	Uses provided mathematical properties and structure of exponential expressions to identify equivalent expressions.
Rewrites exponential expressions to reveal quantities of interest that may be useful.	Rewrites exponential expressions to reveal quantities of interest that may be useful.		
Interpreting Functions: A-APR.2, A-REI.11-2, F-IF.4-2, F.Int.1-2			
Uses mathematical properties and relationships to reveal key features of polynomial, exponential, rational, trigonometric and logarithmic functions, using them to sketch graphs and identify characteristics of the relationship between two quantities, and applying the remainder theorem where appropriate.	Interprets key features of graphs and tables, and uses mathematical properties and relationships to reveal key features of polynomial, exponential and rational functions, using them to sketch graphs.	Uses provided mathematical properties and relationships to reveal key features of polynomial and exponential functions, using them to sketch graphs.	Given a graph of a polynomial or exponential function, identifies key features.
Rate of Change: F-IF.6-2, F-IF.6-			
Calculates and interprets the average rate of change of polynomial, exponential, logarithmic or trigonometric functions (presented symbolically or as a table) over a specified interval, and	Calculates the average rate of change of polynomial and exponential functions (presented symbolically or as a table) over a specified interval, and estimates the rate of change from a graph.	Calculates the average rate of change of polynomial and exponential functions (presented symbolically or as a table) over a specified interval.	Calculates the average rate of change of polynomial and exponential functions (presented as a table) over a specified interval.

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Content (Sub-Claim A) The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
estimates the rate of change from a graph.			
Compares rates of change associated with different intervals.			
Building Functions: A-SSE.4-2, F-BF.1b-1, F-BF.2 F.Int.1-2			
Builds functions that model mathematical and contextual situations, including those requiring trigonometric functions, sequences and combinations of these and other functions, and uses the models to solve, interpret and generalize about problems.	Builds functions that model mathematical and contextual situations, including those requiring trigonometric functions, sequences and combinations of these and other functions, and uses the models to solve and interpret problems.	Builds functions that model mathematical and contextual situations, limited to those requiring arithmetic and geometric sequences, and uses the models to solve and interpret problems.	Identifies functions that model mathematical and contextual situations, limited to those requiring arithmetic and geometric sequences.
Statistics & Probability: S-IC.3-1			
Determines why a sample survey, experiment or observational study is most appropriate.	Determines whether a sample survey, experiment or observational study is most appropriate.	Identifies whether a given scenario represents a sample survey, experiment or observational study.	Identifies characteristics of a sample survey, experiment or observational study.
Given an inappropriate choice of a sample survey, experiment or observational study, identifies and supports the appropriate choice. Determines how to change the scenario to make the choice appropriate.			

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Interpreting Functions: F-IF.7c, F-IF.7e-1, F-IF.7e-2, F-IF.8b, F-IF.9-2, F-Int.1-2			
Given multiple functions in different forms (algebraically, graphically, numerically and by verbal description), writes multiple equivalent versions of the functions, and identifies and compares key features.	Given functions represented algebraically, graphically, numerically and by verbal description, writes multiple equivalent versions of the functions and identifies key features.	Given functions represented algebraically, graphically, numerically and by verbal description, writes equivalent versions of the functions, and identifies key features.	Given functions represented algebraically, graphically, numerically and by verbal description, identifies key features of the functions.
Graphs exponential, polynomial, trigonometric, and logarithmic functions, showing key features.	Graphs exponential and polynomial functions, showing key features.	Graphs polynomial functions, showing key features.	
Equivalent Expressions: N-CN.1, N-CN.2 A-APR.6			
Uses commutative, associative and distributive properties to perform operations with complex numbers.	Uses commutative, associative and distributive properties to perform operations with complex numbers.	Uses commutative and associative properties to add and subtract complex numbers and multiply a complex number by a real number.	Uses commutative and associative properties to add and subtract complex numbers.
Rewrites simple rational expressions using inspection or long division.	Rewrites simple rational expressions using inspection.		
Function Transformations: F-BF.3-2, F-BF.3-3, F-BF.3-5			
Identifies the effects of multiple transformations on graphs of polynomial, exponential, logarithmic and trigonometric functions, and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial, exponential, logarithmic and trigonometric function - including $f(x)+k$, $kf(x)$, $f(kx)$, and $f(x+k)$ - and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial, exponential, logarithmic and trigonometric functions - limited to $f(x)+k$ and $kf(x)$ - and determines if the resulting function is even or odd.	Identifies the effects of a single transformation on graphs of polynomial and exponential functions - limited to $f(x)+k$.

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Trigonometry: F-TF.1, F-TF.8-2			
Given a trigonometric value and quadrant for an angle, utilizes the structure and relationships of trigonometry, including relationships in the unit circle, to identify other trigonometric values for that angle, and describes the relationship between the radian measure and the subtended arc in the circle.	Given a trigonometric value and quadrant for an angle, utilizes the structure and relationships of trigonometry, including relationships in the unit circle, to identify other trigonometric values for that angle.	Given a trigonometric value and quadrant for an angle, utilizes the structure and relationships of trigonometry to identify other trigonometric values for that angle.	Given a trigonometric value for an angle in quadrant 1, utilizes the structure and relationships of trigonometry to identify other trigonometric values for that angle.
Solving Equations and Systems: N-CN.7, A-REI.4b-2, A-REI.6-2, A-REI.7, F-Int.3, F-BF.Int.2 F-LE.2-3 HS-Int.3-3			
Solves multi-step contextual word problems involving linear, exponential, quadratic (with real or complex solutions) and trigonometric equations and systems of equations, using inverses where appropriate.	Solves problems involving linear, exponential, quadratic (with real or complex solutions) and trigonometric equations and systems of equations, using inverses where appropriate.	Solves problems involving linear, exponential and quadratic (with real solutions) equations and systems of equations, using inverses where appropriate.	Solves problems involving linear, exponential and quadratic (with real solutions) equations.
Constructs linear and exponential function models in multi-step contextual problems.	Constructs linear and exponential function models in multi-step contextual problems with mathematical prompting.	Constructs linear and exponential function models in multi-step contextual problems with mathematical prompting.	Constructs linear function models in multi-step contextual problems with mathematical prompting.
Data – Univariate and Bivariate: S-ID.4, S-ID.6a-1, S-ID.6a-2			
Uses the means and standard deviations of data sets to fit them to normal distributions.	Uses the means and standard deviations of data sets to fit them to normal distributions.	Uses the means and standard deviations of data sets to fit them to normal distributions.	Identifies the mean and standard deviation of a given normal distribution.

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Content (Sub-Claim B)			
The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Fits exponential and trigonometric functions to data in order to solve multi- step contextual problems.	Fits exponential functions to data in order to solve multi- step contextual problems.	Uses fitted exponential functions to solve multi-step contextual problems.	
Determines when models fitted to data are inappropriate.			
Inference: S-IC.2, S-IC.Int.1			
Uses sample data to make, justify, and critique inferences and conclusions about the corresponding population.	Uses sample data to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.	Identifies when sample data can be used to make inferences about the corresponding population.
Decides if specified models are consistent with results from given data-generating processes.			
Probability: S-CP.Int.1			
Recognizes, determines and uses conditional probability and independence in multi-step contextual problems, using appropriate set language and appropriate representations, including two-way frequency tables.	Recognizes, determines and uses conditional probability and independence in contextual problems, using appropriate set language and appropriate representations, including two- way frequency tables.	Recognizes and determines conditional probability and independence in contextual problems.	Recognizes and determines independence in contextual problems.
Applies the Addition Rule of probability.			

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Reasoning (Sub-Claim C)			
In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statement.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Reasoning: HS.C.3.1, HS.C.3.2, HS.C.4.1, HS.C.5.4, HS.C.5.11, HS.C.6.2, HS.C.6.4, HS.C.7.1, HS.C.8.2, HS.C.8.3, HS.C.9.2, HS.C.11.1, HS.C.12.2, HS.C.16.3, HS.C.17.2, HS.C.17.3, HS.C.17.4, HS.C.17.5, HS.C.18.4, HS.C.CCR			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a complete response based on:</p> <ul style="list-style-type: none"> • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions <p>OR</p> <ul style="list-style-type: none"> • a response based on properties of exponents by: 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student clearly constructs and communicates a response based on:</p> <ul style="list-style-type: none"> • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures, • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions <p>OR</p> <ul style="list-style-type: none"> • a response based on properties of exponents by: <ul style="list-style-type: none"> ○ using a logical approach based on a conjecture and/or stated 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates a partial response based on:</p> <ul style="list-style-type: none"> • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions <p>OR</p> <ul style="list-style-type: none"> • a response based on properties of exponents by: 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, the student constructs and communicates an incomplete response based on:</p> <ul style="list-style-type: none"> • a response to a given equation or system of equations • a chain of reasoning to justify or refute algebraic, function or number system propositions or conjectures • a response based on data • a response based on the graph of an equation in two variables, the principle that a graph is a solution set or the relationship between zeros and factors of polynomials • a response based on trigonometric functions and the unit circle • a response based on transformations of functions <p>OR</p> <ul style="list-style-type: none"> • a response based on properties of exponents by:

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Reasoning (Sub-Claim C) In connection with content, the student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statement.			
Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) providing an efficient and logical progression of steps or chain of reasoning with appropriate justification performing precise calculations using correct grade- level vocabulary, symbols and labels providing a justification of a conclusion determining whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) – and providing a counter-example where applicable 	<ul style="list-style-type: none"> assumptions, utilizing mathematical connections (when appropriate) providing a logical progression of steps or chain of reasoning with appropriate justification performing precise calculations using correct grade- level vocabulary, symbols and labels providing a justification of a conclusion evaluating, interpreting and critiquing the validity of others' responses, approaches and reasoning – utilizing mathematical connections (when appropriate) 	<ul style="list-style-type: none"> using a logical approach based on a conjecture and/or stated assumptions providing a logical, but incomplete, progression of steps or chain of reasoning performing minor calculation errors using some grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations evaluating the validity of others' approaches and conclusions. 	<ul style="list-style-type: none"> using an approach based on a conjecture and/or stated or faulty assumptions providing an incomplete or illogical progression of steps or chain of reasoning making an intrusive calculation error using limited grade-level vocabulary, symbols and labels providing a partial justification of a conclusion based on own calculations

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: HS.D.2-4, HS.D.2-7, HS.D.2-10, HS.D.2-13, HS.D.3-5, HS.D.3-6 HS.D.CCR			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • mapping relationship between important quantities • selecting appropriate tools to create the appropriate model • analyzing relationships mathematically between important quantities (either given or created) to draw conclusion • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • mapping relationships between important quantities • selecting appropriate tools to create the appropriate model • analyzing relationships mathematically between important quantities (either given or created) to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities • using provided tools to create appropriate but inaccurate model • analyzing relationships mathematically between important given quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claims A and B, devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important given quantities • using provided tools to create inaccurate model • analyzing relationships mathematically to draw conclusions • writing an expression, equation or function to describe a situation • using securely held content incompletely reporting a conclusion, with some inaccuracy within the reporting

HIGH SCHOOL MATHEMATICS

Performance Level Descriptors

Algebra II: Modeling (Sub-Claim D)

In connection with content, the student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • writing a complete, clear and correct expression, equation or function to describe a situation • analyzing and/or creating constraints, relationships and goals • justifying and defending models which lead to a conclusion • using geometry to solve design problems • using securely held content, accurately reporting and justifying the conclusion • identifying and using relevant data from a data source • making an appropriate evaluation or recommendation 	<ul style="list-style-type: none"> • improving the model if it has not served its purpose • writing a complete, clear and correct expression, equation or function to describe a situation • using geometry to solve design problems • using securely held content, briefly, but accurately reporting the conclusion • identifying and using relevant data from a data source • making an appropriate evaluation or recommendation 	<ul style="list-style-type: none"> • writing an expression, equation or function to describe a situation • using geometry to solve design problems • using securely held content, incompletely reporting a conclusion • selecting and using some relevant data from a data source • making an evaluation or recommendation 	<ul style="list-style-type: none"> • indiscriminately using data from a data source • using securely held content incompletely reporting a conclusion, with some • inaccuracy within the reporting • indiscriminately using data from a data source