EUREKA MATH®

GREAT MINDS®

ABOUT *EUREKA MATH*

Created by the nonprofit Great Minds, *Eureka Math* helps teachers deliver unparalleled math instruction that provides students with a deep understanding and fluency in math. Crafted by teachers and math scholars, the curriculum carefully sequences the mathematical progressions to maximize coherence from Prekindergarten through Precalculus—a principle tested and proven to be essential in students' mastery of math.

Teachers and students using *Eureka Math* find the trademark "Aha!" moments in *Eureka Math* to be a source of joy and inspiration, lesson after lesson, year after year.

ALIGNED

Eureka Math is the only curriculum found by EdReports.org to align fully with the Common Core State Standards for Mathematics for all grades, Kindergarten through Grade 8. Great Minds offers detailed analyses that demonstrate how each grade of *Eureka Math* aligns with specific state standards. Access these free alignment studies at greatminds.org/state-studies.

DATA

Schools and districts nationwide are experiencing student growth and impressive test scores after using *Eureka Math*. See their stories and data at greatminds.org/data.

FULL SUITE OF RESOURCES

As a nonprofit, Great Minds offers the *Eureka Math* curriculum as PDF downloads for free, noncommercial use. Access the free PDFs at greatminds.org/math/curriculum.

The teacher–writers who created the curriculum have also developed essential resources, available only from Great Minds, including the following:

- Printed material in English and Spanish
- Digital resources
- Professional development
- Classroom tools and manipulatives
- Teacher support materials
- Parent resources

Alabama Course of Study: Mathematics Correlation to *Eureka Math*®

ALGEBRA I WITH PROBABILITY

The majority of the Algebra I with Probability Alabama Course of Study: Mathematics Learning Standards are fully covered by the Algebra I *Eureka Math* curriculum. The areas where the Algebra I with Probability Alabama Course of Study: Mathematics Learning Standards and Algebra I *Eureka Math* do not align will require the use of *Eureka Math* content from other courses. A detailed analysis of alignment is provided in the table below.

INDICATORS

GREEN	indicates the Alabama standard is addressed in *Eureka Math*.
YELLOW	indicates the Alabama standard may not be completely addressed in *Eureka Math*.
RED	indicates the Alabama standard is not addressed in *Eureka Math*.
BLUE	indicates there is a discrepancy between the grade level at which this standard is addressed in Alabama and in *Eureka Math*.

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
1. Make sense of problems and persevere in solving them. These students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. These students consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculators to obtain the information they need. Mathematically proficient students can explain correspondences among equations, verbal descriptions, tables, and graphs, or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solve complex problems and identify correspondences between different approaches.	Lessons in every module engage students in making sense of problems and persevering in solving them as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 1, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M2: Descriptive Statistics Algebra I M3: Linear and Exponential Functions Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions

Standards for Mathematical Practice	Aligned Components of ***Eureka Math***
2. Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships. One is the ability to *decontextualize*, to abstract a given situation, represent it symbolically, and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents. The second is the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	Lessons in every module engage students in reasoning abstractly and quantitatively as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 2, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M2: Descriptive Statistics Algebra I M3: Linear and Exponential Functions Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
3. Construct viable arguments and critique the reasoning of others. These students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. These students justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments; distinguish correct logic or reasoning from that which is flawed; and, if there is a flaw in an argument, explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until the middle or upper grades. Later, students learn to determine domains to which an argument applies. Students in all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	Lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 3, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M2: Descriptive Statistics

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
4. Model with mathematics. These students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, students might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, students might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas and can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	Lessons in every module engage students in modeling with mathematics as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 4, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M2: Descriptive Statistics Algebra I M3: Linear and Exponential Functions Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
5. Use appropriate tools strategically. Mathematically proficient students consider available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and the tools' limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a Web site, and use these to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	Lessons in every module engage students in using appropriate tools strategically as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 5, which is specifically addressed in the following modules: Algebra I M2: Descriptive Statistics Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
6. Attend to precision. These students try to communicate mathematical ideas and concepts precisely. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. Mathematically proficient students are careful about specifying units of measure and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, and express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	Lessons in every module engage students in attending to precision as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 6, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M2: Descriptive Statistics Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions Algebra I M5: A Synthesis of Modeling with Equations and Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
7. Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. These students also can pause and reflect for an overview or a shift in perspective. They can observe the complexities of mathematics, such as seeing some algebraic expressions as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that mental picture to realize that the value of the expression cannot be more than 5 for any real numbers x and y.	Lessons in every module engage students in looking for and making use of structure as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 7, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M3: Linear and Exponential Functions Algebra I M4: Polynomial and Quadratic Expressions, Equations, and Functions

Standards for Mathematical Practice	Aligned Components of *Eureka Math*
8. Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As students work to solve a problem, mathematically proficient students maintain oversight of the process while attending to the details and continually evaluate the reasonableness of their intermediate results.	Lessons in every module engage students in looking for and expressing regularity in repeated reasoning as required by this standard. This practice standard is analogous to the CCSSM Standards for Mathematical Practice 8, which is specifically addressed in the following modules: Algebra I M1: Relationships Between Quantities and Reasoning with Equations and Their Graphs Algebra I M3: Linear and Exponential Functions

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
Number and Quantity		**Essential Concept: Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers.**	
		1. Explain how the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for an additional notation for radicals using rational exponents.	Algebra II M3 Lesson 3: Rational Exponents
		2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Algebra II M2 Lesson 3: Rational Exponents Algebra II M2 Lesson 4: Properties of Exponents and Radicals Algebra II M2 Lesson 5: Irrational Exponents
		3. Define the imaginary number *i* such that $i^2 = -1$.	Algebra II M1 Lesson 37: A Surprising Boost from Geometry
Algebra and Functions	**Focus 1: Algebra**	**Essential Concept: Expressions can be rewritten in equivalent forms by using algebraic properties, including properties of addition, multiplication, and exponentiation, to make different characteristics or features visible.**	
		4. Interpret linear, quadratic, and exponential expressions in terms of a context by viewing one or more of their parts as a single entity. Example: Interpret the accrued amount of investment $P(1 + r)^t$, where P is the principal and *r* is the interest rate, as the product of P and a factor depending on time *t*.	Algebra I M3 Topic A: Linear and Exponential Sequences

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		5. Use the structure of an expression to identify ways to rewrite it. 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 $(x^2 - y^2)(x^2 + y^2)$.		Algebra I M1 Topic B: The Structure of Expressions
		6. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor quadratic expressions with leading coefficients of one, and use the factored form to reveal the zeros of the function it defines. b. Use the vertex form of a quadratic expression to reveal the maximum or minimum value and the axis of symmetry of the function it defines; complete the square to find the vertex form of quadratics with a leading coefficient of one. c. Use the properties of exponents to transform expressions for exponential functions. 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.		Algebra I M1 Lesson 6: Algebraic Expressions—The Distributive Property Algebra I M1 Lesson 7: Algebraic Expressions—The Commutative and Associative Properties Algebra I M4 Topic A: Quadratic Expressions, Equations, Functions, and Their Connection to Rectangles Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		7. Add, subtract, and multiply polynomials, showing that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.	Algebra I M1 Lesson 8: Adding and Subtracting Polynomials Algebra I M1 Lesson 9: Multiplying Polynomials
		Essential Concept: Finding solutions to an equation, inequality, or system of equations or inequalities requires the checking of candidate solutions, whether generated analytically or graphically, to ensure that solutions are found and that those found are not extraneous.	
		8. Explain why extraneous solutions to an equation involving absolute values may arise and how to check to be sure that a candidate solution satisfies an equation.	Algebra I M3 Lesson 15: Piecewise Functions
		Essential Concept: The structure of an equation or inequality (including, but not limited to, one-variable linear and quadratic equations, inequalities, and systems of linear equations in two variables) can be purposefully analyzed (with and without technology) to determine an efficient strategy to find a solution, if one exists, and then to justify the solution.	
		9. Select an appropriate method to solve a quadratic equation in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Explain how the quadratic formula is derived from this form.	Algebra I M4 Topic B: Using Different Forms for Quadratic Functions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		b. Solve quadratic equations by inspection (such as $x^2 = 49$), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation, and recognize that some solutions may not be real.		
		10. Select an appropriate method to solve a system of two linear equations in two variables. a. Solve a system of two equations in two variables by using linear combinations; contrast situations in which use of linear combinations is more efficient with those in which substitution is more efficient. b. Contrast solutions to a system of two linear equations in two variables produced by algebraic methods with graphical and tabular methods.		Algebra I M1 Topic C: Solving Equations and Inequalities

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Essential Concept: Expressions, equations, and inequalities can be used to analyze and make predictions, both within mathematics and as mathematics is applied in different contexts—in particular, contexts that arise in relation to linear, quadratic, and exponential situations.	
		11. Create equations and inequalities in one variable and use them to solve problems in context, either exactly or approximately. Extend from contexts arising from linear functions to those involving quadratic, exponential, and absolute value functions.	Algebra I M1 Topic C: Solving Equations and Inequalities Algebra I M1 Topic D: Creating Equations to Solve Problems Algebra I M3 Topic A: Linear and Exponential Sequences
		12. Create equations in two or more variables to represent relationships between quantities in context; graph equations on coordinate axes with labels and scales and use them to make predictions. Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.	Algebra I M3 Topic C: Transformations of Functions Algebra I M3 Topic D: Using Functions and Graphs to Solve Problems
		13. Represent constraints by equations and/or inequalities, and solve systems of equations and/or inequalities, interpreting solutions as viable or nonviable options in a modeling context. Limit to contexts arising from linear, quadratic, exponential, absolute value, and linear piecewise functions.	Algebra I M1 Lesson 21: Solution Sets to Inequalities with Two Variables Algebra I M1 Lesson 22: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 23: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
	Focus 2: Connecting Algebra to Functions	**Essential Concept: Functions shift the emphasis from a point-by-point relationship between two variables (input/output) to considering an entire set of ordered pairs (where each first element is paired with exactly one second element) as an entity with its own features and characteristics.**		
		14. Given a relation defined by an equation in two variables, identify the graph of the relation as the set of all its solutions plotted in the coordinate plane. Note: The graph of a relation often forms a curve (which could be a line).		Algebra I M4 Lesson 8: Exploring the Symmetry in Graphs of Quadratic Functions Algebra I M4 Lesson 9: Graphing Quadratic Functions from Factored Form, $f(x) = a(x - m)(x - n)$ Algebra I M4 Lesson 10: Interpreting Quadratic Functions from Graphs and Tables
		15. Define a function as a mapping from one set (called the domain) to another set (called the range) that assigns to each element of the domain exactly one element of the range. a. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. Note: If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.		Algebra I M3 Lesson 9: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 10: Representing, Naming, and Evaluating Functions Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$ Algebra I M3 Lesson 13: Interpreting the Graph of a Function

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		b. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. Limit to linear, quadratic, exponential, and absolute value functions.		
		16. Compare and contrast relations and functions represented by equations, graphs, or tables that show related values; determine whether a relation is a function. Explain that a function f is a special kind of relation defined by the equation $y = f(x)$.		Algebra I M3 Lesson 9: Representing, Naming, and Evaluating Functions
		17. Combine different types of standard functions to write, evaluate, and interpret functions in context. Limit to linear, quadratic, exponential, and absolute value functions. a. Use arithmetic operations to combine different types of standard functions to write and evaluate functions. Example: Given two functions, one representing flow rate of water and the other representing evaporation of that water, combine the two functions to determine the amount of water in a container at a given time. b. Use function composition to combine different types of standard functions to write and evaluate functions.		Algebra I M3 Topic C: Transformations of Functions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		Essential Concept: Graphs can be used to obtain exact or approximate solutions of equations, inequalities, and systems of equations and inequalities—including systems of linear equations in two variables and systems of linear and quadratic equations (given or obtained by using technology).		
		18. Solve systems consisting of linear and/or quadratic equations in two variables graphically, using technology where appropriate.		Algebra I M3 Lesson 16: Graphs Can Solve Equations Too Algebra I M4 Lesson 16: Graphing Quadratic Equations from the Vertex Form, $y = a(x - h)^2 + k$ Algebra I M4 Lesson 17: Graphing Quadratic Functions from the Standard Form, $f(x) = ax^2 + bx + c$ Algebra I M4 Topic C: Function Transformations and Modeling
		19. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. a. Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. Note: Include cases where $f(x)$ is a linear, quadratic, exponential, or absolute value function and $g(x)$ is constant or linear.		Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables Algebra I M1 Lesson 23: Solution Sets to Simultaneous Equations Algebra I M1 Lesson 24: Applications of Systems of Equations and Inequalities

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		20. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes, using technology where appropriate.		Algebra I M1 Lesson 21: Solution Sets to Inequalities with Two Variables
	Focus 3: Functions	**Essential Concept: Functions can be described by using a variety of representations: mapping diagrams, function notation (e.g. $f(x) = x^2$), recursive definitions, tables, and graphs.**		
		21. Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Extend from linear to quadratic, exponential, absolute value, and general piecewise.		Algebra I M3 Topic B: Functions and Their Graphs Algebra I M3 Topic C: Transformations of Functions
		22. Define sequences as functions, including recursive definitions, whose domain is a subset of the integers. a. Write explicit and recursive formulas for arithmetic and geometric sequences and connect them to linear and exponential functions. Example: A sequence with constant growth will be a linear function, while a sequence with proportional growth will be an exponential function.		Algebra I M3 Lesson 1: Integer Sequences—Should You Believe in Patterns? Algebra I M3 Lesson 2: Recursive Formulas for Sequences Algebra I M3 Lesson 3: Arithmetic and Geometric Sequences

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		Essential Concept: Functions that are members of the same family have distinguishing attributes (structure) common to all functions within that family.		
		23. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(k \cdot x)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and explain the effects on the graph, using technology as appropriate. Limit to linear, quadratic, exponential, absolute value, and linear piecewise functions.		Algebra I M3 Topic C: Transformations of Functions Algebra I M4 Topic C: Function Transformations and Modeling
		24. Distinguish between situations that can be modeled with linear functions and those that can be modeled with exponential functions. a. Show that linear functions grow by equal differences over equal intervals, while exponential functions grow by equal factors over equal intervals. b. Define linear functions to represent situations in which one quantity changes at a constant rate per unit interval relative to another. c. Define exponential functions to represent situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.		Algebra I M3 Lesson 14: Linear and Exponential Models—Comparing Growth Rates Algebra I M3 Lesson 21: Comparing Linear and Exponential Models Again

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		25. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).		Algebra I M3 Topic A: Linear and Exponential Sequences
		26. Use graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.		Algebra I M3 Topic A: Linear and Exponential Sequences
		27. Interpret the parameters of functions in terms of a context. Extend from linear functions, written in the form $mx + b$, to exponential functions, written in the form ab^x. Example: If the function $V(t) = 19885(0.75)^t$ describes the value of a car after it has been owned for t years, 19885 represents the purchase price of the car when $t = 0$, and 0.75 represents the annual rate at which its value decreases.		Algebra I M3 Topic A: Linear and Exponential Sequences

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		Essential Concept: Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values, can be associated with and interpreted in terms of the equivalent symbolic representation.	
		28. For a 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. Note: Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries; and end behavior. Extend from relationships that can be represented by linear functions to quadratic, exponential, absolute value, and linear piecewise functions.	Algebra I M3 Topic B: Functions and Their Graphs
		29. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. Limit to linear, quadratic, exponential, and absolute value functions.	Algebra I M3 Lesson 22: Modeling an Invasive Species Population Algebra I M3 Lesson 23: Newton's Law of Cooling Algebra I M3 Lesson 24: Piecewise and Step Functions in Context Algebra I M5 Lesson 2: Analyzing a Data Set

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
			Algebra I M5 Lesson 6: Modeling a Context from Data Algebra I M5 Lesson 7: Modeling a Context from Data
		30. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph piecewise-defined functions, including step functions and absolute value functions. c. Graph exponential functions, showing intercepts and end behavior.	Algebra I M3 Lesson 5: The Power of Exponential Growth Algebra I M3 Lesson 6: Exponential Growth—U.S. Population and World Population Algebra I M3 Lesson 7: Exponential Decay Algebra I M3 Topic B: Functions and Their Graphs Algebra I M3 Lesson 15: Piecewise Functions Algebra I M4 Topic C: Function Transformations and Modeling
		Essential Concept: Functions model a wide variety of real situations and can help students understand the processes of making and changing assumptions, assigning variables, and finding solutions to contextual problems.	
		31. Use the mathematical modeling cycle to solve real-world problems involving linear, quadratic, exponential, absolute value, and linear piecewise functions.	Algebra I M5 Topic B: Completing the Modeling Cycle

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
Data Analysis, Statistics, and Probability	**Focus 1: Quantitative Literacy**	**Essential Concept: Mathematical and statistical reasoning about data can be used to evaluate conclusions and assess risks.**		
		32. Use mathematical and statistical reasoning with bivariate categorical data in order to draw conclusions and assess risk.		Algebra I M2 Lesson 9: Summarizing Bivariate Categorical Data Algebra I M2 Lesson 10: Summarizing Bivariate Categorical Data with Relative Frequencies
		33. Design and carry out an investigation to determine whether there appears to be an association between two categorical variables, and write a persuasive argument based on the results of the investigation.		Algebra I M2 Topic C: Categorical Data on Two Variables
		Essential Concept: Data arise from a context and come in two types: quantitative (continuous or discrete) and categorical. Technology can be used to "clean" and organize data, including very large data sets, into a useful and manageable structure—a first step in any analysis of data.		
		34. Distinguish between quantitative and categorical data and between the techniques that may be used for analyzing data of these two types.		Algebra I M2 Topic D: Numerical Data on Two Variables

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		Essential Concept: The association between two categorical variables is typically represented by using two-way tables and segmented bar graphs.		
		35. Analyze the possible association between two categorical variables. a. Summarize categorical data for two categories in two-way frequency tables and represent using segmented bar graphs. b. Interpret relative frequencies in the context of categorical data (including joint, marginal, and conditional relative frequencies). c. Identify possible associations and trends in categorical data.		Algebra I M2 Topic C: Categorical Data on Two Variables
		Essential Concept: Data analysis techniques can be used to develop models of contextual situations and to generate and evaluate possible solutions to real problems involving those contexts.		
		36. Generate a two-way categorical table in order to find and evaluate solutions to real-world problems. a. Aggregate data from several groups to find an overall association between two categorical variables.		Algebra I M2 Topic C: Categorical Data on Two Variables Algebra I M2 Lesson 19: Interpreting Correlation Algebra I M2 Lesson 20: Analyzing Data Collected on Two Variables

Content Area	Focus	Standards for Mathematical Content	Aligned Components of *Eureka Math*
		b. Recognize and explore situations where the association between two categorical variables is reversed when a third variable is considered (Simpson's Paradox).	
		Essential Concept: Two events are independent if the occurrence of one event does not affect the probability of the other event. Determining whether two events are independent can be used for finding and understanding probabilities.	
		37. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Algebra I M2 Lesson 9: Summarizing Bivariate Categorical Data
		38. Explain whether two events, A and B, are independent, using two-way tables or tree diagrams.	Algebra I M2 Topic B: Describing Variability and Comparing Distributions
		Essential Concept: Conditional probabilities—that is, those probabilities that are "conditioned" by some known information—can be computed from data organized in contingency tables. Conditions or assumptions may affect the computation of a probability.	
		39. Compute the conditional probability of event A given event B, using two-way tables or tree diagrams.	Algebra I M2 Topic B: Describing Variability and Comparing Distributions

Content Area	Focus	Standards for Mathematical Content		Aligned Components of *Eureka Math*
		40. Recognize and describe the concepts of conditional probability and independence in everyday situations and explain them using everyday language.		Algebra I M2 Lesson 19: Interpreting Correlation
		41. Explain why the conditional probability of A given B is the fraction of B's outcomes that also belong to A, and interpret the answer in context.		Algebra I M2 Topic A: Shapes and Centers of Distributions