Grade 8 | Georgia's K–12 Mathematics Standards Correlation to *Eureka Math*®

About *Eureka Math*

Created by Great Minds®, a mission-driven Public Benefit Corporation, *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

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

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

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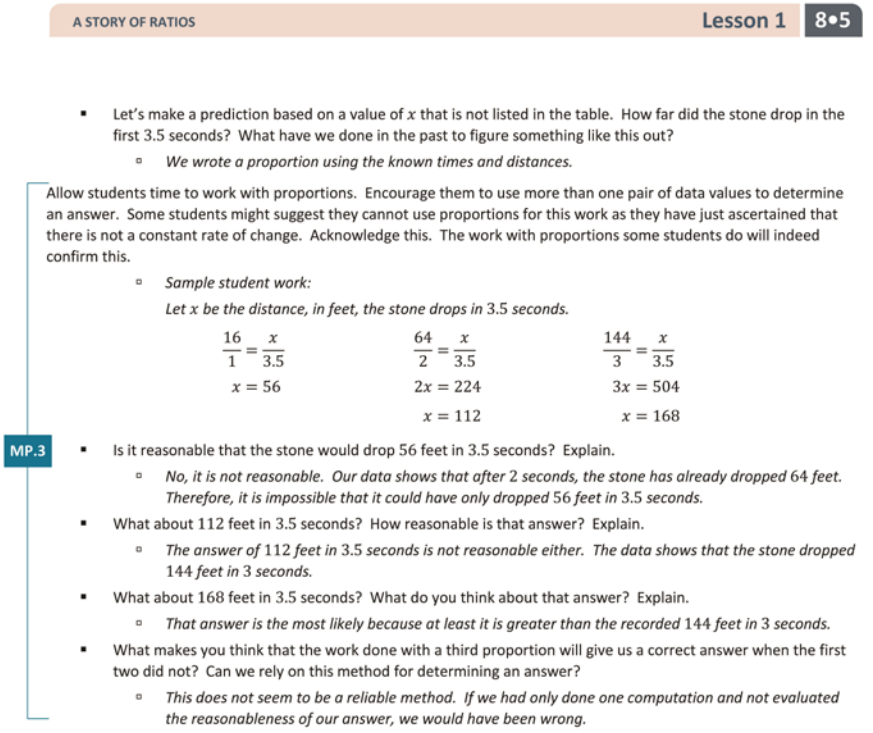
Standards for Mathematical Practice	Aligned Components of *Eureka Math*
MP.1 Make sense of problems and persevere in solving them.	Lessons in every module engage students in mathematical practices. These are designated in the Module Overview and labeled in lessons. For example: 
MP.2 Reason abstractly and quantitatively.	
MP.3 Construct viable arguments and critique the reasoning of others.	
MP.4 Model with mathematics.	
MP.5 Use appropriate tools strategically.	
MP.6 Attend to precision.	
MP.7 Look for and make use of structure.	
MP.8 Look for and express regularity in repeated reasoning.	

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Mathematical Modeling Framework	Aligned Components of *Eureka Math*
MF.1 Explore and describe real-life, mathematical situations or problems.	Lessons in every module engage students in mathematical modeling.
MF.2 Gather information, make assumptions, and define variables related to the problem.	
MF.3 Create a model and arrive at a solution to explain the problem presented.	
MF.4 Analyze and revise models, as necessary.	
MF.5 Evaluate the model and interpret solutions generated from other models. Draw and validate conclusions.	

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Framework for Statistical Reasoning	Aligned Components of *Eureka Math*
SR Create statistical investigative questions that can be answered using quantitative data. Collect, analyze, and interpret patterns of bivariate data and interpret linear models to answer statistical questions and solve real problems.	Lessons in Module 6 engage students in statistical reasoning.
SR.1 Ask: Create a statistical investigative question that can be answered by gathering data from real situations and determine strategies for gathering data to answer the statistical investigative question.	
SR.2 Collect: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.	
SR.3 Analyze: Construct and interpret scatter plots for bivariate quantitative data to investigate patterns of association between two quantities.	
SR.4 Analyze: Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data.	

continued

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Framework for Statistical Reasoning	Aligned Components of *Eureka Math*
SR.5 Interpret: Show that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, visually fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line of best fit.	Lessons in Module 6 engage students in statistical reasoning.
SR.6 Interpret: Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.	
SR.7 Interpret: Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study.	

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Numerical Reasoning—rational and irrational numbers, decimal expansion, integer exponents, square and cube roots, scientific notation

8.NR.1 Solve problems involving irrational numbers and rational approximations of irrational numbers to explain realistic applications.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.NR.1.1 Distinguish between rational and irrational numbers using decimal expansion. Convert a decimal expansion which repeats eventually into a rational number.	G8 M7 Topic B: Decimal Expansions of Numbers
8.NR.1.2 Approximate irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.	G8 M7 Lesson 1: The Pythagorean Theorem G8 M7 Lesson 2: Square Roots G8 M7 Lesson 3: Existence and Uniqueness of Square Roots and Cube Roots G8 M7 Lesson 4: Simplifying Square Roots G8 M7 Lesson 11: The Decimal Expansion of Some Irrational Numbers G8 M7 Lesson 13: Comparing Irrational Numbers G8 M7 Lesson 14: Decimal Expansion of π

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Numerical Reasoning—rational and irrational numbers, decimal expansion, integer exponents, square and cube roots, scientific notation

8.NR.2 Solve problems involving radicals and integer exponents including relevant application situations; apply place value understanding with scientific notation and use scientific notation to explain real phenomena.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.NR.2.1 Apply the properties of integer exponents to generate equivalent numerical expressions.	G8 M1 Topic A: Exponential Notation and Properties of Integer Exponents
8.NR.2.2 Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational number and $\lvert x \rvert \leq 25$) has two solutions and $x^3 = p$ (where p is a negative or positive rational number and $\lvert x \rvert \leq 10$) has one solution. Evaluate square roots of perfect squares ≤ 625 and cube roots of perfect cubes $\geq -1{,}000$ and $\leq 1{,}000$.	G8 M7 Lesson 2: Square Roots G8 M7 Lesson 5: Solving Equations with Radicals *Supplemental material is necessary to address explicitly recognizing that $x^2 = p$ (where p is a positive rational number and $\lvert x \rvert \leq 25$) has two solutions and $x^3 = p$ (where p is a negative or positive rational number and $\lvert x \rvert \leq 10$) has one solution.*
8.NR.2.3 Use numbers expressed in scientific notation to estimate very large or very small quantities, and to express how many times as much one is than the other.	G8 M1 Lesson 7: Magnitude G8 M1 Lesson 8: Estimating Quantities

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.NR.2.4 Add, subtract, multiply and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology (e.g., calculators or online technology tools).	G8 M1 Lesson 9: Scientific Notation G8 M1 Lesson 10: Operations with Numbers in Scientific Notation G8 M1 Lesson 11: Efficacy of Scientific Notation G8 M1 Lesson 12: Choice of Unit G8 M1 Lesson 13: Comparison of Numbers Written in Scientific Notation and Interpreting Scientific Notation Using Technology

Patterning & Algebraic Reasoning—expressions, linear equations, and inequalities

8.PAR.3 Create and interpret expressions within relevant situations. Create, interpret, and solve linear equations and linear inequalities in one variable to model and explain real phenomena.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.PAR.3.1 Interpret expressions and parts of an expression, in context, by utilizing formulas or expressions with multiple terms and/or factors.	G8 M4 Lesson 1: Writing Equations Using Symbols G8 M4 Lesson 5: Writing and Solving Linear Equations G8 M4 Lesson 9: An Application of Linear Equations

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.PAR.3.2 Describe and solve linear equations in one variable with one solution ($x = a$), infinitely many solutions ($a = a$), or no solutions ($a = b$). Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).	G8 M4 Topic A: Writing and Solving Linear Equations
8.PAR.3.3 Create and solve linear equations and inequalities in one variable within a relevant application.	G8 M4 Topic A: Writing and Solving Linear Equations Algebra I M1 Lesson 14: Solving Inequalities Algebra I M1 Lesson 16: Solving and Graphing Inequalities Joined by "And" or "Or" *Supplemental material is necessary to address creating and solving linear inequalities specifically within a relevant application.*
8.PAR.3.4 Using algebraic properties and the properties of real numbers, justify the steps of a one-solution equation or inequality.	G8 M4 Lesson 4: Solving a Linear Equation G8 M4 Lesson 8: Linear Equations in Disguise Algebra I M1 Lesson 11: Solution Sets for Equations and Inequalities Algebra I M1 Lesson 12: Solving Equations Algebra I M1 Lesson 14: Solving Inequalities

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.PAR.3.5 Solve linear equations and inequalities in one variable with coefficients represented by letters and explain the solution based on the contextual, mathematical situation.	Algebra I M1 Lesson 19: Rearranging Formulas *Supplemental material is necessary to fully address this standard.*
8.PAR.3.6 Use algebraic reasoning to fluently manipulate linear and literal equations expressed in various forms to solve relevant, mathematical problems.	G8 M4 Topic A: Writing and Solving Linear Equations Algebra I M1 Lesson 19: Rearranging Formulas

Patterning & Algebraic Reasoning—expressions, linear equations, and inequalities

8.PAR.4 Show and explain the connections between proportional and non-proportional relationships, lines, and linear equations; create and interpret graphical mathematical models and use the graphical, mathematical model to explain real phenomena represented in the graph.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.PAR.4.1 Use the equation $y = mx$ (proportional) for a line through the origin to derive the equation $y = mx + b$ (non-proportional) for a line intersecting the vertical axis at b.	G8 M4 Lesson 16: The Computation of the Slope of a Non-Vertical Line G8 M4 Lesson 17: The Line Joining Two Distinct Points of the Graph $y = mx + b$ Has Slope m G8 M4 Lesson 18: There Is Only One Line Passing Through a Given Point with a Given Slope G8 M4 Lesson 19: The Graph of a Linear Equation in Two Variables Is a Line G8 M4 Lesson 20: Every Line Is a Graph of a Linear Equation G8 M4 Lesson 21: Some Facts About Graphs of a Linear Equation in Two Variables G8 M4 Lesson 22: Constant Rates Revisited G8 M4 Lesson 23: The Defining Equation of a Line

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.PAR.4.2 Show and explain that the graph of an equation representing an applicable situation in two variables is the set of all its solutions plotted in the coordinate plane.	G8 M4 Lesson 19: The Graph of a Linear Equation in Two Variables Is a Line G8 M4 Lesson 20: Every Line Is a Graph of a Linear Equation Algebra I M1 Lesson 20: Solution Sets to Equations with Two Variables

Functional & Graphical Reasoning—relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines

8.FGR.5 Describe the properties of functions to define, evaluate, and compare relationships, and use functions and graphs of functions to model and explain real phenomena.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.5.1 Show and explain that a function is a rule that assigns to each input exactly one output.	G8 M5 Lesson 1: The Concept of a Function G8 M5 Lesson 2: Formal Definition of a Function G8 M5 Lesson 4: More Examples of Functions
8.FGR.5.2 Within realistic situations, identify and describe examples of functions that are linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	G8 M5 Lesson 4: More Examples of Functions G8 M5 Lesson 5: Graphs of Functions and Equations G8 M5 Lesson 8: Graphs of Simple Nonlinear Functions G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line G8 M6 Lesson 4: Increasing and Decreasing Functions G8 M6 Lesson 5: Increasing and Decreasing Functions

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.5.3 Relate the domain of a linear function to its graph and where applicable to the quantitative relationship it describes.	Algebra I M3 Lesson 11: The Graph of a Function Algebra I M3 Lesson 12: The Graph of the Equation $y = f(x)$ *Supplemental material is necessary to fully address this standard.*
8.FGR.5.4 Compare properties (rate of change and initial value) of two functions used to model an authentic situation each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	G8 M5 Lesson 7: Comparing Linear Functions and Graphs
8.FGR.5.5 Write and explain the equations $y = mx + b$ (slope-intercept form), $Ax + By = C$ (standard form), and $(y - y_1) = m(x - x_1)$ (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.	G8 M4 Topic B: Linear Equations in Two Variables and Their Graphs G8 M4 Topic C: Slope and Equations of Lines
8.FGR.5.6 Write a linear function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	G8 M4 Lesson 12: Linear Equations in Two Variables G8 M4 Lesson 17: The Line Joining Two Distinct Points of the Graph $y = mx + b$ Has Slope m G8 M4 Lesson 20: Every Line Is a Graph of a Linear Equation G8 M4 Lesson 21: Some Facts About Graphs of Linear Equations in Two Variables G8 M4 Lesson 23: The Defining Equation of a Line

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.5.7 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph.	G8 M6 Lesson 1: Modeling Linear Relationships G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line
8.FGR.5.8 Explain the meaning of the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	G8 M5 Lesson 3: Linear Functions and Proportionality G8 M5 Lesson 5: Graphs of Functions and Equations G8 M5 Lesson 6: Graphs of Linear Functions and Rate of Change G8 M5 Lesson 7: Comparing Linear Functions and Graphs G8 M6 Lesson 1: Modeling Linear Relationships G8 M6 Lesson 2: Interpreting Rate of Change and Initial Value G8 M6 Lesson 3: Representations of a Line
8.FGR.5.9 Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.	G8 M5 Lesson 7: Comparing Linear Functions and Graphs

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Functional & Graphical Reasoning—relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines

8.FGR.6 Solve practical, linear problems involving situations using bivariate quantitative data.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.6.1 Show that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, visually fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line of best fit.	G8 M6 Lesson 8: Informally Fitting a Line G8 M6 Lesson 9: Determining the Equation of a Line Fit to Data G8 M6 Lesson 11: Using Linear Models in a Data Context
8.FGR.6.2 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.	G8 M6 Lesson 8: Informally Fitting a Line G8 M6 Lesson 9: Determining the Equation of a Line Fit to Data G8 M6 Lesson 11: Using Linear Models in a Data Context
8.FGR.6.3 Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data.	G8 M6 Lesson 11: Using Linear Models in a Data Context

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8.FGR.6.4 Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study.	G8 M6 Lesson 8: Informally Fitting a Line G8 M6 Lesson 9: Determining the Equation of a Line Fit to Data G8 M6 Lesson 11: Using Linear Models in a Data Context

Functional & Graphical Reasoning—relate domain to linear functions, rate of change, linear vs. nonlinear relationships, graphing linear functions, systems of linear equations, parallel and perpendicular lines

8.FGR.7 Justify and use various strategies to solve systems of linear equations to model and explain realistic phenomena.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.7.1 Interpret and solve relevant mathematical problems leading to two linear equations in two variables.	G8 M4 Lesson 24: Introduction to Simultaneous Equations G8 M4 Lesson 26: Characterization of Parallel Lines G8 M4 Lesson 29: Word Problems G8 M4 Lesson 30: Conversion Between Celsius and Fahrenheit G8 M4 Topic E: Pythagorean Theorem

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.FGR.7.2 Show and explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously.	G8 M4 Lesson 25: Geometric Interpretation of the Solutions of a Linear System G8 M4 Lesson 26: Characterization of Parallel Lines
8.FGR.7.3 Approximate solutions of two linear equations in two variables by graphing the equations and solving simple cases by inspection.	G8 M4 Lesson 24: Introduction to Simultaneous Equations G8 M4 Lesson 25: Geometric Interpretation of the Solutions of a Linear System G8 M4 Lesson 26: Characterization of Parallel Lines G8 M4 Lesson 27: Nature of Solutions of a System of Linear Equations
8.FGR.7.4 Analyze and solve systems of two linear equations in two variables algebraically to find exact solutions.	G8 M4 Lesson 26: Characterization of Parallel Lines G8 M4 Lesson 27: Nature of Solutions of a System of Linear Equations G8 M4 Lesson 28: Another Computational Method of Solving a Linear System G8 M4 Lesson 29: Word Problems G8 M4 Lesson 30: Conversion Between Celsius and Fahrenheit G8 M4 Topic E: Pythagorean Theorem
8.FGR.7.5 Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular.	G8 M4 Lesson 26: Characterization of Parallel Lines G8 M4 Lesson 27: Nature of Solutions of a System of Linear Equations Geometry M4 Topic B: Perpendicular and Parallel Lines in the Cartesian Plane

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Geometric & Spatial Reasoning—Pythagorean theorem and volume of triangles, rectangles, cones, cylinders, and spheres

8.GSR.8 Solve geometric problems involving the Pythagorean Theorem and the volume of geometric figures to explain real phenomena.

Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.GSR.8.1 Explain a proof of the Pythagorean Theorem and its converse using visual models.	G8 M2 Lesson 15: Informal Proof of the Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M7 Lesson 15: Pythagorean Theorem, Revisited G8 M7 Lesson 16: Converse of the Pythagorean Theorem
8.GSR.8.2 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions.	G8 M2 Topic D: The Pythagorean Theorem G8 M3 Topic C: The Pythagorean Theorem G8 M7 Lesson 1: The Pythagorean Theorem G8 M7 Lesson 4: Simplifying Square Roots G8 M7 Lesson 5: Solving Equations with Radicals G8 M7 Lesson 17: Distance on the Coordinate Plane G8 M7 Lesson 18: Applications of the Pythagorean Theorem G8 M7 Lesson 19: Cones and Spheres G8 M7 Lesson 23: Nonlinear Motion
8.GSR.8.3 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system in practical, mathematical problems.	G8 M2 Lesson 16: Applications of the Pythagorean Theorem G8 M7 Lesson 17: Distance on the Coordinate Plane

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Georgia's K–12 Mathematics Standards	Aligned Components of *Eureka Math*
8.GSR.8.4 Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve in relevant problems.	G8 M5 Topic B: Volume G8 M7 Lesson 19: Cones and Spheres G8 M7 Lesson 20: Truncated Cones G8 M7 Lesson 21: Volume of Composite Solids G8 M7 Lesson 22: Average Rate of Change

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