EUREKA MATH[®]

G R E A T M I N D S

Grade 7 | New York Next Generation Mathematics Learning 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 <u>greatminds.org/data</u>.

Full Suite of Resources

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

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

MP.8

Look for and express regularity in repeated reasoning.

Standards for Mathematical Practice Aligned Components of Eureka Math MP.1 Lessons in every module engage students in mathematical practices. These are designated in the Module Overview and labeled in lessons. Make sense of problems and persevere in solving them. For example: MP.2 Lesson 13 7•3 A STORY OF RATIOS Reason abstractly and quantitatively. **MP.3** Questions leading to finding a solution: What is a solution set of an inequality? Construct viable arguments and critique the reasoning of others. a A solution set contains more than one number that makes the inequality a true statement. ■ Is -3 a solution to our inequality in part (a)? \circ Yes. When the value of -3 is substituted into the inequality, the resulting statement is true. MP.4 ■ Could -4 be a solution to our inequality in part (a)? \circ Substituting -4 does not result in a true statement because -12 is equal to, but not greater than -12. Model with mathematics. • We have found that x = -3 is a solution to the inequality in part (a) where x = -4 and x = -5 are not. What is meant by the minimum value in this inequality? Explain. The minimum value is the smallest value that makes the inequality true. -3 is not the minimum value MP.5 because there are rational numbers that are smaller than -3 but greater than -4. For example, $-3\frac{1}{2}$ is smaller than -3 but still creates a true statement. Use appropriate tools strategically. How is solving an inequality similar to solving an equation? How is it different? Solving an equation and an inequality are similar in the sequencing of steps taken to solve for the variable. The same if-then moves are used to solve for the variable. MP.6 ^a They are different because in an equation, you get one solution, but in an inequality, there are an infinite number of solutions. Attend to precision. MP.7 Look for and make use of structure.

Ratios and Proportional Relationships

Analyze proportional relationships and use them to solve real-world and mathematical problems.

New York Next Generation Mathematics Learning Standards

Aligned Components of Eureka Math

1 Lesson 11: Ratios of Fractions and Their Unit Rates 1 Lesson 12: Ratios of Fractions and Their Unit Rates 1 Lesson 13: Finding Equivalent Ratios Given the Total Quantity
1 Lesson 15: Equations of Graphs of Proportional Relationships Involving Fractions
1 Topic A: Proportional Relationships
1 Topic B: Unit Rate and Constant of Proportionality
1 Lesson 15: Equations of Graphs of Proportional Relationships Involving Fractions
1 Lesson 16: Relating Scale Drawings to Ratios and Rates
1 Lesson 17: The Unit Rate as the Scale Factor
4 Lesson 1: Percent
4 Lesson 2: Part of a Whole as Percent
4 Lesson 3: Comparing Quantities with Percent
4 Lesson 4: Percent Increase and Decrease
4 Lesson 6: Fluency with Percents
4 Lesson 7: Markup and Markdown Problems
4 Lesson 9: Problem Solving When the Percent Changes
4 Lesson 10: Simple Interest
4 Lesson 11: Tax, Commissions, Fees, and Other Real-World Percent Applications
4 Lesson 12: The Scale Factor as a Percent for a Scale Drawing

Aligned Components of Eureka Math

NY-7.RP.2.a	G7 M1 Topic A: Proportional Relationships
Decide whether two quantities are in a proportional relationship.	
NY-7.RP.2.b	G7 M1 Topic B: Unit Rate and Constant of Proportionality
Identify the constant of proportionality	G7 M1 Lesson 16: Relating Scale Drawings to Ratios and Rates
(unit rate) in tables, graphs, equations,	G7 M1 Lesson 17: The Unit Rate as the Scale Factor
diagrams, and verbal descriptions of proportional relationships.	G7 M4 Lesson 12: The Scale Factor as a Percent for a Scale Drawing
NY-7.RP.2.c	G7 M1 Lesson 2: Proportional Relationships
Represent a proportional relationship	G7 M1 Lesson 8: Representing Proportional Relationships with Equations
using an equation.	G7 M1 Lesson 9: Representing Proportional Relationships with Equations
	G7 M1 Lesson 10: Interpreting Graphs of Proportional Relationships
	G7 M4 Lesson 1: Percent
	G7 M4 Lesson 2: Part of a Whole as Percent
	G7 M4 Lesson 3: Comparing Quantities with Percent
	G7 M4 Lesson 4: Percent Increase and Decrease
	G7 M4 Lesson 6: Fluency with Percents
	G7 M4 Lesson 7: Markup and Markdown Problems
	G7 M4 Lesson 9: Problem Solving When the Percent Changes
	G7 M4 Lesson 10: Simple Interest

Aligned Components of Eureka Math

NY-7.RP.2.d	G7 M1 Lesson 10: Interpreting Graphs of Proportional Relationships
Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.	
NY-7.RP.3	G7 M1 Lesson 14: Multi-Step Ratio Problems
Use proportional relationships to solve	G7 M4 Lesson 1: Percent
multistep ratio and percent problems.	G7 M4 Lesson 3: Comparing Quantities with Percent
	G7 M4 Lesson 4: Percent Increase and Decrease
	G7 M4 Lesson 5: Find One Hundred Percent Given Another Percent
	G7 M4 Lesson 6: Fluency with Percents
	G7 M4 Topic B: Percent Problems Including More than One Whole
	G7 M4 Topic D: Population, Mixture, and Counting Problems Involving Percents

The Number System

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

New York Next Generation Mathematics Learning Standards

Aligned Components of Eureka Math

NY-7.NS.1	This standard is fully addressed by the lessons aligned to its subsections.
Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers. Represent addition and subtraction on a horizontal or vertical number line.	
NY-7.NS.1.a	G7 M2 Lesson 1: Opposite Quantities Combine to Make Zero
Describe situations in which opposite quantities combine to make 0.	
NY-7.NS.1.b	G7 M2 Lesson 1: Opposite Quantities Combine to Make Zero
Understand addition of rational	G7 M2 Lesson 2: Using the Number Line to Model the Addition of Integers
numbers; $p + q$ is the number located	G7 M2 Lesson 3: Understanding Addition of Integers
a distance $ q $ from p , in the positive or negative direction depending	G7 M2 Lesson 4: Efficiently Adding Integers and Other Rational Numbers
on whether q is positive or negative.	G7 M2 Lesson 7: Addition and Subtraction of Rational Numbers
Show that a number and its opposite have a sum of 0 (are additive inverses).	G7 M2 Lesson 8: Applying the Properties of Operations to Add and Subtract Rational Numbers
Interpret sums of rational numbers by describing real-world contexts.	G7 M2 Lesson 9: Applying the Properties of Operations to Add and Subtract Rational Numbers

Aligned Components of Eureka Math

NY-7.NS.1.c	G7 M2 Lesson 5: Understanding Subtraction of Integers and Other Rational Numbers
Understand subtraction of rational numbers as adding the additive inverse, $p-q=p+(-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	G7 M2 Lesson 6: The Distance Between Two Rational Numbers G7 M2 Lesson 7: Addition and Subtraction of Rational Numbers G7 M2 Lesson 8: Applying the Properties of Operations to Add and Subtract Rational Numbers G7 M2 Lesson 9: Applying the Properties of Operations to Add and Subtract Rational Numbers
NY-7.NS.1.d Apply properties of operations as strategies to add and subtract rational numbers.	G7 M2 Lesson 8: Applying the Properties of Operations to Add and Subtract Rational Numbers G7 M2 Lesson 9: Applying the Properties of Operations to Add and Subtract Rational Numbers
NY-7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	This standard is fully addressed by the lessons aligned to its subsections.

Aligned Components of Eureka Math

NY-7.NS.2.a	G7 M2 Topic B: Multiplication and Division of Integers and Rational Numbers
Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1)=1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	
NY-7.NS.2.b	G7 M2 Lesson 12: Division of Integers
Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$. Interpret quotients of rational numbers by describing real-world contexts.	G7 M2 Lesson 15: Multiplication and Division of Rational Numbers
NY-7.NS.2.c	G7 M2 Lesson 16: Applying the Properties of Operations to Multiply and Divide Rational Numbers
Apply properties of operations as strategies to multiply and divide rational numbers.	

Aligned Components of Eureka Math

NY-7.NS.2.d	G7 M2 Lesson 13: Converting Between Fractions and Decimals Using Equivalent Fractions
Convert a fraction to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	G7 M2 Lesson 14: Converting Rational Numbers to Decimals Using Long Division
NY-7.NS.3	G7 M3 Lesson 3: Writing Products as Sums and Sums as Products
Solve real-world and mathematical	G7 M3 Lesson 4: Writing Products as Sums and Sums as Products
problems involving the four operations with rational numbers.	G7 M3 Lesson 7: Understanding Equations
with rational numbers.	G7 M3 Lesson 8: Using If-Then Moves in Solving Equations
	G7 M3 Lesson 9: Using If-Then Moves in Solving Equations
	G7 M3 Lesson 10: Angle Problems and Solving Equations
	G7 M3 Lesson 11: Angle Problems and Solving Equations
	G7 M3 Lesson 13: Inequalities
	G7 M3 Lesson 14: Solving Inequalities
	G7 M3 Lesson 15: Graphing Solutions to Inequalities
	G7 M4 Lesson 7: Markup and Markdown Problems
	G7 M4 Lesson 8: Percent Error Problems
	G7 M4 Lesson 9: Problem Solving When the Percent Changes
	G7 M4 Topic D: Population, Mixture, and Counting Problems Involving Percents

Expressions, Equations, and Inequalities

Use properties of operations to generate equivalent expressions.

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NY-7.EE.1	G7 M3 Topic A: Use Properties of Operations to Generate Equivalent Expressions
Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations.	
NY-7.EE.2	G7 M2 Lesson 18: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers
Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related.	G7 M2 Lesson 19: Writing, Evaluating, and Finding Equivalent Expressions with Rational Numbers G7 M2 Lesson 21: If-Then Moves with Integer Number Cards G7 M3 Lesson 3: Writing Products as Sums and Sums as Products G7 M3 Lesson 4: Writing Products as Sums and Sums as Products

Expressions, Equations, and Inequalities

Solve real-life and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

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Aligned Components of Eureka Math

NY-7.EE.3	G7 M3 Lesson 7: Understanding Equations
Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Assess the reasonableness of answers using mental computation and estimation strategies.	G7 M3 Lesson 8: Using If-Then Moves in Solving Equations G7 M3 Lesson 9: Using If-Then Moves in Solving Equations G7 M3 Lesson 10: Angle Problems and Solving Equations G7 M3 Lesson 11: Angle Problems and Solving Equations G7 M3 Lesson 13: Inequalities G7 M3 Lesson 14: Solving Inequalities G7 M3 Lesson 15: Graphing Solutions to Inequalities G7 M4 Lesson 7: Markup and Markdown Problems G7 M4 Lesson 8: Percent Error Problems G7 M4 Lesson 9: Problem Solving When the Percent Changes G7 M4 Topic D: Population, Mixture, and Counting Problems Involving Percents
NY-7.EE.4	This standard is fully addressed by the lessons aligned to its subsections.
Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	

Aligned Components of Eureka Math

NY-7.EE.4.a

Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

G7 M2 Lesson 17: Comparing Tape Diagram Solutions to Algebraic Solutions

G7 M2 Lesson 21: If-Then Moves with Integer Number Cards

G7 M2 Lesson 22: Solving Equations Using Algebra

G7 M2 Lesson 23: Solving Equations Using Algebra

G7 M3 Lesson 7: Understanding Equations

G7 M3 Lesson 8: Using If-Then Moves in Solving Equations

G7 M3 Lesson 9: Using If-Then Moves in Solving Equations

G7 M3 Lesson 10: Angle Problems and Solving Equations

G7 M3 Lesson 11: Angle Problems and Solving Equations

G7 M4 Lesson 10: Simple Interest

G7 M4 Lesson 11: Tax, Commissions, Fees, and Other Real-World Percent Applications

G7 M4 Lesson 17: Mixture Problems

NY-7.EE.4.b

Solve word problems leading to inequalities of the form px + q > r, $px + q \ge r$, $px + q \le r$, or px + q < r, where p, q, and r are rational numbers. Graph the solution set of the inequality on the number line and interpret it in the context of the problem.

G7 M3 Lesson 12: Properties of Inequalities

G7 M3 Lesson 13: Inequalities

G7 M3 Lesson 14: Solving Inequalities

G7 M3 Lesson 15: Graphing Solutions to Inequalities

Geometry

Draw, construct, and describe geometrical figures and describe the relationships between them.

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NY-7.G.1	G7 M1 Lesson 17: The Unit Rate as the Scale Factor
Solve problems involving scale drawings of geometric figures, including	G7 M1 Lesson 18: Computing Actual Lengths from a Scale Drawing
	G7 M1 Lesson 19: Computing Actual Areas from a Scale Drawing
computing actual lengths and areas from a scale drawing and reproducing	G7 M1 Lesson 20: An Exercise in Creating a Scale Drawing
a scale drawing at a different scale.	G7 M1 Lesson 21: An Exercise in Changing Scales
	G7 M1 Lesson 22: An Exercise in Changing Scales
	G7 M4 Topic C: Scale Drawings
NY-7.G.2	G7 M6 Topic B: Constructing Triangles
Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	
NY-7.G.3	G7 M6 Topic C: Slicing Solids
Describe the two-dimensional shapes that result from slicing three-dimensional solids parallel or perpendicular to the base.	

Geometry

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

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NY-7.G.4 Apply the formulas for the area and circumference of a circle to solve problems.	G7 M3 Lesson 16: The Most Famous Ratio of All G7 M3 Lesson 17: The Area of a Circle G7 M3 Lesson 18: More Problems on Area and Circumference G7 M3 Lesson 20: Composite Area Problems
NY-7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	G7 M3 Lesson 10: Angle Problems and Solving Equations G7 M3 Lesson 11: Angle Problems and Solving Equations G7 M6 Topic A: Unknown Angles
NY-7.G.6 Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles and trapezoids. Solve surface area problems involving right prisms and right pyramids composed of triangles and trapezoids. Find the volume of right triangular prisms, and solve volume problems involving three-dimensional objects composed of right rectangular prisms.	G7 M3 Lesson 19: Unknown Area Problems on the Coordinate Plane G7 M3 Lesson 20: Composite Area Problems G7 M3 Lesson 21: Surface Area G7 M3 Lesson 22: Surface Area G7 M3 Lesson 23: The Volume of a Right Prism G7 M3 Lesson 24: The Volume of a Right Prism G7 M3 Lesson 25: Volume and Surface Area G7 M3 Lesson 26: Volume and Surface Area G7 M6 Topic D: Problems Involving Area and Surface Area G7 M6 Topic E: Problems Involving Volume

Statistics and Probability

Draw informal comparative inferences about two populations.

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NY-7.SP.1	G6 M6 Lesson 14: Summarizing a Distribution Using a Box Plot
Construct and interpret box-plots, find	G6 M6 Lesson 15: More Practice with Box Plots
the interquartile range, and determine if a data point is an outlier.	G6 M6 Lesson 16: Understanding Box Plots
NY-7.SP.3	G7 M5 Topic D: Comparing Populations
Informally assess the degree of visual overlap of two quantitative data distributions.	
NY-7.SP.4	G7 M5 Topic D: Comparing Populations
Use measures of center and measures	
of variability for quantitative data from random samples or populations to draw	
informal comparative inferences about	
the populations.	

Statistics and Probability

Investigate chance processes and develop, use, and evaluate probability models.

New York Next Generation Mathematics Learning Standards

Aligned Components of Eureka Math

NY-7.SP.8 Find probabilities of compound events using organized lists, sample space tables, tree diagrams, and simulation.	This standard is fully addressed by the lessons aligned to its subsections.
NY-7.SP.8.a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	G7 M5 Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities G7 M5 Lesson 7: Calculating Probabilities of Compound Events G7 M5 Lesson 10: Conducting a Simulation to Estimate the Probability of an Event G7 M5 Lesson 11: Conducting a Simulation to Estimate the Probability of an Event
NY-7.SP.8.b Represent sample spaces for compound events using methods such as organized lists, sample space tables, and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event.	G7 M5 Lesson 6: Using Tree Diagrams to Represent a Sample Space and to Calculate Probabilities G7 M5 Lesson 7: Calculating Probabilities of Compound Events G7 M5 Lesson 10: Conducting a Simulation to Estimate the Probability of an Event G7 M5 Lesson 11: Conducting a Simulation to Estimate the Probability of an Event
NY-7.SP.8.c Design and use a simulation to generate frequencies for compound events.	G7 M5 Lesson 10: Conducting a Simulation to Estimate the Probability of an Event G7 M5 Lesson 11: Conducting a Simulation to Estimate the Probability of an Event