Grade 7 | Indiana Academic Standards for Mathematics Correlation to *Eureka Math*²™

When the original *Eureka Math*® curriculum was released, it quickly became the most widely used K–5 mathematics curriculum in the country. Now, the Great Minds® teacher–writers have created *Eureka Math*²™, a groundbreaking new curriculum that helps teachers deliver *exponentially better* math instruction while still providing students with the same deep understanding of and fluency in math. *Eureka Math*² carefully sequences mathematical content to maximize vertical alignment—a principle tested and proven to be essential in students' mastery of math—from kindergarten through high school.

While this innovative new curriculum includes all the trademark *Eureka Math* aha moments that have been delighting students and teachers for years, it also boasts these exciting new features:

Teachability

*Eureka Math*² employs streamlined materials that allow teachers to plan more efficiently and focus their energy on delivering high-quality instruction that meets the individual needs of their students. Differentiation suggestions, slide decks, digital interactives, and multiple forms of assessment are just a few of the resources built right into the teacher materials.

Accessibility

*Eureka Math*² incorporates Universal Design for Learning principles so all learners can access the mathematics and take on challenging math concepts. Student supports are built into the instructional design and are clearly identified in the *Teach* book. Further, the curriculum carries a focus on readability. By eliminating unnecessary words and using simple, clear sentences, the *Eureka Math*² teacher–writers have created one of the most readable mathematics curricula on the market. The curriculum's readability and accessibility help all students see themselves as mathematical thinkers and doers who are fully capable of owning their mathematics learning.

Digital Engagement

The digital elements of *Eureka Math*² add to students' engagement with the math. The curriculum provides teachers with digital slides for each lesson. In addition, each grade level includes wordless videos that spark students' interest and curiosity. Students at all levels work through mathematical explorations that help lead to their own mathematical discoveries. Digital lessons and videos provide opportunities for students to wonder, explore, and make sense of mathematics, which contributes to the development of a strong, positive mathematical identity.

Process Standards for Mathematics	Aligned Components of *Eureka Math²*
PS.1: Make sense of problems and persevere in solving them. Mathematically proficient 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. They 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. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" and "Is my answer reasonable?" They understand the approaches of others to solving complex problems and identify correspondences between different approaches. Mathematically proficient students understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	While lessons in every module engage students in making sense of problems and persevering in solving them, this mathematical practice is specifically addressed in the following modules: 7 M3: Expressions, Equations, and Inequalities 7 M5: Percent and Applications of Percent
PS.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: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and 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.	While lessons in every module engage students in reasoning abstractly and quantitatively, this mathematical practice is specifically addressed in the following modules: 7 M1: Ratios and Proportional Relationships 7 M3: Expressions, Equations, and Inequalities 7 M5: Percent and Applications of Percent 7 M6: Probability and Populations

Process Standards for Mathematics	Aligned Components of *Eureka Math²*
PS.3: Construct viable arguments and critique the reasoning of others. Mathematically proficient 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 analyze situations by breaking them into cases and recognize and use counterexamples. They organize their mathematical thinking, justify their conclusions and 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. They justify whether a given statement is true always, sometimes, or never. Mathematically proficient students participate and collaborate in a mathematics community. They listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	While lessons in every module engage students in constructing viable arguments and critiquing the reasoning of others, this mathematical practice is specifically addressed in the following modules: 7 M3: Expressions, Equations, and Inequalities 7 M4: Geometry 7 M5: Percent and Applications of Percent

Process Standards for Mathematics	Aligned Components of *Eureka Math²*
PS.4: Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace using a variety of appropriate strategies. They create and use a variety of representations to solve problems and to organize and communicate mathematical ideas. Mathematically proficient students apply what they know and 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. They 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.	While lessons in every module engage students in modeling with mathematics, this mathematical practice is specifically addressed in the following modules: 7 M1: Ratios and Proportional Relationships 7 M4: Geometry
PS.5: Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Mathematically 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 their limitations. Mathematically proficient students identify relevant external mathematical resources, such as digital content, and use them to pose or solve problems. They use technological tools to explore and deepen their understanding of concepts and to support the development of learning mathematics. They use technology to contribute to concept development, simulation, representation, reasoning, communication and problem solving.	While lessons in every module engage students in using appropriate tools strategically, this mathematical practice is specifically addressed in the following modules: 7 M1: Ratios and Proportional Relationships 7 M2: Operations with Rational Numbers 7 M5: Percent and Applications of Percent

Process Standards for Mathematics	Aligned Components of *Eureka Math²*
PS.6: Attend to precision. Mathematically proficient students communicate precisely to others. They use clear definitions, including correct mathematical language, 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. They express solutions clearly and logically by using the appropriate mathematical terms and notation. They specify units of measure and label axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently and check the validity of their results in the context of the problem. They express numerical answers with a degree of precision appropriate for the problem context.	While lessons in every module engage students in attending to precision, this mathematical practice is specifically addressed in the following modules: 7 M2: Operations with Rational Numbers 7 M3: Expressions, Equations, and Inequalities 7 M4: Geometry 7 M6: Probability and Populations
PS.7: Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. They step back for an overview and shift perspective. They recognize and use properties of operations and equality. They organize and classify geometric shapes based on their attributes. They see expressions, equations, and geometric figures as single objects or as being composed of several objects.	While lessons in every module engage students in looking for and making use of structure, this mathematical practice is specifically addressed in the following modules: 7 M2: Operations with Rational Numbers 7 M3: Expressions, Equations, and Inequalities 7 M4: Geometry 7 M5: Percent and Applications of Percent
PS.8: Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated and look for general methods and shortcuts. They notice regularity in mathematical problems and their work to create a rule or formula. Mathematically proficient students maintain oversight of the process, while attending to the details as they solve a problem. They continually evaluate the reasonableness of their intermediate results.	While lessons in every module engage students in looking for and expressing regularity in repeated reasoning, this mathematical practice is specifically addressed in the following modules: 7 M1: Ratios and Proportional Relationships 7 M2: Operations with Rational Numbers 7 M4: Geometry 7 M5: Percent and Applications of Percent

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Number Sense	**7.NS.1** Find the prime factorization of whole numbers and write the results using exponents.	6 M4 Lesson 3: Exploring Exponents
	7.NS.2 Understand the inverse relationship between squaring and finding the square root of a perfect square whole number. Find square roots of perfect square whole numbers.	8 M1 Topic D: Perfect Squares, Perfect Cubes, and the Pythagorean Theorem
	7.NS.3 Know there are rational and irrational numbers. Identify, compare, and order rational and irrational numbers (e.g., $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, π) and plot them on a number line.	6 M3 Lesson 3: Rational Numbers 6 M3 Lesson 4: Rational Numbers in Real-World Situations 7 M2 Topic D: Dividing Rational Numbers 8 M1 Lesson 19: Using the Pythagorean Theorem 8 M1 Lesson 20: Square Roots 8 M1 Topic E: Irrational Numbers
Computation	**7.C.1** Understand $p + q$ as the number located a distance $\lvert q \rvert$ from p, in the positive or negative direction, depending on whether q is positive or negative. Show on a number line that a number and its opposite have a sum of 0 (are additive inverses). Find and interpret sums of rational numbers in real-world contexts.	7 M2 Topic A: Adding Rational Numbers
	7.C.2 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.	7 M2 Topic B: Subtracting Rational Numbers

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	7.C.3 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.	7 M2 Topic C: Multiplying Rational Numbers
	7.C.4 Understand that integers can be divided, provided that the divisor is not zero. Understand that if p and q are integers, then $-\left(\frac{p}{q}\right) = \frac{-p}{q} = \frac{p}{-q}$.	7 M2 Topic D: Dividing Rational Numbers
	7.C.5 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.	7 M1 Topic A: Understanding Proportional Relationships
	7.C.6 Use proportional relationships to solve ratio and percent problems with multiple operations (e.g., simple interest, tax, markups, markdowns, gratuities, conversions within and across measurement systems, and percent increase and decrease).	7 M1 Topic B: Working with Proportional Relationships 7 M1 Topic C: Scale Drawings and Proportional Relationships 7 M5: Percent and Applications of Percent
	7.C.7 Compute fluently with rational numbers using an algorithmic approach.	7 M2: Operations with Rational Numbers

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	7.C.8 Solve real-world problems with rational numbers by using one or two operations.	7 M2 Lesson 25: Writing and Evaluating Expressions with Rational Numbers, Part 1 7 M2 Lesson 26: Writing and Evaluating Expressions with Rational Numbers, Part 2 7 M3 Lesson 16: Using Equations to Solve Rate Problems 7 M3 Lesson 17: Using Equations to Solve Problems
Algebra and Functions	**7.AF.1** Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring out a common number (e.g., given $2x - 10$, create an equivalent expression $2(x - 5)$). Justify each step in the process.	7 M3 Topic A: Equivalent Expressions 7 M5 Lesson 12: More Discounts
	7.AF.2 Solve equations of the form $px + q = r$ and $p(x + q) = r$ fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.	7 M3 Topic B: Unknown Angle Measurements 7 M3 Topic C: Solving Equations
	7.AF.3 Solve inequalities of the form $px + q$ ($>$ or $\geq$) r or $px + q$ ($<$ or $\leq$) r, where p, q, and r are specific rational numbers. Represent real-world problems using inequalities of these forms and solve such problems. Graph the solution set of the inequality and interpret it in the context of the problem.	7 M3 Topic D: Inequalities

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	7.AF.4 Define slope as vertical change for each unit of horizontal change and recognize that a constant rate of change or constant slope describes a linear function. Identify and describe situations with constant or varying rates of change.	8 M4 Topic D: Slope of a Line
	7.AF.5 Graph a line given its slope and a point on the line. Find the slope of a line given its graph.	8 M4 Topic E: Different Forms of Linear Equations 8 M4 Topic F: Graphing and Writing Linear Equations
	7.AF.6 Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).	7 M1 Topic A: Understanding Proportional Relationships 7 M1 Lesson 14: Extreme Bicycles
	7.AF.7 Identify the unit rate or constant of proportionality in tables, graphs, equations, and verbal descriptions of proportional relationships.	7 M1 Topic A: Understanding Proportional Relationships 7 M1 Topic B: Working with Proportional Relationships
	7.AF.8 Explain what the coordinates of a point on the graph of a proportional relationship mean in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$, where r is the unit rate.	7 M1 Lesson 4: Exploring Graphs of Proportional Relationships 7 M1 Lesson 5: Analyzing Graphs of Proportional Relationships 7 M1 Lesson 9: Comparing Proportional Relationships

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	7.AF.9 Represent real-world and other mathematical situations that involve proportional relationships. Write equations and draw graphs to represent these proportional relationships. Recognize that these situations are described by a linear function in the form $y = mx$, where the unit rate, m, is the slope of the line.	7 M1 Topic A: Understanding Proportional Relationships 7 M1 Topic B: Working with Proportional Relationships 7 M5 Topic A: Proportion and Percent 8 M4 Lesson 15: Comparing Proportional Relationships 8 M4 Lesson 16: Proportional Relationships and Slope
Geometry and Measurement	**7.GM.1** Explore triangles with given conditions from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.	7 M4 Lesson 3: Side Lengths of a Triangle 7 M4 Lesson 4: Angles of a Triangle 7 M4 Topic B: Constructing Triangles
	7.GM.2 Identify and describe similarity relationships of polygons including the angle-angle criterion for similar triangles, and solve problems involving similarity.	8 M3 Topic C: Similar Figures 8 M3 Topic D: Applications of Similar Figures
	7.GM.3 Solve real-world and other mathematical problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. Create a scale drawing by using proportional reasoning.	7 M1 Topic C: Scale Drawings and Proportional Relationships
	7.GM.4 Solve real-world and other mathematical problems using facts about vertical, adjacent, complementary, and supplementary angles.	7 M3 Topic B: Unknown Angle Measurements

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	7.GM.5 Understand the formulas for area and circumference of a circle and use them to solve real-world and other mathematical problems; give an informal derivation of the relationship between circumference and area of a circle.	7 M4 Topic C: Circumference and Area of Circles
	7.GM.6 Solve real-world and other mathematical problems involving volume of cylinders and three-dimensional objects composed of right rectangular prisms.	7 M4 Topic E: Cross Sections and Volume 8 M6 Lesson 22: Volume of Cylinders
	7.GM.7 Construct nets for right rectangular prisms and cylinders and use the nets to compute the surface area; apply this technique to solve real-world and other mathematical problems.	6 M5 Topic C: Nets and Surface Area 7 M4 Lesson 17: Surface Area of Right Rectangular and Right Triangular Prisms 7 M4 Lesson 19: Surface Area of Cylinders 7 M4 Lesson 20: Surface Area of Right Pyramids
Data Analysis, Statistics, and Probability	**7.DSP.1** Understand that statistics can be used to gain information about a population by examining a sample of the population. Understand that conclusions and generalizations about a population from a sample are valid only if the sample is representative of that population and that random sampling tends to produce representative samples and support valid inferences.	7 M6 Topic C: Random Sampling

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	7.DSP.2 Use data from a random sample to draw inferences about a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.	7 M6 Topic C: Random Sampling
	7.DSP.3 Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.	7 M6 Topic D: Comparing Populations
	7.DSP.4 Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.	7 M6 Topic D: Comparing Populations
	7.DSP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Understand that a probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. Understand that a probability of 1 indicates an event certain to occur and a probability of 0 indicates an event impossible to occur. Identify probabilities of events as impossible, unlikely, equally likely, likely, or certain.	7 M6 Lesson 1: What is Probability?

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	7.DSP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its relative frequency from a large sample.	7 M6 Topic A: Calculating and Interpreting Probabilities 7 M6 Lesson 8: Picking Blue
	7.DSP.7 Develop probability models that include the sample space and probabilities of outcomes to represent simple events with equally likely outcomes. Predict the approximate relative frequency of the event based on the model. Compare probabilities from the model to observed frequencies; evaluate the level of agreement and explain possible sources of discrepancy.	7 M6 Lesson 4: Theoretical Probability 7 M6 Lesson 7: The Law of Large Numbers 7 M6 Lesson 8: Picking Blue