

## Level 8: Focused Mathematics Intervention Lesson Correlations

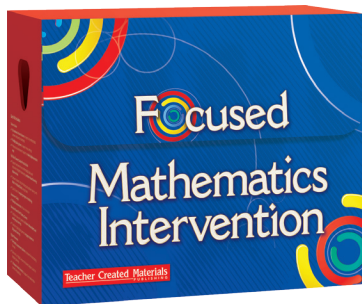
Lesson	Domain	Cluster	Standard	Math Practice
<b>Lesson 1: Repeating Decimals</b>	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	<b>8.NS.A.1</b> —Know that numbers that are not rational are called <i>irrational</i> . Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Attend to precision.</li> <li>Look for and express regularity in repeated reasoning.</li> </ul>
<b>Lesson 2: Approximating Irrational Numbers</b>	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	<b>8.NS.A.2</b> —Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi^2$ ).	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>
<b>Lesson 3: Multiplication and Division with Exponents</b>	Expressions & Equations	Work with radicals and integer exponents.	<b>8.EE.A.1</b> —Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Model with mathematics.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>
<b>Lesson 4: Solving Equations with Squares and Square Roots</b>	Expressions & Equations	Work with radicals and integer exponents.	<b>8.EE.A.2</b> —Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 5: Solving Cubic Equations</b>	Expressions & Equations	Work with radicals and integer exponents.	<b>8.EE.A.2</b> —Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 6: Scientific Notation</b>	Expressions & Equations	Work with radicals and integer exponents.	<b>8.EE.A.3</b> —Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> </ul>
<b>Lesson 7: Computing with Scientific Notation</b>	Expressions & Equations	Work with radicals and integer exponents.	<b>8.EE.A.4</b> —Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> </ul>

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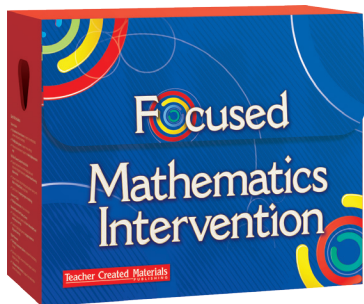
Lesson	Domain	Cluster	Standard	Math Practice
<b>Lesson 8: Slope and Unit Rate</b>	Expressions & Equations	Understand the connections between proportional relationships, lines, and linear equations.	<b>8.EE.B.5</b> —Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 9: Number of Solutions</b>	Expressions & Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	<b>8.EE.C.7.a</b> —Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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).	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 10: Solving Linear Equations</b>	Expressions & Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	<b>8.EE.C.7.b</b> —Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the Distributive Property and collecting like terms.	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Attend to precision.</li> </ul>
<b>Lesson 11: Systems of Equations</b>	Expressions & Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	<p><b>8.EE.C.8.a</b>—Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.</p> <p><b>8.EE.C.8.b</b>—Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.</p>	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Use appropriate tools strategically.</li> </ul>
<b>Lesson 12: Using Systems of Equations</b>	Expressions & Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	<b>8.EE.C.8.c</b> —Solve real-world and mathematical problems leading to two linear equations in two variables.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 13: Definition of Function</b>	Functions	Define, evaluate, and compare functions.	<b>8.F.A.1</b> —Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>
<b>Lesson 14: Comparing Rates of Change</b>	Functions	Define, evaluate, and compare functions.	<b>8.F.A.2</b> —Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> <li>Use appropriate tools strategically.</li> </ul>

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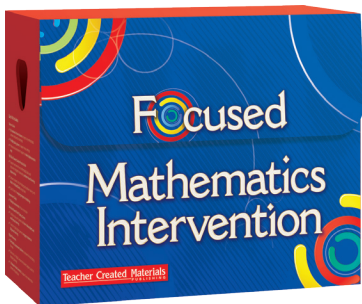
Lesson	Domain	Cluster	Standard	Math Practice
<b>Lesson 15: Linear/Nonlinear</b>	Functions	Define, evaluate, and compare functions.	<b>8.F.A.3</b> —Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Attend to precision.</li> </ul>
<b>Lesson 16: Writing Linear Functions</b>	Functions	Use functions to model relationships between quantities.	<b>8.F.B.4</b> —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. Interpret 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.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 17: Modeling with Linear Functions</b>	Functions	Use functions to model relationships between quantities.	<b>8.F.B.4</b> —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. Interpret 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.	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 18: Increasing and Decreasing Functions</b>	Functions	Use functions to model relationships between quantities.	<b>8.F.B.5</b> —Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Look for and make use of structure.</li> </ul>
<b>Lesson 19: Rigid Transformations</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<p><b>8.G.A.1</b>—Verify experimentally the properties of rotations, reflections, and translations.</p> <p><b>8.G.A.1.a</b>—Lines are taken to lines, and line segments to line segments of the same length.</p> <p><b>8.G.A.1.b</b>—Angles are taken to angles of the same measure.</p> <p><b>8.G.A.1.c</b>—Parallel lines are taken to parallel lines.</p>	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> </ul>
<b>Lesson 20: Congruent Figures</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<b>8.G.A.2</b> —Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Look for and make use of structure.</li> </ul>

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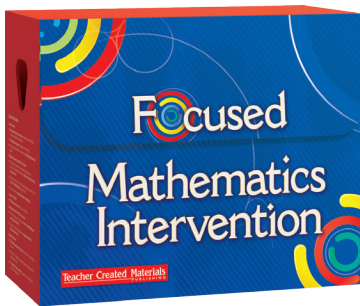
Lesson	Domain	Cluster	Standard	Math Practice
<b>Lesson 21: Transformations with Dilations</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<b>8.G.A.3</b> —Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Look for and make use of structure.</li> </ul>
<b>Lesson 22: Similarity</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<b>8.G.A.2</b> —Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Look for and make use of structure.</li> </ul>
<b>Lesson 23: Angles, Parallel Lines, and Triangles</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<b>8.G.A.5</b> —Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Look for and make use of structure.</li> </ul>
<b>Lesson 24: Angles and Similar Triangles</b>	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	<b>8.G.A.5</b> —Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	<ul style="list-style-type: none"> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Model with mathematics.</li> </ul>
<b>Lesson 25: Determining Right Triangles</b>	Geometry	Understand and apply the Pythagorean Theorem.	<b>8.G.B.6</b> —Explain a proof of the Pythagorean Theorem and its converse.	<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Use appropriate tools strategically.</li> </ul>
<b>Lesson 26: Using the Pythagorean Theorem</b>	Geometry	Understand and apply the Pythagorean Theorem.	<b>8.G.B.7</b> —Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	<ul style="list-style-type: none"> <li>• Make sense of problems and persevere in solving them.</li> <li>• Reason abstractly and quantitatively.</li> <li>• Construct viable arguments and critique the reasoning of others.</li> <li>• Use appropriate tools strategically.</li> <li>• Model with mathematics.</li> </ul>

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Lesson	Domain	Cluster	Standard	Math Practice
<b>Lesson 27: Distance Between Two Points</b>	Geometry	Understand and apply the Pythagorean Theorem.	<b>8.G.B.8</b> —Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Use appropriate tools strategically.</li> </ul>
<b>Lesson 28: Volumes of Cylinders, Cones, and Spheres</b>	Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	<b>8.G.C.9</b> —Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	<ul style="list-style-type: none"> <li>Make sense of problems and persevere in solving them.</li> <li>Reason abstractly and quantitatively.</li> <li>Model with mathematics.</li> <li>Attend to precision.</li> </ul>
<b>Lesson 29: Association in Scatter Plots</b>	Statistics & Probability	Investigate patterns of association in bivariate data.	<b>8.SPA.1</b> —Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	<ul style="list-style-type: none"> <li>Construct viable arguments and critique the reasoning of others.</li> <li>Model with mathematics.</li> <li>Look for and make use of structure.</li> </ul>
<b>Lesson 30: Interpreting Scatter Plots with Linear Associations</b>	Statistics & Probability	Investigate patterns of association in bivariate data.	<p><b>8.SPA.2</b>—Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.</p> <p><b>8.SPA.3</b>—Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.</p>	<ul style="list-style-type: none"> <li>Reason abstractly and quantitatively.</li> <li>Model with mathematics.</li> <li>Use appropriate tools strategically.</li> </ul>

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