

Course Description: Integrated Math 1 introduces students to the essential concepts of algebra, geometry, statistics, and functions through an integrated approach that emphasizes the connections among mathematical ideas. Throughout the course, students develop problem-solving skills by exploring patterns, representing relationships, and applying mathematical reasoning to real-world situations. Students learn to communicate their thinking using equations, graphs, tables, diagrams, and mathematical models.

The course builds a strong foundation in linear relationships, equations and inequalities, functions, systems of equations, exponential growth and decay, quadratic relationships, geometric reasoning, and statistical analysis. Students investigate mathematical concepts through inquiry, modeling, and hands-on applications that encourage critical thinking and perseverance. As they progress through each module, students strengthen their ability to analyze data, construct viable arguments, justify solutions, and use appropriate mathematical tools strategically.

By the end of Integrated Math 1, students will be prepared to tackle increasingly complex mathematical concepts in future integrated mathematics courses. They will have developed the confidence to solve authentic problems, recognize relationships among different areas of mathematics, and apply mathematical reasoning to academic, personal, and career contexts. The knowledge and skills gained in this course provide a strong foundation for continued success in higher-level mathematics and STEM fields.

Module	Lesson Title	Objectives
Module 1 Basic Tools	1.1 Types of Numbers	- Classify numbers as natural, whole, integer, rational, irrational, and real. - Apply the rules of adding or multiplying rational and irrational numbers. - Calculate the sum or product of rational and irrational numbers.
	1.2 Signed Number Operations	- Calculate the opposite and absolute value of a real number. - Operate on signed numbers. - Recognize that division by zero is undefined.
	1.3 Order of Operations	- Simplify expressions using the order of operations. - Apply the order of operations to simplify expressions in real-world problems.

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	1.4 Exponent Rules 1	- Simplify expressions using the product of powers property. - Simplify expressions using the quotient of powers property. - Simplify expressions using the zero power property.
	1.5 Exponent Rules 2	- Simplify expressions using power of a product property. - Simplify expressions using the power of a quotient property. - Simplify expressions with negative exponents. - Simplify expressions using the power of a power property.
	1.6 Properties of Operations	- Define the associative, commutative, and distributive properties. - Recognize instances of the associative, commutative, and distributive properties. - Simplify expressions using the distributive property.
	1.7 Combining Like Terms	- Recognize when terms are like. - Use the properties of operations to simplify expressions by combining like terms. - Evaluate expressions using substitution.
	1.8 Expressions and Equations	- Differentiate between an expression and an equation. - Interpret algebraic expressions and equations in context. - Write algebraic expressions to model phenomena.
	1.9 Ratios, Rates, & Unit Rates	- Define ratios, rates, and unit rates. - Write simplified ratios, rates, and unit rates. - Apply ratios, rates, and unit rates to real-world decision making.
	1.10 Converting Measurements	- Explain that there are two systems of measurement. - Identify units in each system of measurement. - Convert between systems of measurement using proportions.
Module 2 Equations & Inequalities	2.1 Solving One-Step Equations	- Write a one-step equation from a scenario. - Solve one-step equations using inverse operations. - Identify the property of equality used to solve each equation. - Verify that the potential solution of a one-step equation is correct.
	2.2 Proportions and Reciprocals	- Determine if two ratios are proportional. - Write proportions to describe scenarios. - Solve a proportion using the reciprocal property.

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	2.3 Cross Multiplying	- Explain the process of cross-multiplication. - Solve proportions using cross-multiplication.
	2.4 Proportions and Percentages	- Write proportions to describe percentage scenarios. - Solve percentage questions using proportions.
	2.5 Percent of Change	- Explain the steps for solving a percent-of-change question. - Calculate percentage increase or percentage decrease.
	2.6 The Distributive Property	- Solve an equation by moving variables across the equal sign. - Solve an equation involving the distributive property. - Verify that the solution of an equation is correct.
	2.7 Other Multi-Step Equations	- Solve an equation with fractional coefficients. - Solve an equation with the distributive property on both sides of the equal sign. - Identify when an equation has no solution. - Identify when an equation has infinitely many solutions.
	2.8 Literal Equations	- Rewrite literal equations for a named variable. - Identify the properties of equality used to rearrange each equation. - Evaluate literal equations using substitution.
	2.9 Inequalities	- Write one-step inequalities. - Solve a one-step inequality and graph its solution. - Identify the property of inequality used to solve each inequality. - Verify that the solution to an inequality is correct.
	2.10 Multi-Step Inequalities	- Write multi-step inequalities. - Solve a multi-step inequality and graph its solution. - Identify when the solution of an inequality is viable.
	3.1 The Coordinate Plane	- Define the coordinate plane. - Identify the coordinates of ordered pairs plotted on the plane. - Plot ordered pairs on the coordinate plane and connect them to form a line.

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Module 3 Linear Models	3.2 Slope of a Line	- Identify whether the slope of a line is positive, negative, 0, or undefined from its graph. - Calculate the slope of a line. - Interpret the slope of a line in the context of a scenario. - Explain that an infinite number of ordered pairs lie along each line.
	3.3 The Slope-Intercept Equation	- Identify the parts of the slope-intercept equation. - Sketch the graph of a linear equation written in slope-intercept form using a table of values. - Sketch the graph of a linear equation written in slope-intercept form by plotting the y-intercept and slope. - Write a slope-intercept equation from a graph.
	3.4 The Standard Form	- Differentiate between standard form and slope-intercept form of a linear equation. - Calculate the x-intercept and y-intercept of an equation written in standard form. - Sketch the graph of a linear equation written in standard form by plotting the intercepts. - Write a linear equation in standard form.
	3.5 Point-Slope Form Equations	- Identify two points that lie along the graph of a line. - Write a linear equation in point-slope form. - Rewrite equations in point-slope form to slope-intercept form.
	3.6 Converting Representations	- Convert fluently among the forms of a linear equation. - Identify scenarios in which one form of a linear equation is more beneficial than others. - Explain that an equation, a table of values, and a graph can all represent the same information. - Translate fluently between equations, tables of values, and graphs.
	3.7 Parallel & Perpendicular Lines	- Define parallel and perpendicular lines. - Determine if lines are parallel or perpendicular by examining their graphs. - Determine if lines are parallel or perpendicular by examining their equations.

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		Write the equation of a line parallel or perpendicular to another line.
	3.8 Linear Functions	- Define a function. - Identify a function from a mapping, a list of ordered pairs, a graph, or a table of values. - Explain that most linear equations represent functions. - Identify the domain and range of a function.
	3.9 Absolute Value Functions	- Recognize the parent function of an absolute value equation. - Sketch the graph of an absolute value function using a table of values or its equation. - Identify the domain and range of an absolute value function.
	3.10 Linear Inequalities	- Write a linear inequality to represent a given scenario. - Determine if given ordered pairs are solutions of a linear inequality. - Graph a linear inequality on the coordinate plane. - Write a linear inequality.
Module 4 Statistics	4.1 Measures of Central Tendency	- Determine the mode of a data set. - Calculate the mean of a data set. - Calculate the median of the data set. - Explain which of the mean, median, or mode is the most appropriate measure of central tendency.
	4.2 Measures of Spread	- Calculate quartiles of a data set. - Calculate the five number summary from a data set. - Calculate the IQR of a data set. - Calculate the standard deviation of a data set.
	4.3 Representing Data	- Create a dot plot. - Create a histogram. - Construct a box plot from a five number summary. - Construct a stem-and-leaf plot.

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		Interpret data displays in context.
	4.4 Outliers and Comparisons	- Define an outlier. - Identify potential outliers in data sets. - Calculate measures of central tendency and spread with and without potential outliers. - Compare measures of central tendency and spread across two data sets.
	4.5 Data Distributions	- Define a normal distribution. - Interpret a distribution using measures of central tendency. - Determine if data is normally distributed or skewed using a graph. - Apply the 68-95-99.7 rule.
	4.6 Relative and Two-Way Frequency	- Create a frequency table. - Create a relative frequency table. - Construct a two-way relative frequency table. - Interpret a dataset based on its frequency, relative frequency, two-way frequency, or relative two-way frequency table.
	4.7 Scatterplots	- Sketch a scatterplot. - Interpret a scenario using a scatterplot of it. - Identify positively and negatively correlated data using a scatterplot.
	4.8 Lines of Best Fit	- Sketch a line of best fit. - Calculate the equation for a line of best fit. - Calculate residuals. - Create a residual plot to analyze the line of best fit.
	4.9 Bias	- Identify bias in data collection methods. - Describe and identify different sampling methods. - Describe and identify errors in data sampling. - Describe and identify errors in data interpretation.

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	4.10 Correlation vs. Causation	- Define <i>correlation coefficient</i>. - Interpret the correlation coefficient for given data. - Explain that correlation is not the same as causation.
Module 5 Functions and Sequences	5.1 Functions Defined	- Define a function. - Identify a function from a mapping, a list of ordered pairs, a graph, and a table of values. - Write an equation in function notation. - Evaluate functions for inputs in their domains.
	5.2 Writing Linear Functions	- Create a table of values that represents a linear function. - Determine if a given table of values represents constant or nonconstant change. - Write a linear function to represent a scenario from a graph, description, or table of values. - Sketch a graph of a linear function from its equation or table of values.
	5.3 Domain and Range	- State the domain and range of a linear function in words. - Express the domain and range of a linear function as a set and using inequality notation. - State values that would be excluded from a domain or range of a linear function based on a scenario.
	5.4 Evaluating Functions	- Evaluate a linear function for an input in the domain using an equation or a graph. - Complete a table of values for a linear function. - Interpret the slope of a line in the context of a scenario. - Check solutions to see if they are reasonable.
	5.5 Translations	- Translate a linear function on a graph. - Explain that translating a linear function does not affect the slope. - Write the function that represents the translation of a linear equation. - Recognize and apply the notation of transformations to equations.
	5.6 Reflections	- Reflect a linear function across the x-axis. - Reflect a linear function across the y-axis.

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		- Write the function that represents the reflection of a linear equation across either axis. - Recognize and apply the notation of transformations to equations.
	5.7 Rotations	- Rotate a linear function around a pivot point. - Explain that rotating a linear function changes the slope but not the y-intercept. - Write the slope intercept equation of a rotated function. - Recognize and apply the notation of transformations to equations.
	5.8 Arithmetic Sequences	- Define sequence and arithmetic sequence. - Determine if a given sequence is arithmetic by calculating the common difference. - Calculate missing numbers in an arithmetic sequence using the common difference. - Explain that an arithmetic sequence is linear and represents a function.
	5.9 An Explicit Formula	- Write an explicit formula that defines an arithmetic sequence. - Calculate a specific term in an arithmetic sequence using the explicit formula. - Interpret that meaning of the slope in an arithmetic sequence. - State the domain and range of an arithmetic sequence.
	5.10 A Recursive Formula	- Write a recursive formula to represent an arithmetic sequence. - Explain the difference between an explicit and a recursive formula. - Calculate the value of a specific term in an arithmetic sequence using the recursive formula. - Choose the most appropriate form of an arithmetic sequence formula to solve a problem.
Module 6 Linear Systems	6.1 Systems of Equations	- Define a system of equations. - Explain the types of solutions that a system of equations can have. - Write a system of equations to represent a scenario. - Substitute an ordered pair into a system of equations to determine if it is a solution.

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	6.2 Graphical Solutions	- Solve a system of linear equations graphically . - Read the graph of a system of linear equations to determine the number of solutions it has. - State the solution of a system of linear equations from its graph.
	6.3 Solving by Substitution	- Solve a system of equations using substitution. - Show that solving by substitution yields the same result as graphing.
	6.4 Solving by Elimination	- Solve a system of equations using elimination. - Show that solving by elimination yields the same result as substitution and graphing.
	6.5 Special Solutions	- Recognize from a graph when a system has no solution or infinite solutions. - Recognize from the equations that a system of equations has no solution or infinite solutions. - Interpret solutions to a system of equations in context.
	6.6 The Best Method	- Determine which method of solving is best for a given system of linear equations. - Explain why a given solving method is best. - Solve systems of linear equations using the best method.
	6.7 Compound Inequalities	- Write compound inequalities in one variable. - Solve compound inequalities in one variable. - Graph the solution sets of compound inequalities on a number line.
	6.8 Systems of Inequalities	- Write a system of inequalities to represent a scenario. - Solve a system of linear inequalities by graphing on the coordinate plane.
	6.9 Inequality System Solutions	- Recognize from a graph when a system of linear inequalities has no solution or infinite solutions. - Recognize from the inequalities that a system has no solution or infinite solutions. - Determine which solutions of a system of linear inequalities are viable in a real-world context.

Module	Lesson Title	Objectives
	6.10 Linear Programming	• Write linear inequalities to represent the constraints of the scenario. • Graph the optimization equation and constraints on the same coordinate plane. • Determine the optimal solution from the graph by locating and testing the corner points.