

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 7 Growth and Decay	7.1 Properties of Exponents	Simplify expressions using the properties of exponents.
	7.2 Scientific Notation	- Write a number from standard form into scientific notation. - Write a number from scientific notation into standard form. - Apply the properties of exponents to solve problems using numbers written in scientific notation.
	7.3 Exponents and Radicals	- Calculate the nth root of a number. - Name the principal root of a radicand. - Rewrite rational exponents as radicals and radicals as rational exponents.

Module	Lesson Title	Objectives
	7.4 Simplifying Radicals	- Simplify radicals using perfect squares and perfect cubes. - Operate on radicals.
	7.5 Exponential Equations	- Define the number e. - Classify a given exponential representation as growth or decay. - Write an exponential equation from a description or table of values. - Write exponential equations in different forms.
	7.6 Graph Exponential Equations	- Graph an exponential equation. - State the domain and range of an exponential equation. - Identify pertinent characteristics of the graph of an exponential equation.
	7.7 Geometric Sequences	- Determine if a given sequence is geometric by calculating the common ratio. - Calculate missing numbers in a geometric sequence using the common ratio. - Explain that geometric sequence is exponential and represents a function. - Distinguish between arithmetic and geometric sequences.
	7.8 Explicit Geometric Formulas	- Write an explicit formula that defines a geometric sequence. - Calculate a specific term in a geometric sequence using the explicit formula. - Interpret the meaning of the parts of a geometric sequence. - State the domain and range of a geometric sequence.
	7.9 Recursive Geometric Formulas	- Write a recursive formula to represent a geometric sequence. - Calculate the value of a specific term in a geometric sequence using the recursive formula. - Choose the most appropriate form of a geometric sequence formula to solve a problem.
	7.10 Exponential & Linear Growth	- Explain the differences between a linear and an exponential function. - Read the graph of a linear equation and an exponential equation plotted on the same coordinate plane. - Explain that an exponential function's growth will always eventually outpace the growth of a linear function. - Distinguish between linear and exponential scenarios.

Module	Lesson Title	Objectives
Module 8 Quadratics	8.1 Quadratic Equation Graphs	- Sketch the graph of a quadratic equation using a table of values. - Interpret the roots of a quadratic equation in context of a scenario. - State the domain and range of a quadratic function.
	8.2 Graphing Quadratic Equations	- Create the graph of a parabola from its key features. - Sketch a curve of best fit for quadratic data. - Write an equation that models quadratic data. - State the domain and range of a quadratic equation.
	8.3 Factoring When $ a > 1$	- Factor a quadratic trinomial when $a > 1$. - Factor a quadratic trinomial using algebra tiles. - Factor a quadratic trinomial using the AC method.
	8.4 Completing the Square	- Rewrite a quadratic equation by completing the square when $a = 1$. - Rewrite a quadratic equation by completing the square when $a > 1$. - Solve for the roots of a quadratic equation when it is written in vertex form.
	8.5 Quadratic Translations	- Define the parent function of a quadratic equation. - Identify the direction and magnitude of a translation using a graph. - Identify the value of h or k from a graph or equation. - Write the equation of a translated quadratic function.
	8.6 Reflections and Dilations	- Define reflection and dilation. - State how the value of a affects the graph of the parabola. - Sketch the graph of a parabola from the vertex form of its equation using transformations. - Write the equation of a transformed parabola from its graph.
	8.7 Comparing Growth	- Identify function types from graphs, tables of values, and equations. - Identify scenarios that can be modeled using different function types. - Compare the growth of linear, quadratic, and exponential functions.
	8.8 Quadratic Equation Systems	- Solve systems involving a quadratic equation by graphing. - Solve systems involving a quadratic equation by substitution. - Solve systems involving a quadratic equation by elimination. - Interpret the solutions to systems of equations in context.

Module	Lesson Title	Objectives
	8.9 Graphing Square Root Functions and Inequalities	- Graph and analyze square root functions. - Graph square root inequalities.
	8.10 Inverse Relations & Functions	- Find the inverse of a relation or a function. - Decide whether two functions or relations are inverses.
Module 9 Geometric Tools	9.1 The Notation of Geometry	- Define the terms point, line segment, line, ray, angle, and plane. - Label geometric objects using appropriate notation. - Calculate the distance between two points on a horizontal or vertical line.
	9.2 Definitions & Postulates	- Differentiate between definitions and postulates. 2. Explain Euclid's 5 postulates. - Solve problems using the segment addition postulate. - Explain the types of geometry.
	9.3 Basic Geometric Shapes	- Identify basic geometric shapes. - Name the properties of basic geometric shapes. - Distinguish between convex and concave polygons.
	9.4 Perimeter and Area	- Calculate the perimeter and area of polygons. - Calculate the circumference and area of circles. - Estimate the perimeter, area, or circumference of an irregular figure.
	9.5 Transformations	- Define the properties of transformations. - Identify a transformation that will carry a preimage to its image. - Predict how a given rigid motion will affect a preimage.
	9.6 Applying Transformations	- Name the transformations that carry a given figure onto another. - Dilate a line segment and compare it to its preimage. - Sketch the image of transformed figures.
	9.7 Congruency and Similarity	- Distinguish between congruency and similarity. - Identify congruent shapes and similar shapes. - Transform figures to determine if they are congruent or similar.

Module	Lesson Title	Objectives
	9.8 Constructions	• Copy a line segment. • Copy an angle. • Construct perpendicular and parallel lines. • Make conjectures about the geometric relationships shown in these constructions.
	9.9 Other Constructions	• Bisect a line segment. • Bisect an angle. • Construct a perpendicular bisector. • Make conjectures about the geometric relationships shown in these constructions.
	9.10 Truth Tables	• Define terms related to truth tables. • Write negations, conjunctions, disjunctions, and conditional statements. • Complete a truth table.
Module 10 Angles and Lines	10.1 Angle Measures	• Measure an angle. • Identify the parts of an angle. • Draw an angle using a protractor.
	10.2 Classifying Angles	• Classify angles based on their measure. • Identify angle types in real world scenarios. • Draw angles of a given measure using technology.
	10.3 Angle Relationships	• Define adjacent, complementary, supplementary, interior, and exterior angles. • Distinguish between angle types in context. • Solve equations for missing angle measures using angle relationships.
	10.4 Perpendicular Lines	• Identify perpendicular lines. • Construct perpendicular lines and a perpendicular bisector. • Explain and apply the perpendicular bisector theorem.
	10.5 Parallel Lines	• Identify parallel lines. • Name the properties of parallel lines. • Distinguish parallel lines from perpendicular and skew lines. • Describe parallel lines in spherical geometry.

Module	Lesson Title	Objectives
	10.6 Equations of Lines	- Write the equation of a line that is parallel to a given line. - Write the equation of a line that is perpendicular to a given line. - Identify the graphs and equations of parallel and perpendicular lines.
	10.7 Distance and Midpoint	- Graph a line segment on the coordinate plane. - Calculate the length of a line segment using the distance formula. - Calculate the midpoint of a line segment. - Show that a perpendicular bisector is equidistant from the endpoints of a line segment.
	10.8 Angles and Parallel Lines	- Identify the angle relationships created when two parallel lines are crossed by a transversal. - Write and solve equations to determine the measure of a missing angle based on the relationships of the other angles. - Write proofs about angle relationships.
	10.9 Line & Angle Proofs	- Prove the alternate interior theorem converse. - Prove the consecutive interior angle theorem converse. - Prove the right angles theorem.
	10.10 More Line & Angle Proofs	- Prove the vertical angles theorem. - Prove the alternate interior angles theorem. - Prove the consecutive interior angles theorem. - Identify properties or theorems you could use to write proofs.
Module 11 Congruent & Similar Shapes	11.1 Triangles Defined	- Relate angles to triangles. - Identify different types of triangles using their properties. - Read diagrams to determine if two triangles are congruent.
	11.2 Triangle Congruence	- Name congruent parts of triangle pairs. - Explain the criteria for triangle congruence. - Write congruence statements about pairs of triangles.
	11.3 Hypotenuse-Leg Theorem	- Explain the hypotenuse-leg theorem. - Determine if two triangles are congruent by the hypotenuse-leg theorem. - Write an informal proof for triangle congruence.

Module	Lesson Title	Objectives
	11.4 Prove Triangles Congruent	- Read a diagram to determine which theorem to use to prove triangles are congruent. - Write proofs to show triangles are congruent using relevant theorems. - Derive the midpoint formula. - Prove the perpendicular bisector theorem.
	11.5 Congruence Applications	- Calculate missing side lengths and angle measures using triangle congruence. - Write true statements using triangle congruence theorems. - Solve real world problems involving triangle congruence.
	11.6 Ratio & Proportion	- Define similarity. - Calculate the common ratio between similar figures. - Write proportions. - Solve proportions using cross multiplication.
	11.7 Similarity	- Define similarity in terms of dilation in the coordinate plane. - Explain that all congruent shapes are also similar. - Determine if shapes are congruent or similar based on transformations.
	11.8 Similar Triangles	- Distinguish between congruence and similarity. - Explain the criteria for triangle similarity. - Write similarity statements about pairs of triangles.
	11.9 Perimeter of Polygons	- Calculate the perimeter various polygons. - Calculate missing side lengths of a shape when given the total perimeter. - Calculate the perimeter of a polygon using its area.
	11.10 Area of Polygons	- Calculate the area of a polygon in the coordinate plane. - Calculate the area of a regular polygon by decomposing it into triangles. - Calculate the area of a regular polygon using the perimeter and apothem. - Determine the viability of solutions.
	12.1 Rigid Motion	- Name the types of transformations. - Identify transformations in real life. - Examine the transformations that preserve angle measure and length.

Module	Lesson Title	Objectives
Module 12 Transformations & Circles	12.2 Translations	- Identify properties of translations. - Translate figures in the coordinate plane. - Write a vector to represent a translation.
	12.3 Reflections	- Name the properties of a reflection. - Write the equation of the line of reflection. - Reflect figures in the coordinate plane.
	12.4 Rotations	- Define a rotation. - Name the point of rotation. - Rotate figures in the coordinate plane.
	12.5 Dilations Defined	- Define dilation. - Calculate the center of dilation. - Explain the properties of dilation. - Dilate a line segment in the coordinate plane.
	12.6 Dilating Figures	- Calculate the scale factor. - Dilate a figure in the coordinate plane. - Solve problems involving dilation.
	12.7 Composition	- Name the transformations needed to carry a preimage to its image. - Sketch an image by applying a series of transformations to a preimage. - Perform a glide reflection.
	12.8 Rectangle Construction	- Establish the properties of a rectangle using the coordinate plane. - Construct a square. - Calculate lengths in a rectangle using the coordinate plane. - Show that a quadrilateral is a square.
	12.9 Inscribing	- Construct an inscribed equilateral triangle, square, and a regular hexagon. - Prove the inscribed quadrilateral theorem. - Identify and describe properties of inscribed angles and figures. - Solve problems involving angles and quadrilaterals inscribed in a circle.

Module	Lesson Title	Objectives
	12.10 Tangent Lines	• Identify the tangent of a circle and the point of tangency. • Construct a tangent line. • Explain the properties and theorems of tangent lines. • Solve problems using the properties and theorems of tangent lines.