

Course Title

IAA Math 8



INNOVATIVE
ARTS ACADEMY

Course Overview

The 8th-grade mathematics curriculum, often embodied by programs like "ixl," is meticulously designed to foster student growth by ensuring mastery of rigorous standards and equipping students with the skills to persevere through challenging, real-world problems. This comprehensive approach emphasizes focus, coherence, and rigor in content delivery, supported by extensive teacher resources and data-driven assessment strategies

Unit Title

Unit 1: The Number System - Real Numbers.

Time Frame

35 Days

Unit Title

Unit 2: Linear Relationships and Functions

Time Frame

70 Days

Unit Title

Unit 3: Exploring Transformations

Time Frame

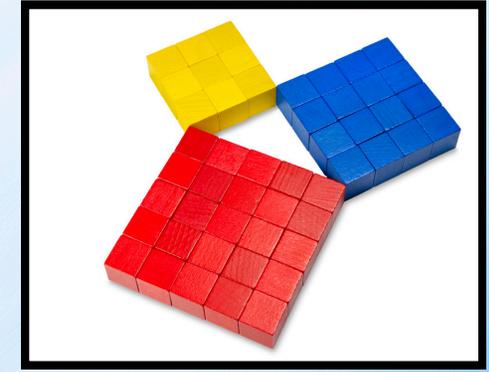
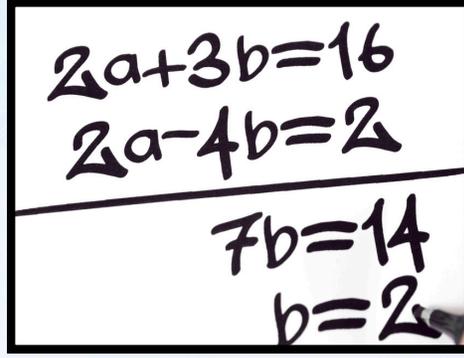
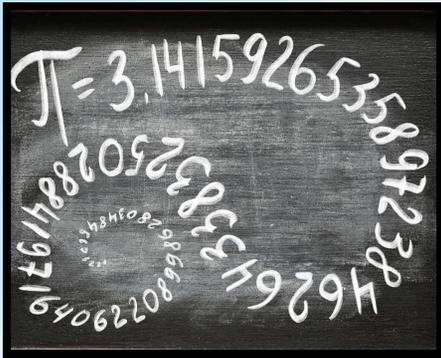
20 days

Unit Title

Unit 4: Applying Geometry

Time Frame

30 days



Focus of the Unit

This unit grounds students in the fundamental nature of numbers, preparing them for more complex algebraic manipulations and real-world problem-solving involving extreme magnitudes

Focus of the Unit

This is the algebraic core of the 8th-grade curriculum, moving from simple relationships to complex modeling and problem-solving with linear equations and functions.

Focus of the Unit

This unit develops spatial reasoning and visualization skills, providing a precise, coordinate-based understanding of how geometric shapes relate to each other through movement and resizing, leading to the core concepts of congruence and similarity.

Focus of the Unit

This unit focuses on practical applications of geometry, allowing students to use mathematical tools to measure, analyze, and solve problems related to shapes and space, from determining distances to calculating capacities.

Board Approved 8/2025

Course Title

8th grade math



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Course Overview

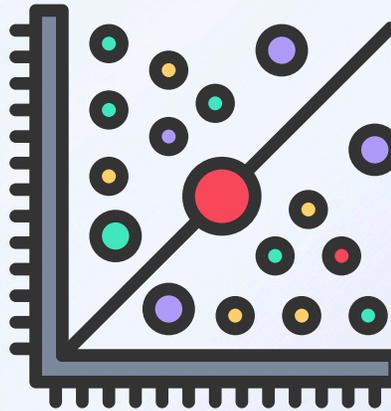
focuses on **linear equations**, **functions**, **geometry** (Pythagorean Theorem, volume), and **bivariate data**, preparing students for high school

Unit Title

Unit 5: Making Sense of Data & Probability

Time Frame

20 days



Focus of the Unit

This unit develops data literacy and critical thinking, enabling students to identify, analyze, and interpret relationships within data sets, drawing meaningful conclusions about observed patterns and associations. It connects back to the theme of relationships explored in Unit 2, but through a statistical lens.

Unit Title

Unit 1: The Number System - Real Numbers

Time Frame

35 Days

**INNOVATIVE**
ARTS ACADEMY**Essential Question(s)**

How does understanding the nature of rational and irrational numbers help us make sense of the broader number system and solve problems?
 How do the properties of integer exponents and radicals provide an efficient way to manipulate and understand numerical expressions?

Focus of the Unit

This unit grounds students in the fundamental nature of numbers, preparing them for more complex algebraic manipulations and real-world problem-solving involving extreme magnitudes

Standards

M08.A-N.1.1 M08.A-N.1.1.2 Apply concepts of rational and
 M08.B-E.1.1 Represent and use expressions and equations to solve problems involving radicals and integer exponents.

Learning Targets

I can understand that numbers can be rational (like fractions or decimals that stop or repeat) or irrational (like pi, which never stops or repeats)

Learning Targets

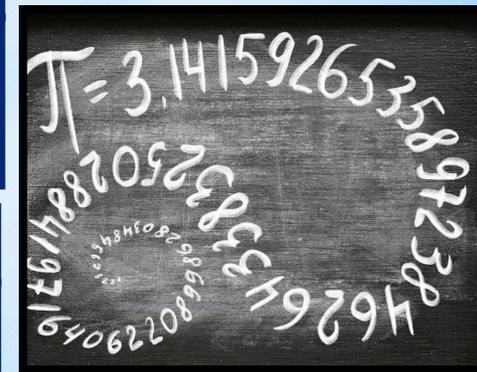
I Can estimate the value of irrational numbers, including square and cube roots, without a calculator and locate them approximately on a number line

Learning Targets

I can estimate the value of irrational numbers (like square roots of numbers that aren't perfect squares) without a calculator.

Learning Targets

I Can perform operations with numbers expressed in scientific notation

**Resources**

HMH, ixl, Flocabulary, Next Generation Personal Finance, projects and game play

Unit Title	Unit 2: Linear Relationships & Functions
Time Frame	70 Days



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	Essential Question(s)
	<p>How can proportional relationships be effectively represented and interpreted to analyze and predict real-world phenomena?</p> <p>How do the different forms of linear equations, such as $y = mx$ and $y = mx + b$, reflect their graphical characteristics and convey specific information about the quantities and relationships they represent?</p>

	Focus of the Unit
	<p>This is the algebraic core of the 8th-grade curriculum, moving from simple relationships to complex modeling and problem-solving with linear equations and functions.</p>

Standards	<p>M08.B-E.2.1 Analyze and describe linear relationships between two variables, using slope</p> <p>M08.B-E.3.1 M08.B-E.3.1.2 M08.B-E.3.1.3 Write, solve, graph, and interpret linear equations in one or two variables, using various methods</p> <p>M08.B-F.1.1 Define, evaluate, and compare functions displayed algebraically, graphically, or numerically in tables or by verbal descriptions</p>
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Learning Targets
I Can write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions

Learning Targets
I Can define, evaluate, and compare functions presented in various ways

Learning Targets
I CAN interpret the equation $y = mx + b$ as defining a linear function whose graph is a straight line, and give examples of functions that are not linear.

Learning Targets
I Can solve systems of two linear equations algebraically and by estimating solutions through graphing.

$$\begin{array}{r} 2a + 3b = 16 \\ 2a - 4b = 2 \\ \hline 7b = 14 \\ b = 2 \end{array}$$

Resources	HMH, ixl, Flocabulary, Next Generation Personal Finance, projects and game play
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Unit Title	Unit 3: Exploring Transformations
Time Frame	20 days



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Essential Question(s)

How do geometric transformations, such as translations, reflections, rotations, and dilations, affect the properties of two-dimensional figures?

How can transformations be used to determine if two figures are congruent or similar?

Focus of the Unit

This unit develops spatial reasoning and visualization skills, providing a precise, coordinate-based understanding of how geometric shapes relate to each other through movement and resizing, leading to the core concepts of congruence and similarity.

Standards	M08.C-G.1.1 Apply properties of geometric transformations to verify congruence or similarity.
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Learning Targets

I Can identify and apply the properties of rotations, reflections, and translations

Learning Targets

I Can describe the effect of translations, reflections, rotations, and dilations on two-dimensional figures using coordinates

Learning Targets

I Can determine if two figures are congruent by describing a sequence of rotations, reflections, and translations that maps one onto the other

Learning Targets

I Can determine if two figures are similar by describing a sequence of transformations, including dilations, that maps one onto the other



Resources	HMH, ixl, Flocabulary, Next Generation Personal Finance, projects and game play
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Unit Title	Unit 4: Applying Geometry
Time Frame	30 Days



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	Essential Question(s)
	<p>How are formulas for the volumes of three-dimensional figures utilized to solve practical problems in various contexts?</p> <p>How can the Pythagorean Theorem be applied to determine unknown lengths and distances in both two- and three-dimensional real-world situations?</p>

	Focus of the Unit
	<p>This unit focuses on practical applications of geometry, allowing students to use mathematical tools to measure, analyze, and solve problems related to shapes and space, from determining distances to calculating capacities.</p>

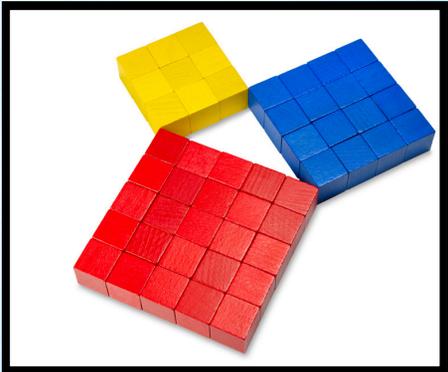
Standards	<p>M08.C-G.2.1 Solve problems involving right triangles by applying the Pythagorean theorem.</p> <p>M08.C-G.3.1 Apply volume formulas of cones, cylinders, and spheres</p>
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Learning Targets
I Can apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems

Learning Targets
I Can use informal arguments to establish facts about angle relationships, including the angle sum and exterior angle of triangles, angles formed when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

Learning Targets
I Can apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems, including distances in a coordinate system

Learning Targets
I Can apply the converse of the Pythagorean Theorem to show a triangle is a right triangle



Resources	HMH, ixl, Flocabulary, Next Generation Personal Finance, projects and game play
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Unit Title	Unit 5: Making Sense of Data & Probability
Time Frame	20 Days



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	Essential Question(s)
	What inferences can be collected and drawn from sets of data when having positive, negative or no association?

	Focus of the Unit
	This unit develops data literacy and critical thinking, enabling students to identify, analyze, and interpret relationships within data sets, drawing meaningful conclusions about observed patterns and associations. It connects back to the theme of relationships explored in Unit 2, but through a statistical lens.

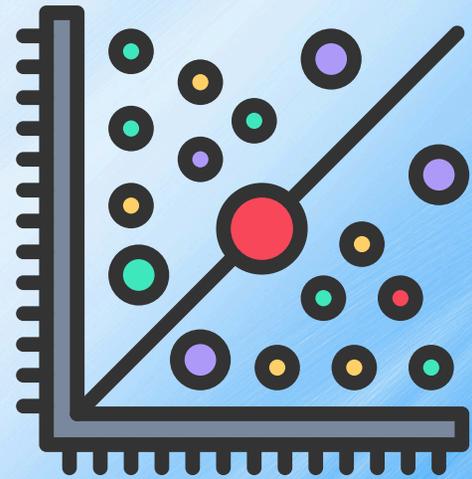
Standards	M08.D-S.1.1 Analyze and interpret bivariate data displayed in multiple representations.
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Learning Targets
I Can informally assess the model fit of a trend line by judging the closeness of the data points to the line for scatter plots that suggest a linear association

Learning Targets
I Can construct and interpret a two-way table summarizing data on two categorical variables and use relative frequencies to describe possible associations

Learning Targets
I Can use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept in context

Learning Targets
I Can construct and interpret scatter plots for bivariate measurement data to investigate patterns of association



Resources	HMH, ixl, Flocabulary, Next Generation Personal Finance, projects and game play
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