

Course Title

# IAA Pre-Algebra



# INNOVATIVE ARTS ACADEMY

Course Overview

Pre-Algebra introduces foundational math concepts that prepare students for Algebra, including operations with integers, fractions, decimals, ratios, proportions, and basic equations. The course emphasizes problem-solving skills and the development of mathematical reasoning through real-world applications.

Unit Title

The Number System and Expressions

Time Frame

34 days

Unit Title

Solving Linear Equations

Time Frame

15 days

Unit Title

Linear Relationships and Functions

Time Frame

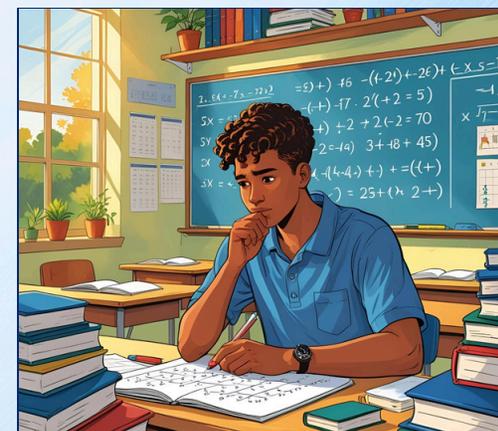
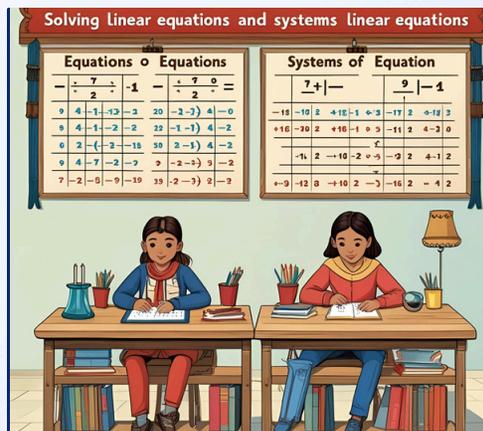
37 days

Unit Title

Systems of Linear Equations

Time Frame

15 days



Focus of the Unit

This unit focuses on understanding real numbers. It involves applying properties of exponents to generate equivalent numerical expressions and working with very large or very small numbers using scientific notation (8<sup>th</sup> grade only). The unit also covers perfect squares and perfect cubes, and estimating irrational numbers.

Focus of the Unit

This unit focuses on analyzing and solving linear equations with one variable. It covers solving linear equations that have rational number coefficients. It also includes identifying the number of solutions for equations.

Focus of the Unit

This unit explores proportional relationships, lines, and linear equations. It introduces the concept of slope, represents proportional relationships, and connects them to linear equations. The unit also introduces the concept and representation of functions, exploring relations and functions, studying their properties, representing linear functions, and understanding qualitative graphs.

Focus of the Unit

This unit focuses on analyzing and solving pairs of simultaneous linear equations. It covers solving solving systems using graphical and algebraic methods. It also includes identifying the number of solutions for equations and systems.

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Unit Title

Geometry - Pythagorean Theorem

Time Frame

20 days

Unit Title

Geometry - Volume and Surface Area

Time Frame

20 days

Unit Title

Statistics and Probability

Time Frame

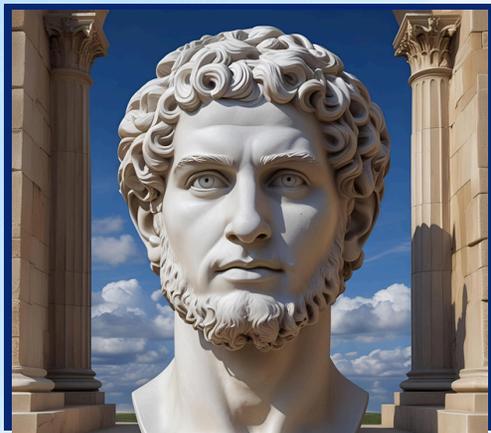
20 days

Unit Title

Transformations and Congruence

Time Frame

13 days



Focus of the Unit

This unit focuses on understanding and applying the Pythagorean Theorem and its converse to find unknown side lengths in right triangles and solve related problems, including calculating distances.

Focus of the Unit

This unit involves solving real-world and mathematical problems by applying the formulas for the volume and surface of cones, cylinders, spheres and prisms. It also includes concepts related to surface area of three-dimensional figures like cones, cylinders, spheres and prisms... and composite figures, as well as problems involving both volume and surface area.

Focus of the Unit

This unit focuses on investigating patterns of association in bivariate data, including constructing and interpreting scatter plots and two-way tables. It also includes comparing and analyzing univariate data using measures of center (mean, median) and spread (range, interquartile range), and representing data using graphical displays such as box plots and dot plots.

Focus of the Unit

This unit introduces geometric transformations including translations, reflections, rotations, and dilations. It explores how these transformations demonstrate congruence and similarity and describes their effect on two-dimensional figures using coordinates. The unit involves describing sequences of transformations that exhibit congruence and similarity.

<b>Unit Title</b>	<b>The Number System and Expressions</b>
<b>Time Frame</b>	34 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	<p>How can we represent and compare different types of numbers?</p> <p>How can we use exponents and scientific notation to express quantities and relationships?</p>

	<b>Focus of the Unit</b>
	<p>This unit focuses on understanding real numbers. It involves applying properties of exponents to generate equivalent numerical expressions and working with very large or very small numbers using scientific notation (8<sup>th</sup> grade only). The unit also covers perfect squares and perfect cubes, and estimating irrational numbers.</p>

<b>Standards</b>	<p><b>CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.</b></p> <p><b>CC.2.2.8.B.1</b> Apply concepts of radicals and integer exponents to generate equivalent expressions</p>
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<b>Learning Targets</b>
I can determine whether a number is rational or irrational

<b>Learning Targets</b>
I can estimate the value of irrational numbers without a calculator

<b>Learning Targets</b>
I can apply one or more properties of integer exponents to generate equivalent numerical expressions

<b>Learning Targets</b>
I can use scientific notation to solve problems



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Modules: 14 and 16), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Solving Linear Equations</b>
<b>Time Frame</b>	15 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	How can we analyze and solve linear equations and systems of linear equations?

	<b>Focus of the Unit</b>
	Identify the solution to a one, two and multistep equations.

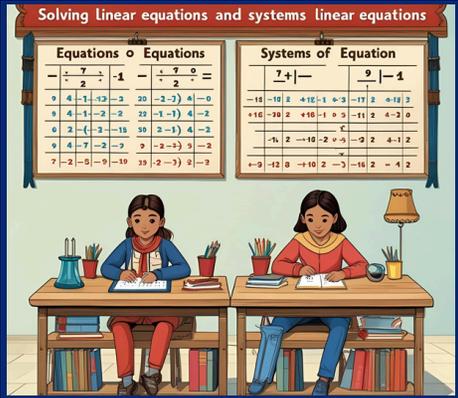
<b>Standards</b>	<b>CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</b>
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<b>Learning Targets</b>
I can solve one and two step equations.

<b>Learning Targets</b>
I can solve linear equations that have rational number coefficients.

<b>Learning Targets</b>
I can solve equations requiring distributive property, combining like terms and variables on both sides

<b>Learning Targets</b>
I can analyze solutions and determine their meaning within the context of their problem.



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Module: 4), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Systems of Equations</b>
<b>Time Frame</b>	15 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	How can I find the solution(s) to one or more equations?

	<b>Focus of the Unit</b>
	Identify the number of solutions of a system of equations, Solve systems algebraically.

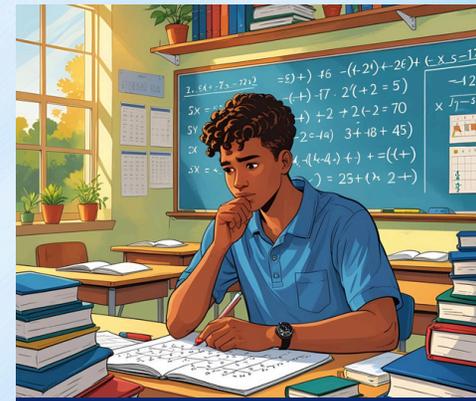
<b>Standards</b>	<b>CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</b>
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<b>Learning Targets</b>
I can analyze and solve pairs of simultaneous linear equations graphically.

<b>Learning Targets</b>
I can analyze and solve pairs of simultaneous linear equations using the substitution method.

<b>Learning Targets</b>
I can analyze and solve pairs of simultaneous linear equations using the elimination method.

<b>Learning Targets</b>
I can determine the type and number of solutions to a system of equations



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Module 9), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Geometry - Pythagorean Theorem</b>
<b>Time Frame</b>	13 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	How does the Pythagorean Theorem help us find lengths and distances?

	<b>Focus of the Unit</b>
	Understand the Pythagorean Theorem and its converse.

<b>Standards</b>	<b>CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems.</b>
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<b>Learning Targets</b>
I can apply the Pythagorean theorem to determine unknown side lengths in right triangles.

<b>Learning Targets</b>
I can apply the converse of the Pythagorean theorem to show a triangle is a right triangle .

<b>Learning Targets</b>
I can apply the Pythagorean theorem in real-world and mathematical problems in two and three dimensions

<b>Learning Targets</b>
I can calculate distances using the distance formula



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Module 15), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Geometry - Volume and Surface Area</b>
<b>Time Frame</b>	20 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	<p>How can we find the volume and surface area of different three-dimensional shapes?</p> <p>How can volume and surface area formulas help us solve real-world problems?</p>

	<b>Focus of the Unit</b>
	<p>Find volume and surface area of three-dimensional figures. Solve real-world and mathematical problems involving volume, and surface area.</p>

<b>Standards</b>	<b>CC.2.3.8.A.1 Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.</b>
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<b>Learning Targets</b>
I can apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems

<b>Learning Targets</b>
I can find volume of three-dimensional figures

<b>Learning Targets</b>
I can apply formulas for the surface area of three-dimensional figures to solve problems

<b>Learning Targets</b>
I can solve multi-step problems involving both volume and surface area



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Modules 17 and 18), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Statistics and Probability</b>
<b>Time Frame</b>	12 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	How can data be organized and represented to provide insight into the relationship between quantities? What patterns can we find in data involving two different things?

	<b>Focus of the Unit</b>
	Investigate patterns of association in bivariate data

<b>Standards</b>	<b>CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations.</b> <b>CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies.</b>
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<b>Learning Targets</b>
I can construct and interpret scatter plots for bivariate measurement data

<b>Learning Targets</b>
I can describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association in scatter plots

<b>Learning Targets</b>
I can find and interpret the mean, median, and range and interquartile range of a data set

<b>Learning Targets</b>
I can construct and interpret box plots (box and whisker plots) to display and compare data



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Modules 10, 12 and 13), IXL, Formative Assessments, Unit Test</b>
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<b>Unit Title</b>	<b>Transformations and Congruence</b>
<b>Time Frame</b>	13 days



**INNOVATIVE**  
ARTS ACADEMY

	<b>Essential Question(s)</b>
	How do transformations affect geometric figures? How can I use transformations to determine if figures are congruent or similar?

	<b>Focus of the Unit</b>
	Demonstrate an understanding of geometric transformations. Use transformations to demonstrate congruence and similarity of geometric figures

<b>Standards</b>	<b>CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.</b>
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<b>Learning Targets</b>
I can describe the effect of translations, reflections, rotations and dilations on two-dimensional figures

<b>Learning Targets</b>
I can understand that figures are congruent if one can be obtained from the other by rotations, reflections, or translations

<b>Learning Targets</b>
I can given two congruent figures, describe a sequence of transformations that exhibits the congruence between them

<b>Learning Targets</b>
I can given two similar figures, describe a sequence of transformations that exhibits the similarity between them



<b>Resources</b>	<b>HMH Into Math Advanced 2 (Suggested Modules 1 and 3), IXL, Formative Assessments, Unit Test</b>
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