Pre-Algebra
Course Syllabus

IDAHO DISTANCE EDUCATION ACADEMY
Educating Through Partnership One Child at a Time

Supervising Teacher

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Course Description:

Pre-Algebra **2 semesters** **2 credits** **Grade 7-8**

Students will review fundamental arithmetic: addition, subtraction, multiplication and division of fractions to show the properties of the number system. Elementary algebraic concepts will be reinforced; problem solving strategies and applications will be reviewed. The course is designed for students who need additional time to learn the foundation skills required for Algebra I.

Recommended Textbook Options:

McDougal-Littel: Pre-Algebra

Required:
- Student Edition
- Teacher Edition OR worked out solutions manual

Recommended:
- Practice workbook and TE

Glencoe: Pre-Algebra

Required:
- Student Edition
- Teacher Edition OR worked out solutions manual

Recommended:
- Practice workbook and TE

Harcourt Holt: Pre-Algebra

Required:
- Student Edition
- Teacher Edition

Recommended:
- Practice workbook and TE

Recommended Supplemental Materials or Software:

ALEKS subscription

Supplies or Equipment:

Scientific Calculator

Pacing Guide

The topics and standards for this course have been divided between the two semesters.

Semester 1(Fall)	Semester 2 (Spring)
Integers	Functions and Graphing
Equations	Equations and Inequalities
Factors and Fractions	Geometrical Figures
Rational Numbers	Statistics and Probability
Ration, Proportion, and Percent	Polynomials and Nonlinear Functions

In order to fulfill this pacing requirement, the recommended texts have been broken down by chapter. Covering the chapters in the order listed will insure that all topics on the final exam will be covered during the appropriate semester.

Note: Chapters marked with an asterisk (*) are likely all review, and should be completed very quickly

Glencoe – PreAlgebra

Semester 1(Fall)	Semester 2 (Spring)
Chapter 1	Chapter 7
Chapter 2	Chapter 8
Chapter 3	Chapter 9
Chapter 4	Chapter 10
Chapter 5	Chapter 11
Chapter 6	Chapter 12
	Chapter 13

Data and Probability is integrated into the chapters, and can either be completed within the chapters, or "saved" and done as a custom unit during Semester 2.

Holt – PreAlgebra

Semester 1(Fall)	Semester 2 (Spring)
Chapter 1	Chapter 5
Chapter 2	Chapter 6
Chapter 3	Chapter 9
Chapter 4	Chapter 10
Chapter 7	Chapter 11
Chapter 8	Chapter 12

McDougal Littell – PreAlgebra

Semester 1(Fall)	Semester 2 (Spring)
Chapter 1	Chapter 5
Chapter 2	Chapter 6
Chapter 3	Chapter 9
Chapter 4	Chapter 10
Chapter 7	Chapter 11
Chapter 8	Chapter 12

I-DEA Student Honor Code:

With any form of valid proof of dishonesty with regard to student work or testing, the instructor may elect from a range of actions. Academic dishonesty could lead to a zero grade for the assignment or even failure for the entire course following consultation between the instructor, Secondary Supervisor, and Director.

All students must adhere to the **Honor Code:**

"On my honor, I will maintain the highest possible standards of honesty, integrity and personal responsibility. This means I will not lie, cheat or steal, and as a member of this academic community, I am committed to creating an environment of respect and mutual trust."

Standards

Standard 1: Number and Operation
Students in Grade 8 read, write, compare, order, and place on a number line rational numbers, including integers, fractions, decimals, and percents, and absolute values. Students use rational numbers, including percents and ratios, and p (pi) to solve problems. Students convert between standard form, scientific notation, and exponential form. Students add, subtract, multiply, and divide rational numbers and students recall the common equivalent fractions, decimals, and percents of halves, thirds, fourths, fifths, and tenths. Students evaluate numerical expressions with rational numbers using the order of operations and students evaluate numerical expressions with whole number exponents. Students estimate to predict computation results.

- Goal 1.1: Understand and use numbers
    - 8.M.1.1.1 Compare magnitudes and relative magnitudes of rational numbers, including integers, fractions, decimals, percents, and absolute values. (337.01.a)
    - 8.M.1.1.2 Use rational numbers, including percents and ratios, and p (pi) to solve problems. (337.01.b)
    - 8.M.1.1.3 Locate the position of rational numbers and positive real numbers on a number line. (337.01.e)
    - 8.M.1.1.4 Convert between standard form, scientific notation, and exponential form. (337.01.c)
    - 8.M.1.1.5 Apply number theory concepts (primes, composites, prime factorization, LCM, GCF). (337.01.d)
    - 8.M.1.1.6 Recognize pertinent information for problem solving. (338.01.b)
    - 8.M.1.1.7 Apply integers in one- and two-step common real-world situations.
    - 8.M.1.1.8 Use appropriate vocabulary.
- Goal 1.2: Perform computations accurately.
    - 8.M.1.2.1 Recall the common equivalent fractions, decimals, and percents of halves, thirds, fourths, fifths, and tenths. (337.02.b)
    - 8.M.1.2.2 Add, subtract, multiply, and divide rational numbers. (337.02.a)
    - 8.M.1.2.3 Evaluate numerical expressions with whole number exponents. (337.02.d)
    - 8.M.1.2.4 Evaluate numerical expressions with rational numbers using the order of operations. (337.02.c)
    - 8.M.1.2.5 Select and use an appropriate method of computation from mental math, paper and pencil, calculator, or a combination of the three. (337.02.e)
    - 8.M.1.2.6 Use a variety of strategies including common mathematical formulas to compute problems drawn from real life situations. (338.01.a)
    - 8.M.1.2.7 Use appropriate vocabulary and notations. (337.02.f)
- Goal 1.3: Estimate and judge reasonableness of results.
    - 8.M.1.3.1 Estimate to predict computation results. (337.03.a)
    - 8.M.1.3.2 Identify when estimation is appropriate and apply to problem solving situations. (337.03.b)
    - 8.M.1.3.3 Identify whether a given estimate is an overestimate or underestimate. (337.03.c)
    - 8.M.1.3.4 Use a four-function calculator to solve complex grade-level problems.
    - 8.M.1.3.5 Formulate conjectures and justify (short of formal proof) why they must be or seem to be true. (338.02.c)
    - 8.M.1.3.6 Use appropriate vocabulary and notations. (337.03.d)

Standard 2: Concepts and Principles of Measurement

Students in Grade 8 select and use appropriate units and tools to make formal measurements in both systems. Students apply given formulas for perimeter, circumference, and area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. Students solve problems involving area of circles and the perimeter and area of rectangles and triangles. Students use rates, proportions, ratios, and map scales in problem solving situations.

- Goal 2.1: Understand and use U.S. customary and metric measurements.
    - 8.M.2.1.1 Select and use appropriate units and tools to make formal measurements in both systems. (339.01.a)
    - 8.M.2.1.2 Apply estimation of measurement to real-world and content problems using standard measuring devices. (339.01.b)
    - 8.M.2.1.3 Compare the differences and relationships among measures of perimeter, area, and volume (capacity) within both systems. (339.01.c)
    - 8.M.2.1.4 Given the formulas, find the circumference, perimeter, or area of triangles, circles, and quadrilaterals, and the volume and surface area of rectangular prisms. (341.01.e)
    - 8.M.2.1.5 Convert units of measurement within each system in problem solving situations. (339.01.e)
    - 8.M.2.1.6 Solve problems involving area of circles and the perimeter and area of rectangles and triangles. (339.01.d)
    - 8.M.2.1.7 Use appropriate vocabulary and notations. (339.01.f)
- Goal 2.2: Apply the concepts of rates, ratios, and proportions.
    - 8.M.2.2.1 Use rates, proportions, ratios, and map scales in problem-solving situations. (339.03.a)
    - 8.M.2.2.2 Determine unit rates in real-world situations.
- Goal 2.3: Apply dimensional analysis.
    - 8.M.2.3.1 Illustrate the interrelationship of measurement units through dimensional analysis conversions. (339.04.a)
- Goal 2.4: Apply appropriate techniques and tools to determine measurements.
    - No objectives at this grade level.

Standard 3: Concepts and Language of Algebra and Functions
Students in Grade 8 translate simple word statements and story problems into algebraic expressions and equations. Students use the order of operations in evaluating basic algebraic expressions and students solve one- and two-step equations and inequalities. Students represent a set of data in a table, as a graph, and as a mathematical relationship.

- Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.
    - 8.M.3.1.1 Use variables in expressions, equations, and inequalities. (340.01.a)
    - 8.M.3.1.2 Translate simple word statements and story problems into algebraic expressions and equations. (340.01.b)
    - 8.M.3.1.3 Use symbols “<,” “>,”“=,” “?,” “?,” and “?” to express relationships. (340.01.c)
- Goal 3.2: Evaluate algebraic expressions.
    - 8.M.3.2.1 Use and apply the following properties in evaluating algebraic expressions: commutative, associative, identity, zero, inverse, distributive, and substitution. (340.02.a)
    - 8.M.3.2.2 Use the order of operations in evaluating simple algebraic expressions. (340.02.b)
    - 8.M.3.2.3 Simplify algebraic expressions. (340.02.c)
- Goal 3.3: Solve algebraic equations and inequalities.
    - 8.M.3.3.1 Solve one- and two-step equations and inequalities. (340.03.a)

    - 8.M.3.3.2 Match graphical representations with simple linear equations. (340.03.b)
- Goal 3.4: Understand the concept of functions.
    - 8.M.3.4.1 Extend patterns and identify a rule (function) that generates the pattern using rational numbers. (343.01.a)
    - 8.M.3.4.2 Use relationships to explain how a change in one quantity may result in a change in another, and identify the relationship as a positive, negative, or neither. (343.01.b)
    - 8.M.3.4.3 Use appropriate vocabulary and notations. (343.01.c)
- Goal 3.5: Represent equations, inequalities and functions in a variety of formats.
    - 8.M.3.5.1 Represent a set of data in a table, as a graph, and as a mathematical relationship. (343.02.a)
- Goal 3.6: Apply functions to a variety of problems.
    - 8.M.3.6.1 Use patterns and linear functions to represent and solve problems. (343.03.a)

Standard 4: Concepts and Principles of Geometry
Students in Grade 8 describe and classify relationships among types of one-, two-, and three-dimensional geometric figures using their defining properties. Students apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, angles, and shapes. Students identify and apply congruence, similarities, and line symmetry of shapes.

- Goal 4.1: Apply concepts of size, shape, and spatial relationships.
    - 8.M.4.1.1 Describe and classify relationships among types of one-, two-, and three- dimensional geometric figures, using their defining properties. (341.01.a)
    - 8.M.4.1.2 Draw and measure various angles and shapes using appropriate tools. (341.01.b)
    - 8.M.4.1.3 Apply the fundamental concepts, properties, and relationships among points, lines, rays, planes, and angles. (341.01.c)
    - 8.M.4.1.4 Identify and model the effects of reflections, translations, rotations, and scaling on various shapes. (341.01.g)
    - 8.M.4.1.5 Identify congruence, similarities, and line symmetry of shapes. (341.01.d)
    - 8.M.4.1.6 Explain the concept of surface area and volume (capacity). (341.01.f)
    - 8.M.4.1.7 Use appropriate vocabulary and symbols. (341.01.h)
- Goal 4.2: Apply the geometry of right triangles.
    - No objectives at this grade level.
- Goal 4.3: Apply graphing in two dimensions.
    - 8.M.4.3.1 Identify and plot points on a coordinate plane. (341.03.a)
- Goal 4.4: Represent and graph linear relationships.
    - No objectives at this grade level.
- Goal 4.5: Use reasoning skills.
    - No objectives at this grade level.

Standard 5: Data Analysis, Probability, and Statistics
Students in Grade 8 analyze and interpret tables, charts and graphs, including frequency tables, scatter plots, line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. Students collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. Students choose and calculate the appropriate measure of central tendency – mean, median, and mode. Students recognize equally likely outcomes and make predictions based on experimental and theoretical probabilities.

- Goal 5.1: Understand data analysis.
    - 8.M.5.1.1 Analyze and interpret tables, charts, and graphs, including frequency tables, scatter plots, broken line graphs, line plots, bar graphs, histograms, circle graphs, and stem-and-leaf plots. (342.01.a)
    - 8.M.5.1.2 Explain and justify conclusions drawn from tables, charts, and graphs. (342.01.b)
    - 8.M.5.1.3 Use appropriate vocabulary and notations. (342.01.c)
- Goal 5.2: Collect, organize, and display data.
    - 8.M.5.2.1 Collect, organize, and display data with appropriate notation in tables, charts, and graphs, including scatter plots, broken line graphs, line plots, bar graphs, histograms, and stem-and-leaf plots. (342.02.a)
- Goal 5.3: Apply simple statistical measurements.
    - 8.M.5.3.1 Choose and calculate the appropriate measure of central tendency – mean, median, and mode. (342.03.a)
    - 8.M.5.3.2 Explain the significance of distribution of data, including range, frequency, gaps, and clusters. (342.03.b)
- Goal 5.4: Understand basic concepts of probability.
    - 8.M.5.4.1 Model situations of probability using simulations. (342.04.a)
    - 8.M.5.4.2 Recognize equally likely outcomes. (342.01.c)
    - 8.M.5.4.3 Explain that probability ranges from 0% to 100% and identify a situation as having high or low probability.
    - 8.M.5.4.4 Use the language of probability. (342.04.b)
- Goal 5.5: Make predictions or decisions based on data.
    - 8.M.5.5.1 Make predictions based on experimental and theoretical probabilities. (342.05.a)
    - 8.M.5.5.2 Conduct statistical experiments and interpret results using tables, charts, or graphs. (342.05.c)
    - 8.M.5.5.3 Use appropriate vocabulary and notations. (342.05.b)