

Liberal Arts Mathematics



Pre-Requisites: Algebra I required Geometry recommended

Credits: 0.5 (per segment)

Estimated Completion Time: 2 segments / 32-36 weeks

Earliest Start Date: March 2014

Description

The total weight of two beluga whales and three orca whales is 36,000 pounds. The weight of each whale could be determined with just one additional fact. The Liberal Arts Math course provides all the math tools needed to answer this weighty question. The setting for this course is an amusement park with animals, rides, and games. The students' job is to apply what they learn to dozens of real-world scenarios. .

Equations, geometric relationships, and statistical probabilities can sometimes be dull, but not in this class! The park guide (teacher) takes each student on a grand tour of problems and puzzles that show how things work and how mathematics provides valuable tools for everyday living.

Students should come ready to reinforce and grow their existing algebra and geometry skills to learn complex algebraic and geometric concepts they will need needed for further study of mathematics.

Note: This course does not meet the academic core requirement for math for entry into the American University System

Major Topics and Concepts

Segment 1

Expression, Operations and the Real Number System

- Real Number System
- Operations with Integers
- Order of Operations
- Evaluating Expressions
- Absolute Value
- Algebraic Properties
- Simplifying Expressions
- Translations from English to Algebra

Equations and Inequalities

- Solving Equations
- Absolute Value Equations
- Literal Equations
- Word Problems
- Inequalities
- Combined Inequalities

Graphing Equations and Inequalities

- Relations and Functions
- Finding Slope
- Horizontal and Vertical Lines
- Graphing Linear Equations
- Writing the Equation of a Line
- Parallel and Perpendicular Lines
- Graphing Inequalities

Systems

- Solving Systems of Equations by Graphing
- Solving by Substitution
- Solving by Algebraic Methods
- Solving Systems of Inequalities
- Word Problems with Systems

Polynomials

- Introduction to Polynomials
- Operations on Polynomials

- Adding and Subtracting
- Multiplying and Dividing with Monomials
- Multiplying Polynomials
- Special Products
- Dividing Polynomials
- Laws of Exponents
- Scientific Notation

Segment 2

Factoring

- Greatest Common Factor
- Difference of Squares
- Trinomials
- Factoring by Grouping
- Solving Equations by Factoring
- Using the Quadratic Formula

Radicals

- Simplifying Radical
- Adding and Subtracting Radicals
- Multiplying Radicals
- Dividing Radicals
- Solving Equations with Radicals
- Pythagorean Theorem
- Distance and Midpoint Formulas
- Real World Application of Pythagorean Theorem

Polygons

- Introduction to Polygons
- Similar Triangles
- Congruent Triangles
- Special Right Triangles
- Similar Polygons
- Congruent Polygons

Quadrilaterals

- Introduction to Quadrilaterals
- Parallelograms
- Trapezoids and Kites

Perimeter, Area, and Volume

- Perimeter and Circumference
- Area
- Changes in Dimensions: 2D
- Lateral Area
- Surface Area
- Volume
- Changes in Dimensions: 3D

Data Analysis

- Histogram, Bar, Line, and Circle Graphs
- Means, Medians, Weighted Means
- Range and Quartiles
- Scatterplots, Stem-and-Leaf Plots, Box-and-Whisker Plots
- Making Data Graphs

Required Materials

Course Objectives

Grading Policy

Besides engaging students in challenging curriculum, the course guides students to reflect on their learning and evaluate their progress through a variety of assessments. Assessments can be in the form of practice lessons, multiple choice questions, writing assignments, projects, research papers, oral assessments, and discussions. The course will use the state-approved grading scale and each course contains a unique end of course assessment. This assessment counts for 20% of the student's overall grade and must be passed with a score of 60% or higher.

Communication Policy

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, "any pace" still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful