LIVE Online Math Pre-Pre-Algebra Scope and Sequence

The course is broken down into Units. The Units, and lessons that make up each Unit, are below. Note: If there is a specific concept/technique that is not listed, please contact us to see if it is part of the course. Specific content is not always readily identifiable simply from the title of a lesson.

Unit 1: Connecting Arithmetic to Algebra

Roughly the first half of Unit 1 focuses on learning about LARGE numbers, working with estimation, and the order of operations. Students are also introduced to some introductory algebra ideas in the second half of the unit. These foundational ideas will serve students well as they continue through this course, and future math courses as well.

Lesson 1: Reading, Writing, and Rounding Large Numbers

Lesson 2: Comparing and Ordering Large Numbers

Lesson 3: Introduction to Exponents

Lesson 4: Estimating Sums, Differences, Products and Quotients

Lesson 5: Order of Operations

Lesson 6: Number Patterns

Lesson 7: Variables and Expressions

Lesson 8: Introduction to Equations

Lesson 9: Solving Equations

Unit 2: Number Theory and Introduction to Fractions

In Unit 2, students learn some important tools that come from number theory to be used later in the course. Additionally, important introductory concepts about fractions is taught. Various visual aids are used to cement these concepts. Since fractions tend to be a particularly challenging topic for students, this is a very important unit to master.

Lesson 1: Divisibility and Prime Factorization

Lesson 2: Least Common Multiple

Lesson 3: Introduction to Fractions

Lesson 4: Expanding and Reducing Fractions

Lesson 5: Mixed Numbers and Improper Fractions

Lesson 6: Comparing and Ordering Fractions

Unit 3: Adding and Subtracting Fractions

Unit 3 extends the learning about fractions that was started in the previous unit. Students learn the techniques involved with adding and subtracting fractions. Proper fractions, improper fractions, and mixed numbers will be explored, as well as combinations of all three. The importance of common denominators is emphasized throughout.

Lesson 1: Adding and Subtracting Fractions with Like Denominators

Lesson 2: Adding and Subtracting Fractions with Unlike Denominators

Lesson 3: Solving Adding and Subtracting Equations with Fractions

Lesson 4: Estimating Sums and Differences with Mixed Numbers

Lesson 5: Adding Mixed Numbers

Lesson 6: Subtracting Mixed Numbers

Unit 4: Multiplying and Dividing with Fractions

In Unit 4, students learn the techniques involved with multiplying and dividing fractions. Similarly to Unit 3, proper fractions, improper fractions, and mixed numbers will all be explored, as well as combinations of all three. Lesson 1 focuses on using area to model the multiplication of fractions. Students will also see how using the "multiplicative inverse" can be helpful in solving multiplication equations with fractions. Lesson 6 helps students review basic equations concepts by learning how to solve equations by multiplying and dividing with fractions.

Lesson 1: Modeling Fraction Multiplication

Lesson 2: Multiplying with Proper Fractions, Improper Fractions, Mixed Numbers, and Whole Numbers

Lesson 3: Cross Canceling and Multiplicative Inverse

Lesson 4: Dividing with Fractions (Proper and Improper)

Lesson 5: Dividing Whole Numbers and Mixed Numbers with Fractions

Lesson 6: Solving Multiplication and Division Equations with Fractions

Unit 5: Decimals

Unit 5 is all about decimals. The unit starts with what decimals are, then it moves into seeing how to work with decimals in a variety of ways. Since decimals are such a useful and important part of every day life, many lessons also present a real life application of decimals. Specifically, students see how Scientific Notation can be used to express very large numbers. Finally, converting decimals to fractions (and vice versa), and solving equations with decimals will also be explored.

Lesson 1: Introduction to and Rounding with Decimals

Lesson 2: Comparing and Ordering Decimals

Lesson 3: Scientific Notation

Lesson 4: Adding and Subtracting Decimals

Lesson 5: Multiplying with Decimals

Lesson 6: Dividing Decimals by a Whole Number

Lesson 7: Dividing Decimals by Decimals

Lesson 8: Converting Fractions and Decimals

Lesson 9: Solving Equations with Decimals

Unit 6: Systems of Measurement, Perimeter, and Area

In Unit 6, students begin learning some geometry concepts that will be continued in Unit 7. Much of this unit is about area and calculating the area of a variety of shapes. Measurement, perimeter, and

area are mathematical concepts that are encountered in everyday life. Therefore, many of the lessons in this unit have a Real Life Application segment. Students will also discover "pi" and use unit multipliers to convert within and between the metric and standard systems.

Lesson 1: Perimeter

Lesson 2: Converting in the Metric System

Lesson 3: Converting in the Standard System

Lesson 4: Areas of Rectangles and Squares

Lesson 5: Area of a Triangle

Lesson 6: Pi and Circumference

Lesson 7: Area of a Circle

Lesson 8: Area of Irregular Figures

Unit 7: Polygons

Unit 7 continues the geometry theme that was started in the last unit and focuses on polygons for the most part. Students start by learning about lines, rays, segments and angles. That transitions into understanding what polygons are and some ways they can be classified. Toward the end of the unit, students learn about symmetry and tessellations and they also get to use some interactive tools that allow them to explore symmetry and tessellations in interesting ways.

Lesson 1: Lines, Rays and Segments

Lesson 2: Measuring and Classifying Angles

Lesson 3: Angles in a Triangle

Lesson 4: Sides in a Triangle

Lesson 5: Polygons

Lesson 6: Types of Quadrilaterals

Lesson 7: Symmetry and Reflection

Lesson 8: Rotations, Translations and Tessellations

Unit 8: Integers and the Coordinate Plane

Unit 8 introduces students to integers and how to add, subtract, multiply and divide negative numbers. A variety of techniques are shown and students are encouraged to use the technique that best fits the situation. The latter part of unit 8 introduces the coordinate plane and how to work with it. In lesson 6, a special tool is used to demonstrate translating and reflecting points and figures on the coordinate plane. Links to several tools are provided allowing students an interactive learning experience.

Lesson 1: Integers

Lesson 2: Adding Negative Numbers

Lesson 3: Subtracting Negative Numbers

Lesson 4: Multiplying and Dividing Negative Numbers

Lesson 5: The Coordinate Plane and Plotting Points

Lesson 6: Translating and Reflecting Using a Coordinate Plane

Unit 9: Rates, Ratios, Proportions and Percents

Unit 9 covers several important concepts. It starts by introducing students to rates and ratios as a lead-in to working with proportions. After learning about what a proportion is and various ways of thinking of them, various methods of solving proportions are shown. This transitions into working with similar polygons. In lesson 5, students manipulate online tools to further their understanding of similarity. Later in the unit, students get a quality review of solving equations as they solve percent of a number problems. Finally, "Real Life Applications" are a part of almost every lesson in this unit.

Lesson 1: Ratios

Lesson 2: Rates

Lesson 3: Proportions

Lesson 4: Solving Proportions

Lesson 5: Similar Polygons

Lesson 6: Percents

Lesson 7: Percent-Decimal and Percent-Fraction Conversions

Lesson 8: Percent of a Number Problems

Unit 10: Surface Area and Volume

Unit 10 takes students into the 3rd dimension by working with surface area and volume. Various figures are explored including rectangular prisms, pyramids, cylinders and triangular prisms. 3D image representations and visually appealing graphics are used throughout the unit. Tools that allow 3D objects to be rotated and seen from various angles are used as well and are aimed at deepening students' understanding of the concepts. Also, most lessons have a "Real Life Application" of how surface area or volume can be used. Finally, students are encouraged to discover the various formulas used for calculating surface area and volume. This will enhance their critical thinking skills and allow them to know where the formulas came from.

Lesson 1: Solids and Their Properties

Lesson 2: Surface Area

Lesson 3: Surface Area Formulas

Lesson 4: Surface Area of a Cylinder

Lesson 5: Volume

Lesson 6: Volume of Cylinders and Triangular Prisms

Unit 11: Probability

Unit 11 is all about probability. Since probability connects so much to real life situations, each instructional lesson has a "Real Life Application" segment. Fun and interesting situations are used throughout the unit to help students understand probability concepts. Lesson 3 presents a great visual technique (a "Tree Diagram") for understanding the possible number of outcomes of various events. Lesson 6 is not an instructional lesson. Rather, it presents students with three different mini-projects aimed at helping students understand how the number of trials involved will lead you closer to (or farther away from) the expected results. Finally, students are encouraged to make own game that involves the probability concepts presented in this unit.

Lesson 1: Probability

Lesson 2: Geometric Probability

Lesson 3: Tree Diagrams and the Counting Principle

Lesson 4: Compound Probability

Lesson 5: Independent and Dependent Probability

Lesson 6: Probability Games and Projects

Unit 12: Charts, Graphs, and Data

Unit 12 introduces students to a variety of charts and graphs. Naturally, visuals are used throughout and real-life data is frequently used in examples. Students also explore how graphs can be misleading (lesson 2) and how to read trends (lesson 3). Lesson 4 shows students how make their own bar chart and how to avoid some pitfalls along the way. Since charts and graphs are a regular part of every day life, almost all lessons contain a "Real Life Application" section. The unit ends by introducing students to the concepts of mean, median and mode.

Lesson 1: Reading Charts and Graphs

Lesson 2: Misleading Graphs

Lesson 3: Scatter Plots and Trends

Lesson 4: Creating Bar Charts

Lesson 5: Median and Mode

Lesson 6: What Does "Mean" Mean?