

AMME, Inc.

Table of Contents - Course I

Unit 1: Measuring Up in Math

This unit is written to ensure all students start with similar basic skills. Students will review fractions by using rulers (both in English and Metric) to measure and make things. This will give them the opportunity to see why fractions are important. By having the students measure in every lab in Unit 1, we have found the concept of fractions becomes much more clear to them.

They will also be given an introduction to the features of a scientific calculator and will compute with numbers in integer, decimal, and fraction formats.

Unit 2: 100% Smarter

This unit is designed to help students become familiar with solving problems with real-life applications that utilize percent. Students will review the renaming of fractions and decimals as percents. They will be taught to visualize percents by sketching rectangles and estimating both the percentages and amounts of items. Proportions will be used to solve all types of applications of percents.

Unit 3: Label Explosions

In this unit, students are taught an **invaluable method** to solve problems by just canceling labels. The formal name of this method is dimensional analysis, we just call it the “Label Method.” AMME uses this method as our keystone, problem-solving method throughout all our units.

Since this is such an important concept for students to acquire, transferring students that join your class after you have taught Unit 3 will be at a deficit. As a result, we have prepared a mini-version of this chapter called the “Label Method Review.” You will find the “Label Method Review” at the tail end of Unit 10. This handout is very similar to 11-6, which also reviews the label method. Our suggestion is that this is the first handout you give incoming students to your class. It works great for them to get a taste of AMME materials while you might be finishing another Unit (concept) with the rest of your class.

Unit 4: Don't Worry! Be Happy! No Problem, Man!

This unit is written to assist the student in developing problem solving skills. Students will use the label method, but will also be given four different techniques to use. Our key motto for this unit is “read a little, write a little.” The “writing” may take the format of a picture, diagram or chart.

Unit 5: Mental Wizardry

This unit is designed to show students how much fun mental math can be. They are taught many mental math tricks to develop their number sense. Students will review the use of rounding and estimating with addition, subtraction, multiplication, and division. The labs are designed to encourage the use of estimation for problem solving.

UNIT 6: Opposites Attract

This unit is designed to help students understand the basics of simple algebraic equations. Topics included are opposites, absolute value, and the combining of like terms. Students will be introduced to inverse operations as they pertain to one and two-step equations. Applications of simple physical science formulas will help them understand the importance of algebra.

Unit 7: Made in France

Students learn more about our measuring system in the areas of weights, lengths and capacities. They will also learn how and why the metric system was invented and will get to practice measuring in both the English and metric systems. They also measure with vernier calipers and with micrometers.

UNIT 8: ¿Habras Algebra?

The purpose of this unit is to help students become fluent in the language of algebra. Students will learn to translate sentences into algebraic and mathematical symbols, and then use the language of algebra to assist them in problem solving.

UNIT 9: What's Your Angle?

In this unit students will become familiar with different concepts of geometry. \Students learn the vocabulary of polygons, circles, angles, triangles, and lines (both parallel and perpendicular). They will understand the derivation of π and use it to find circumferences of circles. Students will also study relationships of angles and will learn that the sum of the measures of the angles in a triangle is 180° .

UNIT 10: From Numbers to Pictures

This unit is designed to assist students in becoming graph literate. Students will be able to interpret data from graphs and design graphs to illustrate data.

AMME Inc. Table of Contents - Course II

Unit 11 Welcome Back

This unit is written to **ensure that all students have the key skills they will need for success** in Course II. While most Applied Math I classes do not complete all ten units of Course I, this unit still can be the first one taught in the second year. After, or during, Unit 11 you can go back to finish any of the material from Course I you would like your students to know. We strongly **recommend that all students have the algebra background** from Unit 8.

Unit 12 Taking Up Space

In this unit, students learn to find the areas and perimeters of geometric shapes. Students will review how to use algebraic formulas and inverse operations. They will be introduced to the multiple facets involved in running a company.

Unit 13 Fill It Up!

In this unit, students will learn how to describe three-dimensional geometric objects and will be able to find the volume of those shapes. Students will be able to use the formulas to find volume. Students also utilize inverse operations to find missing dimensions when the volume of a geometric object is given.

Unit 14 What's My Line?

In this unit, students are taught about linear equations. They will learn that a linear equation is the result of a constant change, and also learn how to find and use slope in practical applications. The coordinate plane will be reviewed and students will graph equations using a T-chart as well as slope-intercept form. Students will also solve systems of linear equations by graphing.

Unit 15 What's Your Cover?

This unit is designed to help students become familiar with solving real-life applications regarding surface area and density. The objective of teaching surface area and density in applied math is to have students understand these concepts so they can use them in later life. For that reason, we believe that it is important for students to *understand* the formulas for area and volume so they can pull them from their minds at a later date. For example, when calculating the surface area of a room, the students will find the area of each wall and add them up instead of multiplying the perimeter by the height. While they are studying density, students will be helped to understand why boats float and hot air balloons rise. Practice of algebraic skills will also occur as students make use of formulas.

Unit 16 You Deserve the Power

Students will learn the definition of integral exponents (positive, negative and zero), the laws of manipulating them, and also learn the importance of scientific notation. Practical applications of exponents and scientific notation will be shown.

Unit 17 A Radical Idea

This unit will help students learn more about square roots and other radicals. Since this is an applied class, students often use decimal approximation of radicals, yet we know many students will be taking geometry or advanced algebra after this class, so we do teach students how to use simplest radical form. As per NCTM recommendations, we do not stress the rationalization of denominators. The Pythagorean Theorem and the special 30-60 and 45-45 right triangles will also be studied along with their applications.

Unit 18 It's Greek To Me

This unit will teach students basic trigonometry. They will learn to apply right-triangle trigonometry along with the Law of Sines and the Law of Cosines. Students also will learn how to use the Unit Circle.

Unit 19 Powerful Equations

This unit will emphasize quadratic equations. Students will learn how to solve quadratic equations using the quadratic formula. Labs will require collecting data, graphing the parabolic data, and finding quadratic equations with the assistance of graphing calculators. Students will also need to use trig, along with the quadratic formula to solve some problems.

Unit 20 Can You Loan Me a Buck?

This unit is designed to help students learn more about becoming better consumers. We are aware that most schools also offer a “consumer math” class and we do not wish to duplicate their curriculum. AMME’s building site license does allow you to share both the masters and the flash drive **with other teachers in your building**. In this unit, we will focus on the mathematics of mortgages, credit cards, and some interesting applications of percent. This unit stresses how to calculate interest in time periods from daily to annually.

Note: Unit 21 on Probability and Statistics is a stand-alone unit. It is not part of Course I or Course II, but if you order both courses, you will receive Unit 21 for FREE. You may also purchase it alone for \$379.

Unit 21 Double or Nothing

This unit is designed to introduce students to basic concepts of probability and statistics, such as: mean, median and mode, measures of central tendency, standard deviation, and probability. Students will understand the relevance of statistics and probability in today’s world. They will also know how to find permutations and combinations of sets of numbers.