

# Trade Math Syllabus

## Course Description:

This fully online course will discuss basic measuring including wiring lengths and room dimensions as well as calculating pipe configurations and electrical currents. In addition, measurement ratios, proportions, decimals, fractions, powers, roots, and basic algebraic formulas will be covered. 30 hours

## Learning Outcomes:

Upon completion of this course a student will be able to:

- Add, subtract multiply, and divide whole numbers, signed numbers, decimals and fractions.
- Convert between fractions decimals and percents and apply to real world applications.
- Solve problems using ratios and proportions.
- Use algebraic formulas to solve for unknown quantities.
- Simplify expressions and equations involving powers and roots.
- Convert units within or between system of measurements.
- Apply basic measuring to calculate wiring lengths, room dimensions as well as calculating pipe configurations and electrical currents.

## Course Outline

### 1. Whole Numbers

- a. Adding and Subtracting Whole Numbers
- b. Multiplying Whole Numbers
- c. Dividing Whole Numbers
- d. Exponents, Order of Operations

### 2. Fractions

- a. Factors and Prime Numbers
- b. Introduction to Fractions
- c. Adding and Subtracting Fractions
- d. Multiplying and Dividing Fractions

### 3. Decimals

- a. Introduction to Decimals
- b. Adding and Subtracting Decimals
- c. Multiplying Decimals
- d. Dividing Decimals

### 4. Basic Algebra: Solving Simple Equations

- a. Introduction to Basic Algebra
- b. Solving Addition and Subtraction Equations

- c. Solving Multiplication and Division Equations
- 5. Ratios and Proportions
  - a. Introduction to Ratios
  - b. Solving Proportions
- 6. Percents
  - a. Introduction to Percents
  - b. Solving Percent Problems
  - c. More on Percents
- 7. Signed Numbers
  - a. Introduction to Signed Numbers
  - b. Adding Signed Numbers
  - c. Subtracting Signed Numbers
  - d. Multiplying Signed Numbers
  - e. Dividing Signed Numbers
- 8. More on Algebra
  - a. Combining Like Terms and Using the Distributive Property
  - b. Solving Equations Using Signed Numbers
  - c. More with Solving Equations
  - d. Using Formulas
  - e. Solving for a Specific Variable
- 9. Measurements and Units
  - a. U.S. Customary Units
  - b. Metric Units and Metric/U.S. Customary Units
- 10. Basic Geometry
  - a. Introduction to Basic Geometry
  - b. Perimeter and Circumference
  - c. Area
  - d. Square Roots and Pythagorean Theorem
- 11. Applications
  - a. Averages
  - b. Tolerances
  - c. Pipe Configurations
    - i. Fitting Allowances
    - ii. Length of Pipe (travel) (optional - include if cover trigonometry)
    - iii. Total Fall and Grade
  - d. Electrical Applications
    - i. Ohm's Law
    - ii. Series and Parallel Circuits
    - iii. Resistance, Resistivity and Wiring Lengths
  - e. Room Dimensions

12. Trigonometry (Optional)

- a. Right Angle Trigonometry
- b. Special Triangles
- c. Applications of Right Angle Trigonometry

**Course Materials:** Applied Technical Mathematics, (PDF textbook), Douglas Gardner

**Method of Instruction:** This course is a fully-online asynchronous courses, which means you may sign on at any time of the day or night, wherever you have internet access. The course will be taught using online video lectures. There will be lecture notes that students can print out to complete as they watch the videos. After each video there will be a homework assignment to complete and submit. For most modules students will have a chance to interact with students and the instructor through discussion. Every 3 or 4 chapters there will be an exam.

**Successful Completion of the Course:** Successful completion of the course is dependent on an average of 70% or higher in the course. The grade will be weight as follows:

Homework: 15%

Discussions: 10%

Tests: 60%

Room Dimension Project: 15%