

### Module Overview

---

This module introduces the mathematical operations commonly used in construction, and explains how geometry is used in the trade. Trainees will learn how to add, subtract, multiply, and divide whole numbers, fractions, and decimals, as well as how to convert decimals, fractions, and percentages.

### Prerequisites

---

Prior to training with this module, it is recommended that the trainee shall have successfully completed the following: *Core Curriculum* and *Ironworking Level One*.

### Objectives

---

Upon completion of this module, the trainee will be able to do the following:

1. Perform calculations using fractions.
2. Perform calculations using decimals and percentages.
3. Convert between fractions of a foot and decimals of a foot.
4. Calculate the areas of selected items.
5. Solve problems for right triangles.
6. Calculate the volumes of selected items.
7. Calculate the weights of selected items.
8. Solve problems for unknown quantities.

### Performance Tasks

---

This is a knowledge-based module. There are no performance tasks.

### Materials and Equipment

---

Multimedia projector and screen	Calculator
<i>Ironworking Level Two</i>	Standard ruler (with 1/16-inch markings)
PowerPoint® Presentation Slides (ISBN 978-0-13-266254-3)	Folding ruler
Computer	Tape measure
Whiteboard/chalkboard	Clay
Markers/chalk	Several empty vessels of various shapes
Pencils and scratch paper	Sand or water to fill vessels
Copies of your local code	Measuring cup
Sample work orders that require mathematical functions	Quick Quizzes*
	Module Examinations**

\* Located at the back of this module.

\*\*Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

### Additional Resources

---

This module presents thorough resources for task training. The following resource material is suggested for further study.

*Applied Construction Math: A Novel Approach*, 2006. National Center for Construction Education and Research. Upper Saddle River, NJ: Prentice Hall.

## Teaching Time for This Module

---

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of  $2\frac{1}{2}$  hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 25 hours are suggested to cover *Trade Math*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources.

Topic	Planned Time
<b>Sessions I through III. Introduction; Math Review</b>	
A. Introduction	_____
B. Math Review	_____
1. Working with Whole Numbers	_____
2. Adding and Subtracting Whole Numbers; Practice Exercises	_____
3. Multiplying and Dividing Whole Numbers; Practice Exercises	_____
4. Working with Common Fractions	_____
5. Reducing Common Fractions; Practice Exercises	_____
6. Finding Common Denominators; Practice Exercises	_____
7. Adding and Subtracting Common Fractions; Practice Exercises	_____
8. Multiplying and Dividing Common Fractions; Practice Exercises	_____
9. Working with Decimal Fractions; Practice Exercises	_____
10. Converting Decimal Fractions to Common Fractions; Practice Exercises	_____
11. Converting Common Fractions to Decimal Fractions; Practice Exercises	_____
12. Adding and Subtracting Decimal Fractions; Practice Exercises	_____
13. Multiplying and Dividing Decimal Fractions; Practice Exercises	_____
14. Percentages; Practice Exercises	_____
15. Tolerances; Practice Exercises	_____
16. Squares and Square Roots	_____
<b>Sessions IV and V. Linear Measure; Equations; Formulas</b>	
A. Linear Measure; Practice Exercises	_____
B. Equations	_____
C. Formulas	_____
1. Surface Area	_____
2. Rectangles and Squares; Practice Exercises	_____
3. Triangles; Practice Exercises	_____
4. Circles; Practice Exercises	_____
5. Volume	_____
6. Cubes and Rectangular Objects	_____
7. Cylinders; Practice Exercises	_____
<b>Sessions VI and VII. Right Triangles; Weight; Solving for Unknowns</b>	
A. Right Triangles	_____
1. 3-4-5 Rule Practice Exercises	_____
B. Weight	_____
1. Weight of Steel Bar	_____
2. Weight of Steel Plate	_____
3. Weight of Steel Tank	_____
C. Solving for Unknowns; Practice Exercises	_____

