



Lakeshore Technical College

31-442-382 Welding Math Basics

Course Outcome Summary

Course Information

Alternate Title	Apply basic mathematic principles to solve problems
Description	Welding Math Basics provides the learner with the necessary skills to solve problems involving whole numbers, fractions, and decimal numbers using pad and pencil and calculator. The course is designed for individualized student needs. This is credit one of the two math credits need for the Welding program.
Total Credits	1
Total Hours	32

Types of Instruction

Instruction Type	Credits/Hours
CBE	1/32

Textbooks

Math for Welders. Publisher: Goodheart-Wilcox. Year: 2013. ISBN: 978-1-60525-900-0. **Visit the LTC Library for your textbook.**

Learner Supplies

Scientific Calculator: fx-115MS Plus -SR. **Manufacturer:** Casio.

#2 Pencil

Institutional Learning Outcomes

1. Apply learning

Criteria

- 1.1. Learner transfers academic knowledge and principles to life and work situations
- 1.2. Learner incorporates prior learning
- 1.3. Learner knows when to ask for help
- 1.4. Learner demonstrates appropriate safety precautions
- 1.5. Learner identifies the need for lifelong learning
- 1.6. Learner develops the ability to research beyond the required work
- 1.7. Learner demonstrates a curiosity for learning about cultures, norms, and practices

2. Apply sustainable practices

Criteria

- 2.1. Learner demonstrates awareness of the ecological impact related to his/her chosen area of study
- 2.2. Learner identifies environmental conservation strategies
- 2.3. Learner can identify how sustainable practices produce a lean work environment
- 2.4. Learner incorporates sustainable practices (environmental, economic, social, and cultural) during the decision making process

3. Communicate effectively

Criteria

- 3.1. Learner comprehends written materials
- 3.2. Learner writes clearly, concisely, and accurately
- 3.3. Learner adjusts communication style in order to meet the needs of others
- 3.4. Learner demonstrates active listening skills
- 3.5. Learner uses culturally appropriate verbal and non-verbal communication methods

4. Demonstrate critical thinking

Criteria

- 4.1. Learner determines issues that merit action
- 4.2. Learner takes initiative in the problem solving processes
- 4.3. Learner makes decisions considering alternatives and consequences
- 4.4. Learner refines action plans based on evaluation of feedback
- 4.5. Learner identifies interdependencies of world issues & events

5. Demonstrate responsible and professional workplace behaviors

Criteria

- 5.1. Learner displays behavior consistent with the ethical standards within a discipline or profession
- 5.2. Learner follows policies and procedures
- 5.3. Learner attends class as mandated by the instructor
- 5.4. Learner completes assignments on time
- 5.5. Learner exhibits academic honesty
- 5.6. Learner accepts responsibility and accountability for his/her actions
- 5.7. Learner demonstrates time management and task prioritization
- 5.8. Learner demonstrates ability to handle ambiguity and unfamiliar situations

6. ILO: Communicates effectively

7. ILO: Demonstrates critical thinking

8. ILO: Exhibits respect of individuality

9. ILO: Models professionalism

10. ILO: Works collaboratively

11. Integrate technology

Criteria

- 11.1. Learner determines which tasks can be performed more efficiently by using technology
- 11.2. Learner uses technology to perform tasks more efficiently
- 11.3. Learner adapts to changing/emerging technology
- 11.4. Learner selects culturally appropriate technology/tools to communicate with diverse groups

12. Respect and appreciate diversity

Criteria

- 12.1. Learner demonstrates respectful workplace actions for successfully working with a diverse workforce (race, color, creed, national origin, religion, age, sex, sexual orientation, disability, and other differences).
- 12.2. Learner observes business customs/etiquette, time zone differences, and holidays
- 12.3. Learner identifies own bias and can adapt to the customs and practices of others
- 12.4. Learner demonstrates respectful behavior for living/working in a diverse society

13. Use mathematics effectively

Criteria

- 13.1. Learner solves real world problems using mathematics

- 13.2. Learner measures accurately
- 13.3. Learner analyzes graphical information
- 13.4. Learner demonstrates an understanding of world measurements and foreign currency exchange

14. Work cooperatively

Criteria

- 14.1. Learner contributes to a group with ideas, suggestions, and effort
- 14.2. Learner completes his/her share of tasks necessary to complete a project
- 14.3. Learner encourages team members by listening and responding appropriately to their contributions
- 14.4. Learner maintains self control
- 14.5. Learner resolves differences for the benefit of the team
- 14.6. Learner accepts constructive feedback
- 14.7. Learner effectively establishes rapport and builds situationally appropriate relationships

Program Outcomes

1. Demonstrate industry recognized safety practices

Criteria

- 1.1. you demonstrate proper inspection and use of personal protective equipment (PPE)
- 1.2. you demonstrate proper inspection and use of ventilation equipment as required
- 1.3. you demonstrate proper Hot Zone operation as required
- 1.4. you explain proper use of precautionary labeling and SDS information
- 1.5. you demonstrate proper inspection and operation of equipment used for each process
- 1.6. you maintain a safe work environment
- 1.7. you demonstrate proper material handling techniques

Course Competencies

1. Solve problems using whole numbers

Linked Institutional Learning Outcomes

Apply learning
Apply sustainable practices
Communicate effectively
Demonstrate critical thinking
Demonstrate responsible and professional workplace behaviors
ILO: Communicates effectively
ILO: Demonstrates critical thinking
ILO: Exhibits respect of individuality
ILO: Models professionalism
ILO: Works collaboratively
Integrate technology
Respect and appreciate diversity
Use mathematics effectively
Work cooperatively

Linked Program Outcomes

Demonstrate industry recognized safety practices

Assessment Strategies

- 1.1. on a written test without the use of a calculator.
- 1.2. on written text assignments

Criteria

You will know you are successful when:

- 1.1. you receive a passing score of at least 75 percent on the written test.
- 1.2. you must have a grade of 100% on text assignments.

Learning Objectives

- 1.a. Add whole numbers.
- 1.b. Subtract whole numbers.
- 1.c. Multiply whole numbers.
- 1.d. Divide whole numbers.
- 1.e. Apply order of operations to solve problems.

- 1.f. Develop calculator skills to solve basic number problems.

2. Solve problems using fractions

Linked Institutional Learning Outcomes

Apply learning
Demonstrate critical thinking
ILO: Demonstrates critical thinking
Integrate technology
Use mathematics effectively

Linked Program Outcomes

Demonstrate industry recognized safety practices

Assessment Strategies

- 2.1. on a written test with use of a calculator
- 2.2. on written text assignments

Criteria

You will know you are successful when:

- 2.1. you receive a passing score of at least 75 percent on the written test.
- 2.2. you must have a grade of 100% on text assignments.

Learning Objectives

- 2.a. Work with fractions.
- 2.b. Recognize proper fractions.
- 2.c. Convert improper fractions to mixed numbers.
- 2.d. Write equivalent fractions.
- 2.e. Multiply fractions.
- 2.f. Divide fractions by reciprocal method.
- 2.g. Add fractions using common denominator.
- 2.h. Develop least common denominator.
- 2.i. Subtract fractions.
- 2.j. Develop calculator skills to solve fraction problems.

3. Solve problems using decimal numbers

Linked Institutional Learning Outcomes

Apply learning
Demonstrate critical thinking
ILO: Demonstrates critical thinking
Integrate technology
Use mathematics effectively

Linked Program Outcomes

Demonstrate industry recognized safety practices

Assessment Strategies

- 3.1. on a written test with use of a calculator
- 3.2. on written text assignments

Criteria

You will know you are successful when:

- 3.1. you receive a passing score of at least 75 percent on the written test.
- 3.2. you must have a grade of 100% on text assignments.

Learning Objectives

- 3.a. Add and subtract decimal numbers.
- 3.b. Multiply and divide decimal numbers
- 3.c. Round decimal numbers.
- 3.d. Convert fractions to decimals.
- 3.e. Convert decimals to fractions.
- 3.f. Develop calculator skills to solve decimal problems.

4. Solve english and metric units of measurement problems

Linked Institutional Learning Outcomes

Apply learning
Demonstrate critical thinking

ILO: Demonstrates critical thinking
Integrate technology
Use mathematics effectively

Linked Program Outcomes

Demonstrate industry recognized safety practices

Assessment Strategies

- 4.1. on a written test with use of a calculator
- 4.2. on written text assignments

Criteria

You will know you are successful when:

- 4.1. you receive a passing score of at least 75 percent on the written test.
- 4.2. you must have a grade of 100% on text assignments.

Learning Objectives

- 4.a. Express English length unit measurements as metric length unit measurements.
- 4.b. Express metric length unit measurements as English length unit measurements.
- 4.c. Determine metric and inch measurements.