



Lakeshore Technical College

31-442-384 Welding Geometry and Formulas

Course Outcome Summary

Course Information

Description Welding Math 2 prepares the learner with the necessary skills to use scientific calculators for the application of solving problems of ratio and proportion, precision, and accuracy in measurements, unit conversions, direct-length measurements, pre-algebra, and simple and complex equations using algebra concepts. The class is designed for individualized student needs. This is credit two of the two-credits needed for the Welding program.

Total Credits 1

Total Hours 36

Pre/Corequisites

Prerequisite Welding Math 1 (31-442-382)

Textbooks

Math for Welders. Publisher: Goodheart-Wilcox. Year: 2013. ISBN: 978-1-60525-900-0.

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 angular measurement problems

Assessment Strategies

- 1.1. by completing the unit test
- 1.2. on written text assignments

Criteria

You will know you are successful when:

- 1.1. with or without the use of a calculator.
- 1.2. you receive a passing score of at least 70 percent on the written test.
- 1.3. you must have a grade of 100% on text assignments.

Learning Objectives

- 1.a. Express angular measurements in correct units.
- 1.b. Add and Subtract angular measurements.
- 1.c. Multiply and divide angular measurements.
- 1.d. Construct angles using a protractor.

2. Solve simple geometric shapes for area and perimeter

Assessment Strategies

- 2.1. by completing the unit test
- 2.2. on written text assignments

Criteria

You will know you are successful when:

- 2.1. with or without the use of a calculator.
- 2.2. you receive a passing score of at least 70 percent on the written test.
- 2.3. you must have a grade of 100% on text assignments.

Learning Objectives

- 2.a. Solve perimeter of four sided shapes.
- 2.b. Solve area of four side shapes.
- 2.c. Solve perimeter of triangles.
- 2.d. Solve area of triangles.
- 2.e. Solve perimeter, "circumference", of circular shapes.
- 2.f. Solve area of circular shapes.

3. Solve simple geometric shapes for volume, weight and bend allowances

Assessment Strategies

- 3.1. by completing the unit test
- 3.2. on written text assignments

Criteria

You will know you are successful when:

- 3.1. with or without the use of a calculator.
- 3.2. you receive a passing score of at least 70 percent on the written test.
- 3.3. you must have a grade of 100% on text assignments.

Learning Objectives

- 3.a. Solve volume measurements for solid figures including: rectangles, parallelograms, trapazoids, triangles, cylinders, half circles, and semi circular shapes.
- 3.b. Solve weight measurements for standard structural shapes.
- 3.c. Calculate flat stock length for parts with inside and outside corner bends.
- 3.d. Calculate flat stock requirements for bending: full circles, and semi circles.

4. Solve percent problems and convert standard and metric units

Assessment Strategies

- 4.1. by completing the unit test
- 4.2. on written text assignments

Criteria

You will know you are successful when:

- 4.1. with or without the use of a calculator.
- 4.2. you receive a passing score of at least 70 percent on the written test.
- 4.3. you must have a grade of 100% on text assignments.

Learning Objectives

- 4.a. Convert percent to a fraction.
- 4.b. Change percent to a decimal.
- 4.c. Change a fraction to a percent.
- 4.d. Change a decimal to a percent.
- 4.e. Calculate a percent of a number.
- 4.f. Estimate metric lengths.
- 4.g. Convert metric and customary units.
- 4.h. Convert one unit of measure to another.
- 4.i. Convert metric and customary units.
- 4.j. Convert one unit of measure to another.