

CREDIT FOR PRIOR LEARNING BY EXAM STUDY GUIDE

Occupational Math 3 (804-362)

To schedule an exam: contact Greg Mittelsteadt at 920-924-3215 or cpl@morainepark.edu

Text: **Not required for purchase for exam.**

Mathematics for Machine Technology, 6th Edition by Robert D. Smith

(There is a copy of the text on reserve in the Beaver Dam, Fond du Lac, and West Bend campus libraries.)

You will be required to know and use the following from previous courses:

1. Pythagorean Theorem
2. Basic Trigonometric Functions – sine, cosine, tangent
3. Information in Units 44, 46-50 from the above listed textbook

The test will consist of problems like those in:

1. Unit 59
2. Unit 57
3. Units 61 – 63 – the formulas in Unit 63 will be included with the test

- The test will be broken into three parts.
- You may use a scientific calculator on each part.
- The point value of each problem is listed with the problem for a total of 80 points.
- You **must score an 80% on the entire test to satisfactorily pass.**
- Partial credit may be given for some problems where the final answer is incorrect, so it is to your advantage to show work on all problems.
- You should set aside two (2) hours to take the exam.
- The attached information/formula sheet will be provided with the test but no books or notes or allowed.

LEARNING PLAN 1: Law of Sines and Law of Cosines

Competencies

- Determine reference angles for a 360° rotation.
- Determine standard position angles for a given reference angle.
- Find the two angles that have the same sine value, the two angles that have the same cosine value, and the two angles that have the same tangent value in 360° .
- Exchange between rectangular and polar coordinates, without and with the polar-to-rectangular calculator functions.
- Find missing angle measures of oblique triangles using the Law of Sines and the Law of Cosines.
- Find missing side measures of oblique triangles using the Law of Sines and the Law of Cosines.
- Find missing measures in complex applications using the Law of Sines and the Law of Cosines.

LEARNING PLAN 2: Complex Practical Machine Applications

Competencies

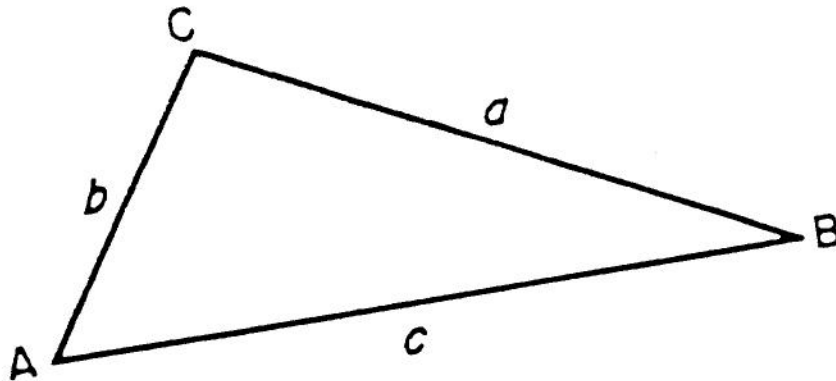
- Project auxiliary lines to create right triangles.
- Find missing lengths in complex applications using right triangle trigonometry, the Pythagorean Theorem, and other geometric relationships.
- Find missing angles in complex applications using right triangle trigonometry and other geometric relationships.

LEARNING PLAN 3: Compound Angles

Competencies

- Compute true lengths and true angles of diagonals of rectangular solids.
- Compute angles of rotation and angles of tilt for rectangular solids and for more complex situations.
- Compute true angles of compound angular edges.
- Use machining formulas to find angles of rotation and angles of tilt when initially given front view and side view angles.

Law of Sines and Law of Cosines



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$$a^2 = b^2 + c^2 - 2bc(\cos A)$$

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$