

MORAINÉ PARK TECHNICAL COLLEGE
Beaver Dam Fond du Lac West Bend

COURSE OUTCOME SUMMARY

COURSE NUMBER: 804-361 DATE LAST REVISED: 4/28/99

COURSE TITLE: Occupational Math 2

TOTAL COURSE HOURS: 54

LECTURE HOURS: 6

LAB HOURS:

CLINICAL HOURS:

FIELD HOURS:

CREDITS: 2

PREREQUISITES: 804-360 Occupational Math 1

CONTACT PERSON: Katie Soles PHONE: X

COURSE DESCRIPTION:

Advances the concepts and applications presented in Industrial Trades Math 1. Special applications in algebra, geometry and trigonometry are emphasized. Appropriate math concepts are presented which are related to the occupation in which the operations will be employed.

COURSE GOALS:

Demonstrate proficiency in solving shop-related quantitative problems required of employees in the machine tool industry.

COMPETENCIES:

Perform geometric operations involving various angles.

Apply trigonometric functions to solve right triangle applications.

Calculate arcs and angles of circles.

Compute simple and compound gearing and pulley applications.

Make conversions within the metric system and between it and the English system.

Read and interpret graphs.

Use a scientific calculator to interpolate and extrapolate trigonometric functions.

CREDIT FOR PRIOR LEARNING BY EXAM STUDY GUIDE

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

Occupational Math 2 (804-361)

Text: **Not required to be purchased 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.)

Course content:

Unit 23	Tolerance, Clearance and Interference
Unit 41	Applications of Formulas to Cutting Speed, Revolutions per Minute and Cutting Time
Unit 44	Introduction to Geometric Figures
Unit 46	Angles
Unit 47	Introduction to Triangles
Unit 49	Introduction to Circles
Unit 53	Introduction to Trigonometric Functions
Unit 55	Basic Calculations of Angles and Sides of Right Triangles
Unit 56	Simple Practical Machine Applications

The most direct preparation for the test would be to work odd-numbered problems from the book. You will be able to check your answers in the back of the book.

You may use a scientific calculator on the test.

- The point value of each problem is listed with the problem for a total of 100 points.
- You **must score an 80% on the entire test to satisfactorily pass.**
- Partial credit may be given for some problems when the final answer is incorrect, so it is to your advantage to show as much work as possible.
- You should set aside two (2) hours to take the exam
- The attached information/formula sheets will be provided with the test but no books or notes or allowed.

For Unit 41-Cutting Speed Formulas

$$C = \frac{\pi D N}{12}$$

$$C = \frac{\pi D N}{1000}$$

$$N = \frac{12 C}{\pi D}$$

$$N = \frac{1000 C}{\pi D}$$

$$T = \frac{L}{F N}$$

C = cutting speed measured in ft/min or m/min

D = diameter measured in inches or mm

N = revolutions per min measured in rpm

T = time measured in minutes

L = length measured in inches or mm

F = feed speed measured in in/rev or mm/rev

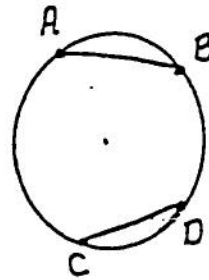
For Unit 48-Formula for the Sum of Interior Angles in a Polygon

$$(n - 2) \times 180^\circ$$

n = number of sides

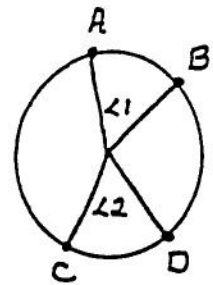
- (11) Equal chords cut off equal arcs.

If $AB = CD$, then $\widehat{AB} = \widehat{CD}$.



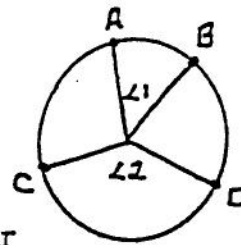
- (12) Equal central angles cut off equal arcs.

If $\angle 1 = \angle 2$, then $\widehat{AB} = \widehat{CD}$.



- (13) Central angles and their arcs are proportional.

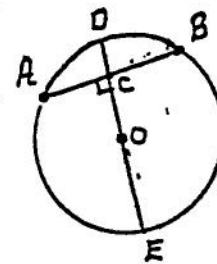
$$\frac{\angle 1}{\angle 2} = \frac{\widehat{AB}}{\widehat{CD}}$$



- (14) A line from the center of a circle perpendicular to a chord bisects the chord and its arc.

The perpendicular bisector of a chord passes through the center of a circle.

If diameter DE is \perp to chord AB , then $AC = BC$ and $\widehat{AD} = \widehat{BD}$.

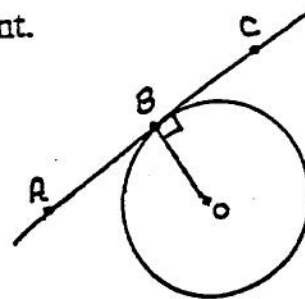


- (15) A line perpendicular to a radius is a tangent.

A tangent is perpendicular to a radius at the point of tangency.

AC is a tangent line.

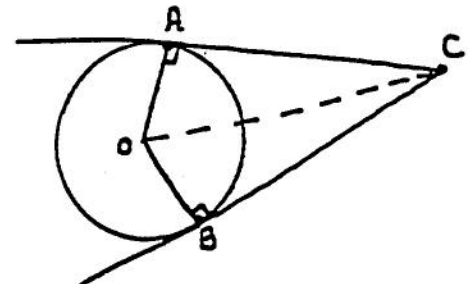
B is a tangent point.



- (16) Two tangents drawn from an exterior point are equal. The angle at the exterior point is bisected by a line from that point to the center of the circle.

$$AC = BC.$$

$$\angle ACO = \angle BCO.$$



- (17) The product of segments created by intersecting chords is equal for each chord.

$$AE \times BE = CE \times DE.$$

