

Occupational Math - Business
Southwest Wisconsin Technical College

Information

Project Title: Occupational Math - Business
Developer(s): Pete Esser & John Pluemer
Development Date: 03/30/2007
Revised By: John Pluemer
Revision Date: 3/30/2007
Course Number: 31-804-314
Division: General Education
Instructional Area: Mathematics
Instructional Level: One-Year Technical Diploma
Potential Hours of Instruction: 18
Total Credits: 1

Instruction Type	Periods	Outside	
		Hours	Credits
Classroom Presentation	18	0	1

Target Population

This course is designed to provide foundation math skills for students entering business programs

Course Description

Students taking Occupational Math - Business organize data and represent data in graphical form. Students use graphs and statistical tools to represent and analyze data. They analyze various financial situations. Students also perform basic algebraic operations. They solve linear equations and rearrange algebraic formulas. In each topic area, students solve application problems.

Course Prerequisites

Occupational Math

Textbooks

Occupational Math - Business

Author: Peter C Esser
Publisher: Lulu.com

Supplies

Scientific Calculator

Performance Expectations

Goals

1. Organize data.
2. Represent data in graphical form.
3. Analyze data using statistical tools.
4. Analyze purchasing situations.
5. Analyze saving situations.
6. Analyze loan situations.
7. Perform basic algebraic operations
8. Solve linear equations

1. **Organize data.**

Linked Core Abilities

Communicate clearly

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner identifies/selects relevant raw data that should be used to accomplish a given task.
- o student-designed table presents relevant data in a legible format.
- o table is correctly labeled.
- o learner can accurately read data from an already-created graph.

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o when student analyzes existing tables and graphs.

Learning Objectives

- a. Gather or select raw data to be used to accomplish desired task.
- b. Select from the given raw data that will be relevant to accomplish desired task.
- c. Sketch a preliminary "skeleton" table(s) to decide if the format will present the data in an easy-to-read format.
- d. Create a final table based on the most effective format using the selected data.

2. Represent data in graphical form.

Linked Core Abilities

Communicate clearly

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner selects the most appropriate graphical format (circle graph, bar graph, line graph) for the given data.
- o graph of data is designed with appropriate labeling, titles, scales (both horizontal & vertical scales).
- o graph is legible (especially line graphs and bar graphs).

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o by creating table, circle, bar, and line graphs

Learning Objectives

- a. Identify the characteristics and accepted formats for circle, bar, and line graphs.
- b. Describe the most appropriate use for a given graph style (circle graphs, bar graphs, line graphs).
- c. Determine the purpose of an-already-created graph.
- d. Read data from a created graph.
- e. Determine the appropriate choice(s) of graph style for a given table of data.
- f. Create graph using computer spreadsheet for a given table of data.

3. Analyze data using statistical tools.

Linked Core Abilities

Communicate clearly

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner selects the best measure of central tendency (mean, median, mode) to accurately represent a given group of data.
- o learner selects the best measure of variability (range, standard deviation) to accurately represent a given group of data.
- o learner accurately computes the above-listed statistical measurements with 100% accuracy.
- o learner accurately completes SPC chart

- o learner accurately determines correlation of data

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o through completion of a chapter test.

Learning Objectives

- Define measures of central tendency: mean, median, mode.
- Determine, for a given situation, which measure of central tendency is most appropriate.
- Compute measures of central tendency for a given group of data.
- Define measures of dispersion: range, standard deviation.
- Determine for a given situation, which measure of dispersion is most appropriate.
- Compute measures of dispersion for a given group of data.
- Analyze a set of data by computing measures of central tendency and dispersion.
- Define the characteristics of a normal distribution.
- Determine 1 and 2 standard deviation intervals from a given normal distribution.
- Use basic statistical process control charting
- Analyze data to assess correlation

4. Analyze purchasing situations.

Linked Core Abilities

Solve problems

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner determine which product size/pricing option presents the best value.
- o learner accurately fills out a catalog order form. Correct items/quantity/prices and Grand Total.

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o
- o through a chapter test.

Learning Objectives

- Determine for a given situation which product has the cheapest unit pricing.
- Determine the correct amount to pay for a completed invoice by interpreting the */10 n/30 (or similar) format.
- Determine the grand total for a given list of items taking in to account product discounts, order discounts, shipping/handling charges.
- Complete an order form by locating products to be purchased from a catalog.

5. Analyze saving situations.

Linked Core Abilities

Solve problems

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner computes interest earned in a simple interest savings scenario.
- o learner computes interest earned in a compound interest savings situation.
- o learner distinguishes differences among savings options.
- o learner computes money saved on taxes by using an IRA.

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o through completion a chapter test.

Learning Objectives

- Determine how given information about a simple interest loan scenario fits into the simple

interest formula.

- b. Compute the interest earned in a simple interest situation.
- c. Define the fundamental difference between simple and compound interest accounts.
- d. Define the purpose of each variable in the compound interest formula.
- e. Compute the amount of interest earned in a given situation where compound interest is used.
- f. Compare and contrast different money saving options.

6. Analyze loan situations.

Linked Core Abilities

Solve problems

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner computes monthly payments for a given loan.
- o learner compares among different loan options to decide which is the more economical choice.
- o learner reads various information from a pre-made amortization schedule.
- o learner computes the initial and a few subsequent lines for an amortization schedule
- o learner uses the full extra principle payment strategy to reduce the amount of interest paid on a loan.

Conditions for Assessment - *Conditions - Competence will be demonstrated:*

- o through quiz and chapter test.

Learning Objectives

- a. Define the elements of a basic loan.
- b. List strategies that help reduce the amount of money paid on loans.
- c. Use loan table, furnished in the text, to determine monthly payments for a loan.
- d. Determine the cheapest loan option by comparing total amount of interest paid for each of the given choices.
- e. Select specified information from a pre-made amortization schedule.
- f. Use $I=PRT$ formula to generate the first several lines of an amortization schedule.
- g. Analyze the full extra principle payment strategy.

7. Perform basic algebraic operations

Linked Core Abilities

Work productively

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner chooses a valid method for solving a problem
- o learner shows the steps used to solve the problem
- o Answer is within 1% of actual value
- o Answer is stated with appropriate precision

Conditions for Assessment - *Conditions for assessment:*

- o using a scientific calculator
- o through completion of a unit test

Learning Objectives

- a. Perform arithmetic operations on signed numbers
- b. Use order of operations
- c. Evaluate numeric expressions involving powers and roots
- d. Evaluate algebraic expressions
- e. Evaluate formulas

8. Solve linear equations

Linked Core Abilities

Work productively

Criteria - *Criteria - Performance will be satisfactory when:*

- o learner chooses a valid method for solving a problem
- o learner writes an equation representing the problem
- o learner manipulates an existing formula to solve for an unknown
- o learner shows the steps used to solve the problem
- o Answer includes correct units of measure
- o Answer is within 1% of actual value
- o Answer is stated with appropriate precision

Conditions for Assessment - *Conditions for assessment:*

- o using a scientific calculator
- o through completion of a unit test

Learning Objectives

- a. Combine like terms
- b. Multiply algebraic expressions
- c. Solve linear equations with one variable
- d. Rearrange a formula to solve for an indicated first degree variable
- e. Translate phrases into equations using variables to represent unknowns
- f. Apply skills to a technical problem
- g. Rearrange algebraic formulas