



Lakeshore Technical College

10-804-123 Math with Business Applications - Online

Course Outcome Summary

Course Information

Description	This course integrates algebraic concepts, proportions, percents, simple interest, compound interest, annuities, and basic statistics with business/consumer scenarios. It also applies math concepts to the purchasing/buying and selling processes.
Total Credits	3
Total Hours	54

Types of Instruction

Instruction Type	Credits/Hours
Lecture	3/54

Pre/Corequisites

Prerequisite A grade of C or better in 10-834-109 Pre-Algebra or an Accuplacer score of 79 or greater.

Textbooks

Business Mathematics 13th edition with MyMathLab online software ISBN: 9780133906226
Clendenen, Salzman
Pearson Publishing

(The complete textbook is available in MyMathLab software, so the physical textbook is not required. You can purchase only the online software access.)

MyMathLab Access Code only: ISBN: 9780321199911

Learner Supplies

Scientific Calculator TI30XIIS

Access to a computer with internet connectivity

Core Abilities

1. Demonstrate critical thinking

Criteria

- 1.1. Learner determines issues that merit action
- 1.2. Learner takes initiative in the problem solving processes
- 1.3. Learner makes decisions considering alternatives and consequences

- 1.4. Learner refines action plans based on evaluation of feedback
- 1.5. Learner identifies interdependencies of world issues & events

2. Use mathematics effectively

Criteria

- 2.1. Learner solves real world problems using mathematics
- 2.2. Learner measures accurately
- 2.3. Learner analyzes graphical information
- 2.4. Learner demonstrates an understanding of world measurements and foreign currency exchange

Course Competencies

1. Solve scenarios using basic math computations

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 1.1. Scenario Response
- 1.2. Math Assessment with Consumer/Business Applications
- 1.3. In a proctored testing situation or classroom situation.
- 1.4. Discussion board posting

Criteria

Your performance will be successful when:

- 1.1. you use real numbers and basic operations to solve business/consumer problems
- 1.2. you answer with the precision of terms appropriate to the problem
- 1.3. you answer in the correct units of measure and labels

Learning Objectives

- 1.a. Compute (add, subtract, multiply, divide) using whole numbers.
- 1.b. Identify key words in a problem that determine whether addition, subtraction, multiplication, or division should be used to solve the problem
- 1.c. Solve applied business scenarios using whole numbers
- 1.d. Round numbers to the appropriate place value.
- 1.e. Read and write decimal numbers.
- 1.f. Compute (add, subtract, multiply and divide) using decimals.
- 1.g. Solve applied business scenarios using decimals.
- 1.h. Recognize types of fractions.
- 1.i. Compute (add, subtract, multiply and divide) using fractions and mixed numbers.
- 1.j. Convert mixed numbers to improper fractions.
- 1.k. Convert improper fractions to mixed numbers.
- 1.l. Use divisibility rules to reduce fractions.
- 1.m. Convert between fractions and decimals
- 1.n. Solve business scenarios using fractions.
- 1.o. Use a scientific calculator to do calculations with whole numbers, fractions, decimals and exponents.

2. Solve scenarios using algebraic concepts

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 2.1. Math Assessment with Consumer/Business Applications
- 2.2. Using a calculator
- 2.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 2.1. you answer with the precision of terms appropriate to the problem
- 2.2. you answer in the correct units of measure and labels
- 2.3. you identify the unknown with the appropriate variable.
- 2.4. you evaluate formulas for given values of variables.
- 2.5. you perform basic operations with signed numbers
- 2.6. you use algebra to solve business/consumer scenarios.
- 2.7. you employ the order of operations to simplify an expression
- 2.8. you perform basic operations with signed numbers.
- 2.9. you rearrange formulas to solve for a specific variable
- 2.10. you solve linear equations
- 2.11. you solve proportions.
- 2.12. you write the equation that relates the known information with the appropriate variable.
- 2.13. you obtain an 78% or better on the online or paper test.

Learning Objectives

- 2.a. Identify the unknown with the appropriate variable.
- 2.b. Solve scenarios using algebraic concepts
- 2.c. Write the equation that relates the known information with the appropriate variable.
- 2.d. Evaluate formulas for given value of the variables
- 2.e. Perform basic operations with signed numbers
- 2.f. Employ the order of operations to simplify an expression
- 2.g. Rearrange formulas to solve for a specific variable
- 2.h. Solve linear equations
- 2.i. Solve proportions
- 2.j. Use algebra to solve business/consumer scenarios

3. Solve percentage scenarios

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 3.1. Math Assessment with Consumer/Business Applications
- 3.2. Using a calculator
- 3.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 3.1. you convert between percents, decimals, fractions
- 3.2. you identify the base, rate and amount in problem
- 3.3. you compute the base, rate, or amount
- 3.4. you use percentages to solve business/consumer scenarios
- 3.5. you solve percent increase/decrease scenarios
- 3.6. you answer with the precision of terms appropriate to the problem
- 3.7. you answer in the correct units of measure and labels

Learning Objectives

- 3.a. Convert a whole number, fraction or decimal to a percent.
- 3.b. Convert a percent to a fraction or decimal equivalent.
- 3.c. Identify the rate, base and portion in percent problems.
- 3.d. Solve problems using the basic percent formula $R \times B = P$.
- 3.e. Solve the basic percent formula for the rate or the base.
- 3.f. Recognize the terms associated with base, rate and part.
- 3.g. Calculate sales tax and commissions.
- 3.h. Calculate the amount of an investment if interest payment and rate of interest are known.
- 3.i. Solve for the rate in application problems.
- 3.j. Solve for the base in applications problems.
- 3.k. Identify percent increase or decrease problems.
- 3.l. Calculate the amount of increase or decrease in business/consumer scenarios.
- 3.m. Determine the rate of increase or decrease in business/consumer scenarios.
- 3.n. Determine the new value directly after a percent change in business/consumer scenarios.

- 3.o. Determine the original amount before a percent change in business/consumer scenarios.
- 3.p. Analyze business/consumer scenarios that use percents.

4. Apply math concepts to the purchasing/buying process

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 4.1. Math Assessment with Consumer/Business Applications
- 4.2. Using a calculator.
- 4.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 4.1. you calculate trade discounts
- 4.2. you calculate net cost
- 4.3. you differentiate between single and series discounts
- 4.4. you express a series discount as a single discount equivalent
- 4.5. you determine cash discount period
- 4.6. you compute a cash discount
- 4.7. you solve business/consumer scenarios involving the purchasing/buying process
- 4.8. you answer in the correct units of measure and labels
- 4.9. you answer with the precision of terms appropriate to the problem

Learning Objectives

- 4.a. Define common shipping terms (COD, FOB shipping point, FOB destination, FAS).
- 4.b. Calculate trade discounts.
- 4.c. Complete an invoice.
- 4.d. Differentiate between single and series discounts (also called chain discounts).
- 4.e. Explain the purpose of trade discounts.
- 4.f. Interpret series discounts abbreviations.
- 4.g. Use complements to calculate the net cost equivalent.
- 4.h. Calculate discounts using net cost equivalent
- 4.i. Express a series discount as an equivalent single discount.
- 4.j. Calculate the list price given the series discount and the net cost.
- 4.k. Differentiate between trade discounts and cash discounts.
- 4.l. Calculate net cost after trade and cash discounts are taken.
- 4.m. Determine whether cash discounts are earned.
- 4.n. Determine the cash discount date and net payment date of an invoice using any of the following dating methods: ordinary dating, postdating, End of Month dating (EOM), proximo dating, Receipt of Goods (ROG) dating, and/or extra dating.
- 4.o. Solve cash discount problems using any of the following dating methods: ordinary dating, postdating, End of Month dating (EOM), proximo dating, Receipt of Goods (ROG) dating, and/or extra dating.
- 4.p. Calculate credit for partial payment of an invoice and the balance due.

5. Apply math concepts to the selling process

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 5.1. Math Assessment with Consumer/Business Applications
- 5.2. Using a calculator.
- 5.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 5.1. you distinguish between markup based on cost and markup based on selling price
- 5.2. you compute selling price, cost or markup based on cost

- 5.3. you compute selling price, cost or markup based on selling price
- 5.4. you compute sale price, markdown, or original price
- 5.5. you solve business/consumer scenarios involving the selling process
- 5.6. you answer in the correct units of measure and labels
- 5.7. you answer with the precision of terms appropriate to the problem

Learning Objectives

- 5.a. Recognize the terms used in selling: cost, selling price, markup, margin, gross profit, operating expenses or overhead, net profit.
- 5.b. Compute the cost, markup or selling price using the basic formula for markup: $M = S - C$.
- 5.c. Compute the cost, markup, selling price and/or percent of markup when cost is the base.
- 5.d. Compute the cost, markup, selling price and/or percent of markup when selling price is the base.
- 5.e. Compare the percent markup based on cost and the percent markup based on selling price.
- 5.f. Change percent markup based on selling price to percent markup based on cost using the appropriate formula.
- 5.g. Change percent markup based on cost to percent markup based on selling price using the appropriate formula.
- 5.h. Apply percent concepts to markup problems.
- 5.i. Price perishables in order to cover spoilage loss and achieve a desired profit.
- 5.j. Calculate the amount of markdown, the new price and the markdown percent.
- 5.k. Compute final selling price after a series of markups and markdowns.
- 5.l. Calculate the original price if the percent markdown and the reduced price is given.
- 5.m. Define terms associated with loss: breakeven point, reduced net profit, operating loss, and absolute loss.
- 5.n. Calculate the break even point, operating loss and absolute loss.

6. Determine the value of inventory.

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 6.1. Math Assessment with Consumer/Business Applications
- 6.2. Using a calculator.
- 6.3. In a proctored testing situation or classroom situation.

Learning Objectives

- 6.a. Calculate the cost of ending inventory using the specific identification method.
- 6.b. Calculate the cost of ending inventory using the weighted-average inventory method.
- 6.c. Value inventory using the FIFO method.
- 6.d. Value inventory using the LIFO method.
- 6.e. Estimate inventory value using the retail method.
- 6.f. Determine average inventory.
- 6.g. Calculate inventory turnover.

7. Solve simple interest scenarios

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 7.1. Math Assessment with Consumer/Business Applications
- 7.2. Using a calculator
- 7.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 7.1. you identify the characteristics of simple interest
- 7.2. you compute principal, rate, or time using simple interest formula
- 7.3. you determine due date of a promissory note
- 7.4. you compute maturity value, principal, rate, and time using maturity value formula

- 7.5. you determine present and future values
- 7.6. you use simple interest to solve business/consumer scenarios
- 7.7. you answer with the precision of terms appropriate to the problem
- 7.8. you answer in the correct units of measure and labels

Learning Objectives

- 7.a. Identify the characteristics of simple interest.
- 7.b. Calculate simple interest and maturity value when time is measured in months or years.
- 7.c. Calculate simple interest and maturity value when time is measured in days using exact interest and ordinary interest.
- 7.d. Rearrange the simple interest formula for principal, rate or time.
- 7.e. Compute principal, rate, or time using the simple interest formula
- 7.f. Calculate maturity value, principal, rate or time using maturity value formula.
- 7.g. Determine the due date of a promissory note.
- 7.h. Calculate present value and future value using the maturity value formula for simple interest notes.
- 7.i. Differentiate between simple interest notes and simple discount notes.
- 7.j. Calculate the bank discount and proceeds for simple discount notes.
- 7.k. Calculate the effective rate for discount notes and Treasury Bills.
- 7.l. Compute the purchase price of a Treasury Bill.
- 7.m. Calculate the maturity value, bank discount, and proceeds for a simple interest note that was discounted before maturity.

8. Solve compound interest scenarios

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 8.1. Math Assessment with Consumer/Business Applications
- 8.2. Using a calculator
- 8.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 8.1. you identify the characteristics of compound interest
- 8.2. you differentiate between simple and compound interest
- 8.3. you determine the number of periods
- 8.4. you determine the rate per period
- 8.5. you compute compound interest and compound amount
- 8.6. you determine present and future values
- 8.7. you use compound interest formulas to solve business/consumer scenarios
- 8.8. you determine the effective rate of interest
- 8.9. you answer with the precision of terms appropriate to the problem
- 8.10. you answer in the correct units of measure and labels

Learning Objectives

- 8.a. Compare simple interest with compound interest.
- 8.b. Determine the number of compounding periods and interest rate per period.
- 8.c. Calculate manually and by table lookup the compound amount.
- 8.d. Use the compound interest formula to find compound amount (also known as future value or maturity value).
- 8.e. Define passbook, savings, interest bearing accounts, time deposit accounts, inflation, consumer price index, future value, and present value.
- 8.f. Calculate interest compounded daily using the table and the formula.
- 8.g. Calculate interest for time deposit accounts.
- 8.h. Examine the effect of inflation on income.
- 8.i. Analyze the role of government related to inflation.
- 8.j. Calculate the present value of an account by table lookup.
- 8.k. Estimate the future value of a business using future value and present value calculations.

9. Solve annuity scenarios

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 9.1. Math Assessment with Consumer/Business Applications
- 9.2. Using a calculator.
- 9.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 9.1. you identify the characteristics of an annuity
- 9.2. you differentiate between the present and future value of an annuity
- 9.3. you calculate the amount of a sinking fund payment.
- 9.4. you calculate the present and/or future values of an annuity
- 9.5. you apply annuity calculations to business/consumer scenarios
- 9.6. you answer with the precision of terms appropriate to the problem
- 9.7. you answer in the correct units of measure and labels

Learning Objectives

- 9.a. Differentiate between compound interest on an annuity and compound interest calculated on a lump sum.
- 9.b. Define ordinary annuity, annuity due, compound amount, future value, present value of an ordinary annuity and sinking fund.
- 9.c. Calculate manually & by table lookup the future value of an ordinary annuity and an annuity due.
- 9.d. Calculate the present value of an ordinary annuity by table lookup.
- 9.e. Determine the minimum payment necessary each period for a sinking fund by table lookup.
- 9.f. Explain the different types of retirement accounts.

10. Interpret basic statistics

Linked Core Abilities

Demonstrate critical thinking
Use mathematics effectively

Assessment Strategies

- 10.1. Math Assessment with Consumer/Business Applications
- 10.2. Using a calculator.
- 10.3. In a proctored testing situation or classroom situation.

Criteria

Your performance will be successful when:

- 10.1. you interpret charted data
- 10.2. you construct charts/graphs
- 10.3. you determine the appropriate chart given the raw data
- 10.4. you calculate measures of central tendencies
- 10.5. you interpret measures of dispersion
- 10.6. you determine the probability of an event involving normally distributed data
- 10.7. you use statistics to solve business/consumer scenarios
- 10.8. you answer with the precision of terms appropriate to the problem
- 10.9. you answer in the correct units of measure and labels

Learning Objectives

- 10.a. Calculate the mean, weighted mean, median, and mode of a set of data.
- 10.b. Construct a frequency distribution chart.
- 10.c. Analyze a frequency distribution chart.
- 10.d. Prepare bar, line and circle graphs.
- 10.e. Interpret bar, line or circle graph
- 10.f. Determine the percent of data which would fall within a given range of values for a normal distribution.
- 10.g. Calculate standard deviation for a set of data.