

EASTERN ARIZONA COLLEGE

Business Mathematical Calculations

Course Design
2018-2019

Course Information

Division Business
Course Number BUS 111
Title Business Mathematical Calculations
Credits 3
Developed by Derek Rich
Lecture/Lab Ratio 3 Lecture/0 Lab

Transfer Status

ASU	NAU	UA
Elective Credit	Elective Credit	Non Transferable

Activity Course No
CIP Code 52.0100
Assessment Mode Final Exam (50 Questions/100 Points)
Semester Taught Fall and Spring
GE Category AAS degree only
Separate Lab No
Awareness Course No
Intensive Writing Course No
Diversity and Inclusion Course No

Prerequisites

None

Educational Value

Gives the general student practical knowledge in the area of business math. Provides the business student background in the mathematics of the business world which will tie into other business courses. Also, builds confidence in nontraditional returning students as they complete the competencies.

Description

Instruction and practice in fundamental business operations. Begins with basic mathematical operations and then continues through payroll, banking, interest, income tax, and other areas of business mathematics.

Supplies

None

Competencies and Performance Standards

1. Calculate basic math problems without the use of a calculator.

Learning objectives

What you will learn as you master the competency:

- a. Add whole numbers.
- b. Subtract whole numbers.
- c. Multiply whole numbers.
- d. Divide whole numbers.
- e. Calculate decimal problems.

Performance Standards

Competence will be demonstrated:

- o on homework with use of the textbook without the use of a calculator
- o in class on a 100 -point exam using the textbook without the use of a calculator

Criteria - Performance will be satisfactory when:

- o learner is able to add whole numbers
- o learner is able to subtract whole numbers
- o learner is able to multiply whole numbers
- o learner is able to divide whole numbers
- o learner is able to calculate decimal problems

2. Calculate the basics of fractions without the use of a calculator.

Learning objectives

What you will learn as you master the competency:

- a. Add fractions.
- b. Subtract fractions.
- c. Multiply fractions.
- d. Divide fractions.
- e. Convert decimals to fractions and fractions to decimals.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook without the use of a calculator
- o In class on a 100-point exam using the textbook without the use of a calculator

Criteria - Performance will be satisfactory when:

- o learner is able to add fractions
- o learner is able to subtract fractions
- o learner is able to multiply fractions
- o learner is able to divide fractions
- o learner is able to convert decimals to fractions and fractions to decimals

3. Calculate the basics of percentages.

Learning objectives

What you will learn as you master the competency:

- a. Write decimals and fractions as percents.
- b. Calculate the part in a percentage problem.
- c. Calculate the base in percentage problems.
- d. Calculate the rate in a percentage problem.
- e. Calculate the base when given a rate of increase from the part.
- f. Calculate the base when given a rate of decrease from the part.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook without the use of a calculator
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to write decimals and fractions as a percentage
- o learner is able to calculate the part in a percentage problem
- o learner is able to calculate the base in a percentage problem
- o learner is able to calculate the rate in a percentage problem
- o learner is able to calculate the base when given a rate of increase from the part
- o learner is able to calculate the base when given a rate of decrease from the part

4. Calculate the reconciliation of a checking account.

Learning objectives

What you will learn as you master the competency:

- a. Explain the meaning of outstanding checks and outstanding deposits.
- b. Explain the meaning of banking services charges and interest on checking accounts.
- c. Calculate the adjusted bank balance and adjusted checkbook balance.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to explain the meaning of outstanding checks and outstanding deposits
- o learner is able to explain the meaning of banking service charges and interest on checking accounts
- o learner is able to calculate the adjusted bank balance and adjusted checkbook balance

5. Calculate a simple payroll including gross earnings, taxes, and other deductions.

Learning objectives

What you will learn as you master the competency:

- a. Calculate gross earnings with an hourly rate including overtime based on a forty-hour week.
- b. Calculate gross earnings using a commission rate.

- c. Calculate social security and Medicare withholding.
- d. Calculate income tax withholding.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to calculate gross earnings with an hourly rate including overtime based on a forty-hour week
- o learner is able to calculate gross earnings using a commission rate
- o learner is able to calculate social security and Medicare withholding
- o learner is able to calculate income tax withholding

6. Calculate the basics of simple interest.

Learning objectives

What you will learn as you master the competency:

- a. Calculate simple interest given principal, rate, and time.
- b. Calculate principal given interest, rate, and time.
- c. Calculate rate given principal, interest, and time.
- d. Calculate time given principal, interest, and rate.
- e. Calculate the discount amount and proceeds of a simple discount note.
- f. Calculate the net proceeds when discounting a note before maturity.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to calculate simple interest given principal, rate, and time
- o learner is able to calculate principal given interest, rate, and time
- o learner is able to calculate rate given principal, interest, and time
- o learner is able to calculate time given principal, interest, and rate
- o learner is able to calculate the discount amount and proceeds of a simple discount note
- o learner is able to calculate the net proceeds when discounting a note before maturity

7. Calculate the basics of compound interest.

Learning objectives

What you will learn as you master the competency:

- a. Calculate compound interest.
- b. Calculate the compounded daily interest in a savings account.
- c. Calculate the present value of a compounded interest account.

Performance Standards

Competence will be demonstrated:

- on homework with the use of the textbook
- in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- learner is able to calculate compound interest
- learner is able to calculate the compounded daily interest in a savings account
- learner is able to calculate the present value of a compounded interest account

8. Calculate annuities and sinking funds.

Learning objectives

What you will learn as you master the competency:

- a. Calculate an annuity.
- b. Calculate the present value of an annuity.
- c. Calculate a sinking fund payment.

Performance Standards

Competence will be demonstrated:

- on homework with the use of the textbook
- In class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- learner is able to calculate an annuity
- learner is able to calculate the present value of an annuity
- learner is able to calculate a sinking fund payment

9. Calculate stock value and bond value.

Learning objectives

What you will learn as you master the competency:

- a. Read stock and bond tables.
- b. Calculate the value of stock purchase including broker's fees.
- c. Calculate the value of bond purchases including broker's fees.

Performance Standards

Competence will be demonstrated:

- on homework with use of the textbook
- in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- learner is able to read stock and bond table
- learner is able to calculate the value of stock purchase including broker's fees
- learner is able to calculate the value of bond purchases including broker's fees

10. Calculate business and consumer loans.

Learning objectives

What you will learn as you master the competency:

- a. Calculate the unpaid balance on a revolving charge account at the end of the month when given the interest rate, purchases, returns, and payments.
- b. Calculate the annual percentage rate using the formula.
- c. Calculate the balance due on a loan when an early partial payment is made using the United State Rule.
- d. Calculate the payment necessary to amortize a loan.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to calculate the unpaid balance on a revolving charge account at the end of the month when given the interest rate, purchases, returns, and payments
- o learner is able to calculate the annual percentage rate using the formula
- o learner is able to calculate the balance due on a loan when an early partial payment is made using the United States Rule
- o learner is able to calculate the payment necessary to amortize a loan

11. Calculate property tax and personal income tax.

Learning objectives

What you will learn as you master the competency:

- a. Calculate the assessed valuation of a piece of property.
- b. Calculate the property tax using the assessed valuation on a piece of property.
- c. Calculate the adjusted gross income for a given individual.
- d. Calculate the taxable income and tax owed for a given individual.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to calculate the assessed valuation of a piece of property
- o learner is able to calculate the property tax using the assessed valuation on a piece of property
- o learner is able to calculate the adjusted gross income on a given individual
- o learner is able to calculate the taxable income and tax owed for a given individual

12. Calculate fire, motor vehicle, and life insurance premiums.

Learning objectives

What you will learn as you master the competency:

- a. Calculate the fire insurance premium on a given building.

- b. Calculate the motor vehicle insurance premium for a given individual.
- c. Calculate the life insurance premium for a given individual.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to calculate the fire insurance premium for a given building
- o learner is able to calculate the motor vehicle insurance premium for a given individual
- o learner is able to calculate the life insurance premium for a given individual

13. Calculate the five basic types of depreciation.

Learning objectives

What you will learn as you master the competency:

- a. Calculate depreciation using the straight-line method.
- b. Calculate depreciation using the declining-balance method.
- c. Calculate depreciation using the sum-of-the-year's-digits method.
- d. Calculate depreciation using the units-of-production method.
- e. Calculate depreciation using the modified accelerated cost recovery system.

Performance Standards

Competence will be demonstrated:

- o on homework with the use of the textbook
- o in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- o learner is able to complete an income statement showing the annual net income after taxes
- o learner is able to complete a vertical analysis of an income statement
- o learner is able to complete a horizontal analysis of an income statement
- o learner is able to complete a balance sheet showing assets equal to liabilities plus owner's equity
- o learner is able to calculate the current ratio
- o learner is able to calculate the acid-test ratio

14. Complete and analyze a balance sheet and income statement.

Learning objectives

What you will learn as you master the competency:

- a. Complete an income statement showing the annual net income after taxes.
- b. Complete a vertical analysis of an income statement.
- c. Complete a horizontal analysis of an income statement.
- d. Complete a balance sheet showing assets equal to liabilities plus owner's equity.
- e. Calculate the current ratio.
- f. Calculate the acid-test ratio.

Performance Standards

Competence will be demonstrated:

- on homework with the use of the textbook
- in class on a 100-point exam using the textbook

Criteria - Performance will be satisfactory when:

- learner is able to complete an income statement showing the annual net income after taxes
- learner is able to complete a vertical analysis of an income statement
- learner is able to complete a horizontal analysis of an income statement
- learner is able to complete a balance sheet showing assets equal to liabilities plus owner's equity
- learner is able to calculate the current ratio
- learner is able to calculate the acid-test ratio

Types of Instruction

Classroom Presentation

Grading Information

Grading Rationale

Pretest (not part of grade)

Exams (45%)

Homework (45%)

Final Exam (10%)

Grading Scale

A 90-100%

B 80-89%

C 70-79%

D 60-69%

F Below 60%