

OCCUPATIONAL MATHEMATICS

OCCUPATIONAL MATHEMATICS I

Major Concepts

Occupational Mathematics I continues the study of: a) Computation: reading, writing, counting, and using whole numbers, decimals, fractions, and percents; b) Financial Management: recognizing and identifying basic financial information; c) Time and Measurement; d) Independent Living; and e) Technology. Students will acquire these skills through hands-on approaches and cooperative learning within the classroom and community. Application of these skills is necessary for independent living and successful employment.

Strands: Computation, Financial Management, Time and Measurement, Independent Living, Technology

Competency Goal 1: The learner will read, write, model, and compute numbers less than 1,000 using relevant and authentic independent living and employment concepts.

Objectives:

- 1.01 Read and write word names for numbers to 1,000
- 1.02 Compare and order numbers less than 1,000
- 1.03 Memorize addition/subtraction facts up to 18
- 1.04 Add 3 single-digit numbers
- 1.05 Model 2 digit addition and subtraction using manipulatives and alternative strategies
- 1.06 Add 2 and 3-digit numbers with and without regrouping
- 1.07 Subtract 2 and 3-digit numbers with and without borrowing
- 1.08 Make reasonable estimates up to 100 objects
- 1.09 Explain solutions to problems using:
 - words
 - pictures
 - numbers
- 1.10 Model and explain multiplication in a variety of ways including:
 - repeated addition
 - skip counting
- 1.11 Memorize or demonstrate the ability to use multiplication fact tables through 10.
- 1.12 Model and explain division in a variety of ways including:
 - sharing equally
 - repeat subtraction
 - its relationship to multiplication
- 1.13 Memorize or demonstrate ability to use basic division facts.
- 1.14 Divide numbers with and without remainders.
- 1.15 Perform one-step problems using division.
- 1.16 Check division problems using multiplication.
- 1.17 Solve meaningful multi-step problems including addition, subtraction, multiplication, and division and a variety of strategies including:
 - diagrams
 - organized lists
 - manipulatives
 - guess and check
 - calculators as appropriate
- 1.18 Model fractions and mixed numbers using:
 - regions and sets
 - describe relationships of parts to whole
- 1.19 Compare and order fractions using models; describe comparisons.
- 1.20 Model equivalent fractions using:
 - manipulatives
 - pictures
- 1.21 Use estimation techniques in determining solutions to problems.
- 1.22 Solve problems by identifying and correcting errors.

Financial Management

Competency Coal 2: The learner will demonstrate an understanding of financial management skills necessary for independent living and employment.

Objectives:

- 2.01 Demonstrate working vocabulary involving financial management.
- 2.02 Identify sources of income.
- 2.03 Identify ways to save money.
- 2.04 Determine the difference between fixed and changing monthly expenses.
- 2.05 Determine the difference between planned and unplanned expenses.
- 2.06 Determine financial information which should be saved.
- 2.07 Identify prices on merchandise.
- 2.08 Distinguish between needs and wants.
- 2.09 Identify and analyze factors to consider when choosing a bank.
- 2.10 Recognize and identify banking terms.
- 2.11 Identify and analyze the advantages and disadvantages of using checking and savings accounts.
- 2.12 Identify and recognize:
 - hourly wage
 - gross pay
 - net pay
 - deductions on a paycheck stub
- 2.13 Solve problems by identifying and correcting errors.

Time and Measurement

Competency Goal 3: The learner will demonstrate an understanding of basic time and measurement skills needed for independent living and employment.

Objectives:

- 3.01 Use calendar language appropriately:
 - seasons
 - months
 - today
 - tomorrow
 - yesterday
- 3.02 Sequence months and use the calendar to solve problems.
- 3.03 Read, write, and tell time using MilitaryTime.
- 3.04 Read, write, and tell time to the nearest hour using:
 - a digital clock
 - an analog clock
- 3.05 Read, write, and tell time to the nearest half-hour using:
 - digital clock
 - analog clock
- 3.06 Read, write, and tell time to the nearest minute using:
 - digital clock
 - analog clock
- 3.07 Solve problems related to time.
- 3.08 Recognize and identify regularly scheduled activities based on time.
- 3.09 Identify measurement tools:
 - ruler
 - yardstick
 - tape measure
 - carpenter's rule
 - meter stick
 - digital tape measure
 - measuring spoons
 - measuring cups
 - scales
 - clock

- timer
 - thermometer
 - thermostat
 - calendar
- 3.10 Identify situations in which one would need to use measuring tools:
- cooking
 - laundry
 - cleaning
- 3.11 Measure length in:
- inches
 - feet
 - yards
 - meters
- 3.12 Measure capacity using:
- cups
 - pints
 - quarts
 - gallons
 - liters
- 3.13 Measure weight using:
- ounces
 - pounds
 - kilograms
- 3.14 Read thermometers and relate temperatures to everyday situations.
- 3.15 Solve problems using measurement concepts and procedures. Explain the solutions.
- 3.16 Describe and identify:
- squares
 - rectangles
 - triangles
 - circles
- 3.17 Model the concept of area and perimeter using concrete materials. Estimate and record results.
- 3.18 Recognize and identify solid figures and identify employment areas where these would be used.
- cubes
 - cylinders
 - prisms

Independent Living

Competency Goal 4: The learner will demonstrate an understanding of mathematics skills needed for independent living.

Objectives:

- 4.01 Identify coins needed to buy items less than \$1.00.
- 4.02 Determine different sets of coins with equivalent values.
- 4.03 Determine the value of a set of coins.
- 4.04 Solve money problems using addition and subtraction skills.
- 4.05 Estimate cost and make change-using coins up to \$1.00.
- 4.06 Determine the value of sets of coins to \$5.00 creating equivalent amounts with different coins and bills.
- 4.07 Estimate and compute the cost of items up to \$5.00, making change up to \$5.00.
- 4.08 Round money amounts for personal expenditures.
- 4.09 Read money amounts involving decimals.
- 4.10 Add and subtract using decimals.
- 4.11 Calculate percent of a number for sales tax.
- 4.12 Distinguish among regular, sale, and clearance prices.
- 4.13 Use and compare unit price to demonstrate best value.
- 4.14 Identify the coins needed for vending machines such as:
- laundromat
 - food and drink machines
 - telephone
 - public copy machine
 - stamp machine

- 4.15 Demonstrate the use of a vending machine.
- 4.16 Compute the cost of a meal, including sub-total, tax and gratuity.
- 4.17 Follow a simple recipe.
- 4.18 Determine the appropriate clothing to be worn based on the outside temperature.
- 4.19 Identify the correct clothing size using measurement skills.
- 4.20 Describe and compare objects by their attributes and order sets of objects.
- 4.21 Sort by one or more attributes describing the rules used.

Technology Skills

Competency Goal 5: The learner will demonstrate the selection and use of a calculator.

Objectives:

- 5.01 Determine the most appropriate calculator for personal use.
- 5.02 Identify, recognize and demonstrate the use of:
 - keys
 - functions
 - decimal placement
- 5.03 Using the calculator solve problems involving:
 - addition
 - subtraction
 - multiplication
 - division
- 5.04 Solve problems by identifying and correcting errors using the calculator.

OCCUPATIONAL MATHEMATICS II

Major Concepts

Occupational Mathematics II continues from Occupational Mathematics I the study of computation and the application of these skills for independent living and successful employment. More emphasis is placed on application and problem solving in the areas of financial management, reading and interpreting schedules, time and measurement and independent living using technology, hands-on approaches and cooperative learning.

Strands: Computation, Financial Management, Time and Measurement, Independent Living, and Maps, Graphs, and Charts.

Competency Goal 1: The learner will compute with whole numbers, decimals and fractions.

Computation

Objectives:

- 1.01 Read and write word names for numbers less than 10,000.
- 1.02 Compare and order numbers less than 10,000.
- 1.03 Review and expand previously introduced computational concepts.
- 1.04 Solve problems using:
 - words
 - pictures
 - numbers
- 1.05 Solve multiplication and division problems.
- 1.06 Use estimation techniques to solve problems with fractions.
- 1.07 Compute with decimals using:
 - addition
 - subtraction
 - multiplication
 - division
- 1.08 Use percent to compute tax and discount.
- 1.09 Apply whole number computation skills to problem solving.
- 1.10 Solve problems using the calculator.

Financial Management

Competency Goal 2: The learner will apply basic skills to financial management problems for independent living and employment.

Objectives:

- 2.01 Identify important sections of bills, statements, and invoices.
- 2.02 Demonstrate the skills involved in paying bills.
- 2.03 Identify methods of paying bills and the advantages of each:
 - cash
 - money order
 - check
- 2.04 Complete a money order.
- 2.05 Determine when to pay bills.
- 2.06 Demonstrate actions to take if unable to pay bills ontime.
- 2.07 Recognize and identify the various sections on a paycheck stub.
- 2.08 Demonstrate an understanding of the purpose of banks and other financial institutions and the responsibilities associated with them:
 - writing checks
 - balancing a checkbook register
 - bank statement reconciliation
 - responsibilities of checking and savings accounts
 - using the ATM machine
 - debit card
- 2.09 Determine the consequences and action to take if a checking account is overdrawn.

- 2.10 Prepare a budget based on a specific income and determine adjustments needed.
- 2.11 Estimate the cost of:
 - recreation and leisure activities
 - housing
 - personal items
 - utilities
 - transportation
 - employment-related supplies
- 2.12 Recognize and identify terms related to completing income tax forms and their definitions.
- 2.13 Determine records that need to be maintained for tax purposes.

Time and Measurement

Competency Goal 3: The learner will calculate time and measurement problems for independent living and employment using computation skills.

Objectives:

- 3.01 Using a digital and analog clock tell time the nearest minute.
- 3.02 Tell time to the minute from a digital and analog clock.
- 3.03 Compute elapsed time intervals:
 - movie
 - concert
 - work
 - break
 - vacation
 - calendars
 - cooking
- 3.04 Read and write calendar time periods in a variety of notations.
- 3.05 Calculate, using area and perimeter, to determine supplies needed:
 - paint
 - wallpaper
 - fencing
 - seeds
 - fertilizer
 - water
 - flooring
- 3.06 Determine the temperature from a thermometer to:
 - interpret temperature changes
 - averages
- 3.07 Determine cooking time and temperature for various recipes and quantities in:
 - conventional oven
 - microwave oven
- 3.08 Identify shapes encountered in various area of employment:
 - square
 - rectangle
 - triangle
 - cones
 - cylinders
 - prisms

Independent Living

Competency Coal 4: The learner will apply decision-making and budgeting skills to independent living.

Objectives:

- 4.01 Give and receive the accurate amount of change following transactions in classroom and community settings.
- 4.02 Use catalogs to complete mail order forms given a specified amount of money.
 - tax
 - shipping
- 4.03 Demonstrate the ability to place a telephone order including:
 - returns
 - exchanges
 - confirmation number
- 4.04 Solve problems related to purchasing event tickets including single and multiple admissions.
- 4.05 Identify residential living options:
 - home ownership
 - rentals
 - manufactured housing
 - supported living
 - group home
- 4.06 Determine the location and availability of housing in the local area.
- 4.07 Investigate possible funding sources to obtain housing.
- 4.08 Determine the advantages and disadvantages of renting versus owning:
 - home
 - furniture
 - appliances
- 4.09 Determine the cost of:
 - moving
 - furnishing
 - utilities
 - repairs
 - insurance
 - deposits

Maps, Graphs, and Charts

Competency Goal 5: The learner will read, interpret, and solve problems involving maps, graphs, schedules, and charts.

Objectives:

- 5.01 Calculate mileage between cities.
- 5.02 Calculate gas mileage on a trip.
- 5.03 Recognize and identify places on a building directory. Determine most appropriate route to destination.
- 5.04 Solve problems involving schedules:
 - bus
 - train
 - television
 - airline
 - subway
- 5.05 Solve problems using maps:
 - legend
 - scale
 - charts
 - mileage
 - population
- 5.06 Recognize and identify parallel and perpendicular locations on road and city maps.
- 5.07 Read schedules and graphs as related to specified jobs in the local area.

- 5.08 Determine a system for:
- maintaining records
 - scheduling appointments
 - paying bills
- 5.09 Make predictions and solve problems using patterns involving:
- production rates
 - self-monitoring logs
- 5.10 Use and understand language of probability to describe events in daily living and determine appropriate actions.
- 5.11 Identify the advantages and disadvantages of using communication devices such as:
- cell telephone
 - pager
 - internet accounts

OCCUPATIONAL MATHEMATICS III

Major Concepts

Occupational Math III emphasizes the application of skills previously learned. In this course students demonstrate application of the skills in the community and places of employment.

Strands: Computation, Financial Management, Time and Measurement, Independent Living.

Computation

Competency Goal 1: The learner will apply computational skills.

Objectives:

- 1.01 Solve problems involving:
 - whole number computation
 - decimals
 - fractions
 - percent
- 1.02 Solve problems using the calculator.

Financial Management

Competency Goal 2: The learner will apply mathematics to financial management and employment skills.

Objectives:

- 2.01 Demonstrate understanding of the importance of reviewing and monitoring financial transactions for accuracy and completeness.
- 2.02 Complete credit applications and demonstrate an understanding of the billing procedures.
- 2.03 Organize and compile the information required to complete a credit application
- 2.04 Evaluate the advantages and disadvantages of buying on credit.
- 2.05 Investigate the places where credit may be obtained.
- 2.06 Determine the factors which affect a person's ability to obtain credit.
- 2.07 Predict possible consequences of abusing credit privileges.
- 2.08 Recognize and identify variable rates.
- 2.09 Recognize terms related to completing and income tax form and sources for assistance in completion.
- 2.10 Complete a W-2 form.
- 2.11 Identify the items needed from an employer for income tax purposes.
- 2.12 Complete 1040E-Z state and federal income tax forms.
- 2.13 Understand the importance and maintain a log of hours worked.
- 2.14 Determine the gross pay for a specified number of hours.
- 2.15 Determine production rates and gross pay for piecework.
- 2.16 Compute hourly wage including overtime wages.
- 2.17 Identify and understand the deductions from a paycheck to compute net pay.
- 2.18 Determine the cost of job related expenses.

Time and Measurement

Competency Goal 3: The learner will apply basic skills to time and measurement activities in school, community, and on the job.

Objectives:

- 3.01 Demonstrate the use of appropriate tools to measure objects.
- 3.02 Using the calendar plan dates and activities in the future.

- 3.03 Demonstrate the preparation and use of a daily schedule for:
 - medication
 - meal-time
 - arrival and departure time
 - transportation
- 3.04 Demonstrate the preparation and use of a weekly schedule for:
 - leisure activities
 - days off
 - overtime
- 3.05 Demonstrate the preparation and use of a monthly schedule for:
 - bill paying
 - travel
 - appointments

Independent Living

Competency Coal 4: The learner will apply computation skills needed for independent living.

Objectives:

- 4.01 Identify the types and amounts of insurance needed.
- 4.02 Evaluate the advantages and disadvantages of insurance options.
- 4.03 Monitor and correct performance during a specific task:
 - checkbook register
 - change
 - quality control
- 4.04 Demonstrate skills to use a calculator in everyday living situations.
- 4.05 Complete comparison-shopping activities involving:
 - best buy
 - quality vs. quantity
 - name-brand vs. storebrand
- 4.06 Evaluate the advantages and disadvantage of a lay away plan.
- 4.07 Demonstrate the understanding and use of:
 - coupons
 - rebates
 - other promotional offers
- 4.08 Plan and purchase items after determining the amount of discount, savings, and total cost.
- 4.09 Compute the cost of parking for specified time.
- 4.10 Demonstrate the ability to purchase airplane, train and bus tickets.
- 4.11 Plan a hotel stay, make reservations, and determine the cost of lodging.
- 4.12 Determine the cost of owning an automobile:
 - license
 - insurance
 - taxes
 - upkeep
 - fuel
- 4.13 Read, adjust, and follow recipes to:
 - plan a shopping list
 - budget amount needed
 - write a check
 - allot time to prepare
 - prepare simple meal
- 4.14 Develop an awareness of the responsibilities of using a computer:
 - cost involved
 - troubleshooting
 - safety
 - security