Wisconsin Indianhead Technical College

32804355 Math 355

Course Outcome Summary

Course Information

Description	This technical diploma course begins with a short review of basic arithmetic skills and continues with the application of these skills. Problem solving involving fractional and decimal dimensions is emphasized. The course also includes introductory algebra with emphasis on utilization of formulas including work with signed numbers. First-degree equation solution is also emphasized.
Instructional Level	Two-Year Technical Diploma
Total Credits	3.00
Total Hours	80.00

Types of Instruction

Instruction Type	Credits/Hours
Classroom Presentation (Lecture/Demonstration/Discussion)	3/80

Course Competencies

1 Perform operations with fractional numbers

Assessment Strategies

individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

Criteria

Criteria - Performance will be satisfactory when:

learner completes problem assignments in agreement with solution key
learner solves and presents solutions to problems within standards developed by peers
learner completes quizzes and comprehensive test within course standards

Learning Objectives

Express fractions in lowest terms and as equivalent fractions
Convert between mixed numbers and improper fractions
Determine least common denominator
Add fractions and mixed numbers
Subtract fractions and mixed numbers
Multiply fractions and mixed numbers

Divide fractions and mixed numbers
Solve problems which involve combined operations of fractions, mixed numbers, and complex fractions.
Apply skills to related technical problems

2 Perform operations with decimal numbers

Assessment Strategies
individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives
Round decimal fractions to any required number of places
Express common fractions to decimals and decimals to common fractions
Add decimal fractions and combinations of decimals, mixed decimals and whole numbers
Subtract decimal fractions and combinations of decimals, mixed decimals and whole numbers
Multiply decimal fractions and combinations of decimals, mixed decimals and whole numbers
Divide decimal fractions with whole numbers and mixed decimals
Apply skills to related technical problems

3 Perform fraction and decimal conversions

Assessment Strategies
individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives
Convert fractional numbers to decimal numbers
Convert decimal numbers to fractional numbers
Apply skills to related technical problems

4 Use correct order of operations

Assessment Strategies
individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test

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Learning Objectives
Raise numbers to indicated powers using scientific calculator
Demonstrate understanding of algebraic order of operations
Solve problems which involve combinations of powers with other basic operations
Extract whole number roots
Extract indicated roots of any number using scientific calculator
Solve problems which involve combinations of roots with other basic arithmetic operations
Solve problems consisting of combinations of operations by applying the order of operations
Apply skills to related technical problems

5 Solve commonly occurring percentage problems

Assessment Strategies
individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives
Express fractional and decimal numbers as percents
Express percents as fractional and decimal numbers
Choose the correct operation for solving an application problem
Solve an applied problem involving fractional numbers, decimal numbers, and percents
Use a calculator to facilitate work with fractional numbers, decimal numbers, and percents
Apply skills to related technical problems

6 Use various measurement systems

Assessment Strategies
individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives
Express English lengths as larger or smaller English linear units
Express metric lengths as larger or smaller metric linear units
Express metric length units as English length units
Express English length units as metric length units
Apply skills to related technical problems

7 Perform basic algebraic operations

Assessment Strategies

individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives

Express word statements as algebraic expressions
Express diagram dimensions as algebraic expressions
Evaluate algebraic expressions by substituting numbers for symbols
Compare signed numbers according to size and direction using the number scale
Determine absolute values of signed numbers
Perform basic operations of addition, subtraction, multiplication, division, powers, and roots using signed numbers
Solve expressions which involve combined operations of signed numbers
Perform the basic algebraic operations of addition, subtraction, multiplication, division, powers, and roots.
Remove parentheses which are preceded by a plus or minus sign
Simplify algebraic operations which involve combined operations
Apply skills to related technical problems

8 Apply algebraic principles to problems from program area

Assessment Strategies

individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives

Express diagram dimensions as algebraic expressions
Evaluate shop formulas by substituting numbers for symbols
Utilize trade handbooks to find appropriate formulas and solve by substitution of numbers for symbols
Apply skills to related technical problems

9 Solve first degree algebraic equations

Assessment Strategies

individually and in group work
in the classroom
in daily written assignments and recitation sessions
in periodic written quizzes and a comprehensive test
using appropriate tools for learning such as the calculator, computer, manuals, texts, and other library and community resources

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Learning Objectives

Express word problems as equations
Express problems given in graphic form as equations
Solve equations using the subtraction principle of equality
Solve equations using the addition principle of equality
Solve equations using the division principle of equality
Solve equations using the multiplication principle of equality
Solve equations using transposition
Solve equations involving several operations
Solve equations using the root principle of equaltiy
Solve equations using the power principle of equaltiy
Apply skills to related technical problems

10 Manipulate algebraic formulas and solve equations by substitution

Assessment Strategies

individually and in group work
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Learning Objectives

Rearrange formulas in terms of any letter value
Substitute values in formulas and solve for unknowns
Apply skills to related technical problems