



Lakeshore Technical College

10-804-107 College Mathematics - Online

Course Outcome Summary

Course Information

Description	...is designed to review and develop fundamental concepts of mathematics pertinent to the areas of: 1) arithmetic and algebra; 2) geometry and trigonometry; and 3) probability and statistics. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.
Total Credits	3
Total Hours	54

Pre/Corequisites

Prerequisite 10-834-109 Pre-Algebra or equivalent

Course Competencies

1. Simplify algebraic expressions

Assessment Strategies

- 1.1. by simplifying algebraic expression problems
- 1.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 1.1. you perform operations on rational numbers
- 1.2. you simplify expression using the order of operations
- 1.3. you solve applied problems
- 1.4. your solution is correct
- 1.5. your solution includes correct units
- 1.6. you show supporting work
- 1.7. your work is clear and organized

Learning Objectives

- 1.a. Perform operations on rational numbers
- 1.b. Simplify expression using the order of operations
- 1.c. Solve applied problems
- 1.d. Validate solutions are correct
- 1.e. Utilize correct units

2. Solve equations and inequalities

Assessment Strategies

- 2.1. by solving equation and inequalities problems
- 2.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 2.1. you solve equations in one variable
- 2.2. you manipulate formulas and solve literal equations
- 2.3. you solve applied problems
- 2.4. you solve linear inequalities in one variable
- 2.5. you solve a system of equations by algebraic methods
- 2.6. your solution is correct
- 2.7. your solution includes correct units
- 2.8. you show supporting work
- 2.9. your work is clear and organized

Learning Objectives

- 2.a. Solve equations in one variable
- 2.b. Manipulate formulas and solve literal equations
- 2.c. Solve applied problems
- 2.d. Solve linear inequalities in one variable
- 2.e. Solve a system of equations by algebraic methods

3. Solve percent applications

Assessment Strategies

- 3.1. by solving percent application problems
- 3.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 3.1. you solve ratios and proportions
- 3.2. you solve for missing quantities in percent problems
- 3.3. you solve financial problems involving percent (interest, finance charges, sale prices, credit transactions, etc.)
- 3.4. your solution is correct
- 3.5. your solution includes correct units
- 3.6. you show supporting work
- 3.7. your work is clear and organized

Learning Objectives

- 3.a. Solve ratios and proportions
- 3.b. Solve for missing quantities in percent problems
- 3.c. Solve financial problems involving percent (interest, finance charges, sale prices, credit transactions, etc.)

4. Graph equations and inequalities in two variables

Assessment Strategies

- 4.1. by graphing equations and inequalities
- 4.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 4.1. you graph linear equations in two variables by making a table of values
- 4.2. you graph linear equations in two variables using the slope intercept method
- 4.3. you graph linear equations in two variables using intercepts
- 4.4. you solve a system of two linear equations by graphing
- 4.5. you graph linear inequalities in two variables
- 4.6. your solution is correct
- 4.7. your solution includes correct units
- 4.8. you show supporting work
- 4.9. your work is clear and organized

Learning Objectives

- 4.a. Graph linear equations in two variables by making a table of values
- 4.b. Graph linear equations in two variables using the slope intercept method
- 4.c. Graph linear equations in two variables using intercepts
- 4.d. Solve a system of two linear equations by graphing
- 4.e. Graph linear inequalities in two variables

5. Apply geometric concepts

Assessment Strategies

- 5.1. by applying geometric concepts to solve problems
- 5.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 5.1. you find perimeter of plane figures including composites (having more than one basic shape)
- 5.2. you find area of plane figures including composites
- 5.3. you find volume and surface area of geometric solids including composites
- 5.4. you solve problems involving similar and congruent triangles
- 5.5. you approximate solutions without a calculator
- 5.6. your solution is correct
- 5.7. your solution includes correct units
- 5.8. you show supporting work
- 5.9. your work is clear and organized

Learning Objectives

- 5.a. Find perimeter of plane figures including composites (having more than one basic shape)
- 5.b. Find area of plane figures including composites
- 5.c. Find volume and surface area of geometric solids including composites
- 5.d. Solve problems involving similar and congruent triangles
- 5.e. Approximate solutions without a calculator

6. Use measurement concepts (both US Customary and metric) to solve problems

Assessment Strategies

- 6.1. by solving measurement problems
- 6.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 6.1. you convert measurements within the metric system
- 6.2. you convert measurements within the us customary system
- 6.3. you convert between us and metric systems
- 6.4. you convert area and volume measurements
- 6.5. you express measurements with correct precision and accuracy
- 6.6. you estimate conversions without a calculator
- 6.7. your solution is correct
- 6.8. your solution includes correct units
- 6.9. you show supporting work
- 6.10. your work is clear and organized

Learning Objectives

- 6.a. Convert measurements within the metric system
- 6.b. Convert measurements within the us customary system
- 6.c. Convert between us and metric systems
- 6.d. Convert area and volume measurements
- 6.e. Express measurements with correct precision and accuracy
- 6.f. Estimate conversions without a calculator

7. Apply trigonometric concepts to solve problems

Assessment Strategies

- 7.1. by applying trigonometry concepts to solve problems
- 7.2. given written problems and calculator

Criteria

Your performance will be successful when:

- 7.1. you use the Pythagorean Theorem to solve for the unknown side of a right triangle
- 7.2. you solve right triangles using trigonometric ratios
- 7.3. you solve oblique triangles using trigonometric ratios
- 7.4. your solution is correct
- 7.5. your solution includes correct units
- 7.6. you show supporting work
- 7.7. your work is clear and organized

Learning Objectives

- 7.a. Use the Pythagorean Theorem to solve for the unknown side of a right triangle
- 7.b. Solve right triangles using trigonometric ratios
- 7.c. Solve oblique triangles using trigonometric ratios

8. Summarize data

Assessment Strategies

- 8.1. by organizing data and summarizing results
- 8.2. given data sets
- 8.3. given written problems and calculator

Criteria

Your performance will be successful when:

- 8.1. you organize data using grouped and ungrouped frequency distributions
- 8.2. you construct, read, and interpret graphs of data (histograms, pie charts, etc.)
- 8.3. you find measures of central tendency (mean, median, mode, mid-range) for data sets
- 8.4. you find measures of relative position (quartiles, percentiles)
- 8.5. you find measures of dispersion (range, variance, standard deviation, inter-quartile range) for given data sets your solution is correct
- 8.6. your solution includes correct units
- 8.7. you show supporting work
- 8.8. your work is clear and organized

Learning Objectives

- 8.a. Organize data using grouped and ungrouped frequency distributions
- 8.b. Construct, read, and interpret graphs of data (histograms, pie charts, etc.)
- 8.c. Find measures of central tendency (mean, median, mode, mid-range) for data sets
- 8.d. Find measures of relative position (quartiles, percentiles)
- 8.e. Find measures of dispersion (range, variance, standard deviation, inter-quartile range) for given data sets your solution is correct

9. Solve problems involving probabilities

Assessment Strategies

- 9.1. by solving probability problems
- 9.2. given an actual experiment
- 9.3. given calculator

Criteria

Your performance will be successful when:

- 9.1. you define a probability of an event in an experiment
- 9.2. you recognize invalid probabilities
- 9.3. you calculate probabilities using a fair experiment model
- 9.4. you apply the counting principle
- 9.5. you compare theoretical and empirical probabilities
- 9.6. you distinguish between probabilities and odds of an event
- 9.7. your solution is correct
- 9.8. your solution includes correct units
- 9.9. you show supporting work

9.10. your work is clear and organized

Learning Objectives

- 9.a. Define a probability of an event in an experiment
- 9.b. Recognize invalid probabilities
- 9.c. Calculate probabilities using a fair experiment model
- 9.d. Apply the counting principle
- 9.e. Compare theoretical and empirical probabilities
- 9.f. Distinguish between probabilities and odds of an event