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

Types of Instruction

Instruction Type	Credits/Hours
Online	3/54

Pre/Corequisites

Prerequisite 10-834-109 Pre-Algebra or equivalent

Textbooks

MyMathLab: 978-032-1199911. (Required)

Cheryl Cleaves & Margie Hobbs: *College Mathematics*. Ninth edition: Publisher: Pearson-Prentice Hall Year: 2015. ISBN: 13:978-0136116325 (Optional)

Learner Supplies

Access to a computer with internet connectivity

Calculator

Core Abilities

1. Apply learning

Criteria

1.1. Learner transfers academic knowledge and principles to life and work situations
1.2. Learner incorporates prior learning
1.3. Learner knows when to ask for help
1.4. Learner demonstrates appropriate safety precautions
1.5. Learner identifies the need for lifelong learning
1.6. Learner develops the ability to research beyond the required work
1.7. Learner demonstrates a curiosity for learning about cultures, norms, and practices

2. Communicate effectively

Criteria

2.1. Learner comprehends written materials
2.2. Learner writes clearly, concisely, and accurately
2.3. Learner adjusts communication style in order to meet the needs of others
2.4. Learner demonstrates active listening skills
2.5. Learner uses culturally appropriate verbal and non-verbal communication methods

3. Demonstrate critical thinking

Criteria

3.1. Learner determines issues that merit action
3.2. Learner takes initiative in the problem solving processes
3.3. Learner makes decisions considering alternatives and consequences
3.4. Learner refines action plans based on evaluation of feedback
3.5. Learner identifies interdependencies of world issues & events

4. Demonstrate responsible and professional workplace behaviors

Criteria

4.1. Learner displays behavior consistent with the ethical standards within a discipline or profession
4.2. Learner follows policies and procedures
4.3. Learner attends class as mandated by the instructor
4.4. Learner completes assignments on time
4.5. Learner exhibits academic honesty
4.6. Learner accepts responsibility and accountability for his/her actions
4.7. Learner demonstrates time management and task prioritization
4.8. Learner demonstrates ability to handle ambiguity and unfamiliar situations

5. Integrate technology

Criteria

5.1. Learner determines which tasks can be performed more efficiently by using technology
5.2. Learner uses technology to perform tasks more efficiently
5.3. Learner adapts to changing/emerging technology
5.4. Learner selects culturally appropriate technology/tools to communicate with diverse groups

6. Respect and appreciate diversity

Criteria

6.1. Learner demonstrates respectful workplace actions for successfully working with a diverse workforce (race, color, creed, national origin, religion, age, sex, sexual orientation, disability, and other differences).
6.2. Learner observes business customs/etiquette, time zone differences, and holidays
6.3. Learner identifies own bias and can adapt to the customs and practices of others
6.4. Learner demonstrates respectful behavior for living/working in a diverse society

7. Use mathematics effectively

Criteria

7.1. Learner solves real world problems using mathematics
7.2. Learner measures accurately
7.3. Learner analyzes graphical information
7.4. Learner demonstrates an understanding of world measurements and foreign currency exchange

8. Work cooperatively

Criteria

8.1. Learner contributes to a group with ideas, suggestions, and effort
8.2. Learner completes his/her share of tasks necessary to complete a project
8.3. Learner encourages team members by listening and responding appropriately to their contributions
8.4. Learner maintains self control
8.5. Learner resolves differences for the benefit of the team
8.6. Learner accepts constructive feedback

8.7. Learner effectively establishes rapport and builds situationally appropriate relationships

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