Western Technical College

10804107 College Mathematics

Course Outcome Summary

Course Information

Description This course is designed to review and develop fundamental concepts of mathematics in the areas of algebra, geometry, trigonometry, measurement and data. Algebra topics emphasize simplifying algebraic expressions, solving linear equations and inequalities with one variable, solving proportions and percent applications. Geometry and trigonometry topics include; finding areas and volumes of geometric figures, applying similar and congruent triangles, applying Pythagorean Theorem, and solving right triangles using trigonometric ratios. Measurement topics emphasize the application of measurement concepts and conversion techniques within and between U.S. customary and metric system to solve problems. Data topics emphasize data organization and summarization skills, including: frequency distributions, central tendency, relative position and measures of dispersion. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators.

Instructional Level Associate Degree Courses

Total Credits 3

Total Hours 54

Textbooks

MyMathLab Standalone Access Card. 4th Edition. Copyright 2012. Pearson Publishing Staff. Publisher: Pearson. **ISBN-13**: 978-0-321-19991-1. Required.

Learner Supplies

Scientific calculator - $10-20. **Vendor:** Campus Shop. Required.

Webcam and microphone. **Vendor:** To be discussed in class. Required. (Online section only)

Success Abilities

1. Cultivate Passion: Expand a Growth-Mindset
2. Live Responsibly: Develop Resilience
3. Live Responsibly: Foster Accountability
4. Refine Professionalism: Improve Critical Thinking

Course Competencies

1. Simplify algebraic expressions.

Assessment Strategies

1.1. by simplifying algebraic expression problems
1.2. given written problems and calculator
1.3. Written Objective Test

Criteria

You will know you are 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.

Learning Objectives

1.a. Calculate using fractions, decimals, and using scientific notation with order of operations.
1.b. Simplify algebraic expressions using distributive property, like terms, and rules of exponents.

2. Solve equations and inequalities.

Assessment Strategies

2.1. by solving equation problems
2.2. given written problems and calculator
2.3. Written Objective Test

Criteria

You will know you are 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.

Learning Objectives

2.a. Solve linear equations, including fractional and decimal coefficients.
2.b. Manipulate formulas to solve for a variable (literal equations).
2.c. Solve linear inequalities in one variable.

3. Solve ratio and proportion applications.

Assessment Strategies

3.1. by solving ratio and proportion application problems
3.2. given written problems and calculator
3.3. Written Objective Test

Criteria

You will know you are 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.).

Learning Objectives

3.a. Solve proportions.
3.b. Find a unit rate.
3.c. Solve problems involving percent, percent of change, business applications.

4. Graph linear equations.

Assessment Strategies

4.1. by graphing linear equations
4.2. Written Objective Test

Criteria

You will know you are successful when

4.1. you plot points on the coordinate plane.
4.2. you use a table of values to graph a line.
4.3. you identify characteristics of a line.
4.4. you write the equation of a line given information.

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. Graph horizontal and vertical lines.

5. Apply geometric concepts.

Assessment Strategies

5.1. by applying geometric concepts to solve problems
5.2. given written problems and calculator
5.3. Written Objective Test

Criteria

You will know you are successful when

5.1. you find perimeter of plane figures including composites (having more than one basic shape).
5.2. you calculate the area of plane figures, including composites
5.3. you calculate the volume and surface area of geometric solids including composites.
5.4. you solve problems involving similar triangles.
5.5. you use the Pythagorean Theorem to solve for the unknown side of a triangle.
5.6. you solve right triangles using trigonometric ratios

Learning Objectives

5.a. Compute perimeter of plane figures including composites (having more than one basic shape).
5.b. Compute area of plane figures including composites.
5.c. Compute volume and surface area of geometric solids including composites.
5.d. Solve problems involving similar and congruent triangles.
5.e. Solve problems using the Pythagorean Theorem.
5.f. Solve problems using trigonometric ratios

6. Use measurement concepts (both U.S. customary and metric) to solve problems.

Assessment Strategies

6.1. by solving measurement problems
6.2. given written problems and calculator
6.3. Written Objective Test

Criteria

You will know you are successful when

6.1. you convert measurements within the metric system.
6.2. you convert measurements within the U.S. customary system.
6.3. you convert between U.S. 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.

Learning Objectives

6.a. Convert measurements within and between the metric system and the U.S. customary system.
6.b. Convert area and volume measurement units.

7. Summarize data.

Assessment Strategies

7.1. by organizing data and summarizing results
7.2. given data sets
7.3. given written problems and calculator
7.4. Written Objective Test

Criteria

You will know you are successful when

7.1. you organize data using grouped and ungrouped frequency distributions.
7.2. you find measures of central tendency (mean, median, mode, mid-range) for data sets.
7.3. you find measures of relative position (quartiles, percentiles).
7.4. you find measures of dispersion (range, variance, standard deviation, inter-quartile range) for given data sets your solution is correct

Learning Objectives

7.a. Summarize data using grouped and ungrouped frequency distributions.
7.b. Use proper techniques to construct, read, and interpret graphs of data (histograms, pie charts, etc.).
7.c. Compute measures of central tendency (mean, median, mode, mid-range) for data sets.
7.d. Compute measures of relative position (quartiles, percentiles).
7.e. Compute measures of dispersion (range, variance, standard deviation, inter-quartile range) for given data sets.

8. Solve problems involving probabilities.

Assessment Strategies

8.1. solve written problems using a calculator
8.2. Written Objective Test

Criteria

You will know you are successful when

8.1. you use the Fundamental Counting Principal to determine the number of outcomes.
8.2. you determine the probability of a single event.
8.3. you determine the probability of two events.
8.4. you determine conditional probability.
8.5. you convert between odds and probability.

Learning Objectives

8.a. Define probabilities and odds.
8.b. Calculate theoretical and empirical probabilities.