

CORE COURSE PERFORMANCE OBJECTIVES

1. Interpret set theory and its applications to the real world. (CCC 2,7)
2. Perform basic operations with real numbers. (CCC 7)
3. Solve problems using algebra. (CCC 2,7)
4. Apply ratio, proportions, percents, simple and compound interest to solve problems in business. (CCC 2,7)
5. Compute, analyze and interpret data. (CCC 6)

MEASURABLE PERFORMANCE OBJECTIVES

1. **Interpret set theory and its applications to the real world. (CCC 2,7)**
 - 1.1 Given a set, state whether it is well-defined, finite, or infinite; determine what elements are found in the set. Given two or more sets, identify whether they are equal or equivalent.
 - 1.2 Given a set of elements, write it using roster form and set-builder notation.
 - 1.3 Given a set, find all of its subsets, learning subset notation.
 - 1.4 Knowing the elements found in the universal set, find the complement of a set.
 - 1.5 Given two or more sets, find their union and intersection and perform operations in the correct order.
 - 1.6 Given two or more sets, use Venn Diagrams to show the relationship between them and to determine cardinalities of sets.
 - 1.7 Using your knowledge of Venn diagrams, solve application problems by creating Venn diagrams representing the information for two distinct sets only.
2. **Perform basic operations with real numbers. (CCC 7)**
 - 2.1 Given an integer, determine whether it is prime or composite. If the number is composite, use divisibility laws to find its prime factors.
 - 2.2 (REVIEW) Given two or more integers, find their greatest common divisor and use it to reduce fractions and also find their least common multiple and use it to add/subtract fractions.

- 2.3 (REVIEW) Given two or more integers, review addition, subtraction, multiplication, and division of them. Also, review principles of orders of operations.
 - 2.4 Given two or more rational numbers, add, subtract, multiply, and divide them. Given complex fractions, simplify them.
 - 2.5 Given a fraction, express it as a decimal. Given a decimal number that is rational, express it as a fraction.
 - 2.6 Given a real number, determine whether it is rational or irrational.
 - 2.7 Given a real number, express it in scientific notation and given a number in scientific notation, express it as a real number. Given an expression containing very large or very small real numbers, use scientific notation to evaluate it.
3. **Solve problems using algebra. (CCC 2,7)**
- 3.1 Given an open sentence of equality or inequality, find and graph its solution set over the real numbers.
 - 3.2 Given an algebraic expression in one variable, simplify it.
 - 3.3 Given an open sentence in one variable (linear equation), solve it over the reals.
 - 3.4 Given an English phrase, use mathematical phrases to illustrate it.
 - 3.5 Given an English phrase, use mathematical phrases to illustrate it.
 - 3.6 Given word problems involving age, money, and other basic translations, write an equation and solve it.
 - 3.7 Given a linear equation in two variables, find solutions.
 - 3.8 Given a linear equation in two variables, graph it on a Cartesian plane.
 - 3.9 Given a system of two linear equations in two variables, solve it by graphing.
 - 3.10 Given an inequality involving two variables, graph it on the Cartesian Plane.

- 3.11 Given the definition of angles, angle types and angle relationships, name and identify angles and solve problems using angle relationships. (Concentrate especially on learning the definitions and understanding algebraic manipulations.)
 - 3.12 Given a pair of parallel lines cut by a transversal, find required angle measures.
 - 3.13 Given the definition of polygons and theorems concerning the relationships of parts of special polygons, name them and solve problems about triangles using the algebra you have learned.
 - 3.14 Given the definition of quadrilaterals and theorems concerning the relationships of parts of special quadrilaterals, name them and solve problems about them using the algebra you have learned.
 - 3.15 Given various geometric shapes, find the perimeter and area of each of them as well as finding specific parts using the perimeter and area formulas. (YOU ARE REQUIRED TO KNOW PERIMETER FORMULAS; HOWEVER, AREA FORMULAS WILL BE PROVIDED FOR YOU.)
 - 3.16 Given a polyhedron, identify a tetrahedron, a square pyramid, a cube, a triangular prism, and an octahedron; find the number of vertices, faces, and edges each have, and verify the Euler formula for each.
 - 3.17 Given geometric solids, identify them and solve for various properties of the solids including volume and surface area. (ALL FORMULAS WILL BE GIVEN TO YOU FOR TEST PURPOSES.)
 - 3.18 Given properties of two triangles, use the concepts of similarity and congruence to solve for angle measures and lengths of sides of triangles.
4. **Apply ratio, proportions, percents, simple and compound interest to solve problems in business. (CCC 2,7)**
- 4.1 Given a ratio simplify it and solve problems involving proportions.
 - 4.2 Given percents, express them as fractions in simplest form and decimals, and given decimals and fractions, express them as percents.

- 4.3 Given a combination of the selling price, cost, and/or profit margin, find the percent markup, the cost, or the selling price.
 - 4.4 Given the simple interest formula, calculate amount of interest received or owed and the total income or amount owed.
 - 4.5 Given the required information, calculate compound interest and compound amount using the table provided and also your scientific or graphing calculator. (YOU NEED NOT MEMORIZE THE FORMULAS AS THEY WILL BE GIVEN TO YOU.)
 - 4.6 Given a compound interest rate, calculate the effective rate of interest using a scientific or graphing calculator. (FORMULAS WILL BE GIVEN TO YOU.)
 - 4.7 Given the terms of installment buying, calculate the true annual rate of interest.
 - 4.8 Given the terms of purchasing a home and the necessary tables, determine the monthly mortgage payment, total interest, and compare rates.
5. **Compute, analyze and interpret data. (CCC 6)**
- 5.1 Given a sample space and the definition of probability, compute the probability of an event.
 - 5.2 Given sufficient information, construct the sample space and use the fundamental counting principle to assign probabilities to events.
 - 5.3 Given a particular experiment, construct a tree diagram to illustrate the sample space and use it to calculate the probability of an event.
 - 5.4 Reviewing the appropriate definitions and the calculation of odds in favor of and odds against an event, determine odds in favor and odds against. Also, calculate the probability of an event given the odds for or against the event, and calculate the odds for or against an event given the probability of that event.
 - 5.6 Given the definition of mathematical expectation, compute the expectation (or expected value) or the "fair price" of the event.
 - 5.7 Given a compound event, made up of two or more simpler events, determine the probability of that event.

- 5.8 Given a set of data, calculate the mean, median, mode, and midrange.
- 5.9 Given a set of data, calculate the range, standard deviation and variance.
- 5.10 Given a set of data, identify the rank and percentile rank. For percentiles, calculate the quartiles of the data.
- 5.11 Given sufficient data, create or interpret various types of bar graphs (including vertical, horizontal and comparative), pictograms, circle/pie graphs, frequency distributions (including grouped), histograms, and line graphs.
- 5.12 Given a normal curve with a specific mean and standard deviation, find percentages of the distribution which satisfy a condition.
- 5.13 Given a normal curve with a specific mean and standard deviation, use the z-score to find percentages of the distribution which satisfy a condition.

EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

92 - 100	A
83 - 91	B
75 - 82	C
0 - 74	R

Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.

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