

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
CREDIT COURSE NOT APPLICABLE TO THE A.A. DEGREE

(Use this form only for courses which do not apply to the A.A. Degree)

COURSE NUMBER AND TITLE: MATH 15 - Prealgebra

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 48

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills

ENTRANCE REQUIREMENTS

PREREQUISITE: None

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE: The basic arithmetic operations, integers, fractions, decimals, percents, ratio and proportion, basic geometric concepts, problem-solving techniques, and an introduction to algebraic thinking.

SPECIFIC COURSE OBJECTIVES: Successful students will be able to:

1. Identify and use arithmetic operations and the order of operations agreement to simplify arithmetic expressions and to solve application problems
2. Use estimation in both solving problems and in checking the reasonableness of results
3. Explain the relationship between fractions, decimals, and percents
4. Identify and use perimeter, area, and volume to solve application problems
5. Convert measurements within and between the U.S. Standard Systems and the Metric System
6. Use a variable to represent missing information, solve proportions and percent equations, and to generalize patterns
7. Apply various problem-solving strategies to solve multi-step or non-routine problems

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

1. Operations on Whole Numbers
 - The number line and order relationships
 - Addition, subtraction, multiplication and division of Whole numbers
 - Conceptual models of operations
 - Commutative and Associative properties
 - Rounding and estimating
 - Applications and Problem solving using Whole Numbers
 - Exponential notation
 - The Order of Operations Agreement
2. Operations on Integers
 - Addition, subtraction, multiplication and division of Integers
 - Conceptual models of operations

Opposites or additive inverses
Absolute value
Applications and Problem solving using integers

3. Operations on Fractions
 - Prime and composite numbers
 - Prime factorization
 - Multiples, Factors and Divisibility rules
 - Least Common Multiples
 - Addition, subtraction, of fractions
 - Multiplication and division of fractions
 - Reciprocals
 - Conceptual models involving operations on fractions
 - Improper fractions and mixed numbers
 - Applications and Problem solving using fractions and mixed numbers
4. Decimal Numbers
 - Converting from fractions to decimals
 - Converting from decimals to fractions, as appropriate
 - Addition, subtraction, multiplication and division of decimals
 - Estimating and rounding
 - Conceptual models involving operations on decimals
 - Applications and Problem solving using decimal numbers
5. Ratios and Proportions
 - Introduction to ratios and proportions
 - Solving a proportion for the missing variable
 - Application of ratio and proportions in a variety of situations, including similar figures
6. Percent
 - Understanding the percent notation and the relation between percent decimals and fractions
 - Solving percent problems using ratios and/or equations
 - A variety of applications of percent: Tax, commission, discount, interest, etc.
7. Geometry and Measures
 - Systems of measurement: The U.S. Standard system and the Metric system
 - Estimate, use and perform measurements in both systems
 - Select the appropriate units and tools for measuring lengths and angles
 - Introduction to rectangles, triangles, circles and composite figures
 - Use the appropriate formulas to calculate the area and/perimeter of geometric figures and to solve application problems
 - Introduction to sphere, rectangular prism, cylinder, cone, and composite figures
 - Introduction to Square roots and Pythagorean Theorem
 - Use the appropriate formulas to calculate the volume and/or capacity and to solve application problems
 - Introduction to weights, mass and temperature measurements
 - Apply dimensional analysis to convert units
8. Introduction to Algebraic thinking
 - Generalizing patterns using input-output tables
 - Reading and interpreting graphs: pie charts, histograms, line graphs, etc.
9. Additional topics may be included at instructor's discretion

REQUIRED READING:

Aufmann, Richard N., Vernon C. Barker, and Joanne S. Lockwood. Prealgebra, 3rd edition. Boston: Houghton Mifflin, 1998.

OR

Lienhart, Shannon, and Monika Brannick. Prealgebra: An Introduction to Practical Mathematical Thinking. Boston: Houghton Mifflin, 1997.

OR

Bittinger, Marvin, and David Elenbogen. Prealgebra. 3rd edition. New York: Addison-Wesley, 2000

OR

Other similar textbooks

SUGGESTED READING:

None

REQUIRED WRITING:

Problem-solving exercises and calculator skills demonstration in homework assignments and tests are more appropriate.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes. This preparation will include reading the textbook, reviewing lecture material, and completing the assigned problem sets, as deemed necessary by the instructor.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
 laboratory
 lecture-laboratory combination
 directed study

DISTANCE LEARNING:

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply.

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
 Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
 Two-Way Video Conferencing (Two-way interactive video and audio)
 One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
 Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Homework and/or assignments 0 - 20%
Exams 50 - 75%
Final exam 20 - 40%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes _____ No X Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Mathews Chakkanakuzhi EXTENSION: 2541

SIGNATURES ON FILE
