Course Outline

REVISED: February/2012

Program: Adult Literacy/High School Diploma

Course of Study: Adult Basic Education

Course: 1:1002 Mathematics

53-03-77

Math 3

Course Description:

This competency-based course offers an introduction to the mathematics concepts including: points, lines, angles, polygons, exponents, square roots, Pythagorean theorem, perimeter, area, circumference, volume, integers, equations, inequalities, number lines and graphing. The competencies are aligned with the *Mathematics Content Standards for California Public Schools Kindergarten through Seventh Grade* with an emphasis on the following strands: Geometry and Measurement (Geometry) and Algebra and Functions. Included in this course are assignments for GED preparation.

Credits: 5 **Hours:** 120

Prerequisite:

1. Completion of Math 2 (53-03-76), with a score of 90% or higher on each assessment.

2. A minimum of 5.0 on complete battery or survey on TABE 9/10 D reading assessment is recommended.

After a student has completed this course, he or she may not be allowed to re-enroll in the course.

Los Angeles Unified School District
Division of Adult and Career Education
Instructional and Couseling Services Unit
Adult Curriculum Office
adultinstruction.org

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APPROVED:

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COURSE OUTLINE COMPETENCY-BASED COMPONENTS

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components (*Education Code* Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

Course Outline Components

GOALS AND PURPOSES — Cover

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

PERFORMANCE OBJECTIVES OR COMPETENCIES — pp. 12-14

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction that enables each student to attain individual goals as measured against prestated standards.

Competency-based instruction provides immediate and continual repetition. In competency-based education, the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are explicit, known, agreed upon, integrated, performance oriented, and adaptive.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS (continued)

Course Outline Components

INSTRUCTIONAL STRATEGIES p. 15

Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Older Adults, Programs for Adults with Disabilities.

UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT Cover

The approximate time devoted to each instructional unit within the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be that it ensures the student will learn at an optimum level. pp. 12-14

Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

EVALUATION PROCEDURES p. 15

The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, simulations), paper and pencil exams, and standardized tests.

REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT Cover

After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.

HOW TO USE THIS COURSE OUTLINE

THE ADULT BASIC EDUCATION PROGRAM

The Adult Basic Education (ABE) Program is part of the continuum of academic instruction that includes English as a Second Language (ESL) and Adult Secondary Education (ASE) within the Division of Adult and Career Education (DACE) of the Los Angeles Unified School District (LAUSD). Learners whose foundational skills in reading, writing and math are below 9th-grade level enter the ABE Program to improve these basic skills. Students who complete the ABE Program can move on to the ASE Program where they can study for their GED or high school diploma, or enter a Career Technical Education (CTE) program. The ABE student population includes native and non-native speakers of English, adult learners, young-adult and adolescent learners, concurrently enrolled high-school students, learners in recovery, learners with disabilities, and students mandated by the courts. More information about the ABE Program is available at http://abe.adultinstruction.org.

STUDENT PLACEMENT IN ABE MATH

Students requesting math are placed in a math course based upon their Grade Equivalent (GE) score on the TABE 9M complete math battery. Students are assigned to ABE math when their skills fall below the 9th grade level.

Placement in ABE Math is done at registration, usually by the Assistant Principal of Counseling Services (APACS) or a teacher advisor. Students who score a total GE of 0 – 6.9 on the TABE 9M are registered in Math 1. Students with a GE of 7.0 – 8.9 are registered in Math 2. Students who score 9.0 or above are placed in Algebra 1/A or another high school math course depending upon their needs and goals.

The initial TABE grade equivalent score on 9M will be compared to the TABE score the student earns on 9A at the culmination of Math 3.

Using Assignment Assessments to Determine an Instructional Starting Point

Each ABE math course contains a set of assessments. These assessments determine where in the contract students should start their course of study. These assessments are also designed as the final tests for each assignment in the contract. All students should be given the assessments when they enter the math class. As soon as a student scores less than 90% on an assessment, testing should stop and instruction should begin. Use the following chart as a guide.

TABE 9M Grade Equivalent (GE)	Assessments to Administer	Course of Action
GE 0 – 6.9	Math 1 assessments	Use the results of the Math 1 assessments as a diagnostic tool to determine where in the contract a student should begin studying. • If the student scores less than 90% on an assessment, begin instruction with that Math 1 assignment. • If the student scores 90% or higher on all of the Math 1 assessments, give the student credit and a grade for Math 1. Register the student in Math 2. • Students who promote from Math 1 to Math 2 should be given the Math 2 assessments. (See below.)

TABE 9M Grade Equivalent (GE)	Assessments to Administer	Course of Action
GE 7.0 – 8.9	Math 2 assessments	Use the results of the Math 2 assessments as a diagnostic tool to determine where in the contract a student should begin studying. • If the student scores less than 90% on an assessment, begin instruction with that Math 2 assignment. • If the student scores 90% or higher on all of the Math 2 assessments, give the student credit and a grade for Math 2. Register the student in Math 3. • Students who promote from Math 2 to Math 3 should be given the Math 3 assessments to determine where they should begin studying.

COURSE COMPLETION AND PROMOTION

Students who complete Math 1 are proficient in the following competency areas:

- Whole numbers
- Whole number addition and subtraction
- Whole number addition and subtraction applications
- Decimal addition and subtraction
- Decimal addition and subtraction applications
- Whole number multiplication
- Whole number division
- Whole number multiplication and division applications
- Decimal multiplication and division
- Decimal multiplication and division applications
- Fractions
- Fraction multiplication and division applications
- Fraction addition and subtraction applications

Students who complete Math 2 are proficient in the following competency areas:

- Whole number estimation of addition and subtraction / multiplication and division
- Decimal and fraction estimation
- Ratio and proportion
- Percent
- Percent applications
- Percent estimation
- Probability
- Statistics / analyzing data
- Measurement

Students who complete Math 3 are proficient in the following competency areas:

- Points, lines, angles, polygons and triangles
- Exponents, square roots, Pythagorean theorem
- Perimeter, area, circumference and volume

- Integers
- Equations / inequalities
- Number lines and graphing

Passage of the assignment assessments with a score of 90% or higher is the requirement for course completion on Math 1, Math 2, and Math 3. Once Math 3 students have achieved 90% or higher on the assessments, they must also take the TABE 9A complete math battery. A total math GE of 9.0 or higher is required to complete Math 3 and receive a grade. If a student does not score 9.0 or higher on the TABE 9A, the teacher should use the TABE diagnostic to determine what remediation is needed.
Students who complete Math 3 will also be prepared to take the practice test for the math portion of the GED.

Use the following table to determine course completion and readiness for promotion.

Course	Standard for Completion	Promotion Destination
Math 1	• A score of 90% or higher on all assessments	Math 2
Math 2	• A score of 90% or higher on all assessments	Math 3
Math 3	• A score of 90% or higher on all assessments • TABE 9A GE 9.0+	Algebra 1/A (31-02-70)

Students who do not meet the "Standard for Completion" do not receive credit and cannot be awarded a grade.

Awarding Credit and Grades
Students may receive five elective credits for successfully completing each of the ABE math courses.
Use the following table to determine student grades. A score lower than 90% is not considered a passing grade. A grade and credit should not be awarded.

Course	**Percentage Range**	**Grade**
Math 1, 2 & 3	95 – 100%	**A**
	90 – 94%	**B**

GED PREPARATION

Math 1, 2 and 3 offer students who plan to take the GED special lessons that target GED skills. Math 1 contains six Steck-Vaughn *GED Mathematics (2002)* lessons. Math 2 contains eight lessons. Math 3 offers eleven lessons. These lessons relate to the competency that has been taught and should be used after the student has successfully completed the assessment for the competency area. In some cases, specific problems in the Steck-Vaughn lessons may be stated differently, or be a little more difficult than the problems previously studied. If the student has trouble with a particular GED lesson or problem, the teacher should reteach the concept and give the student additional practice. Completed Steck-Vaughn lessons should be kept in the student's folder so they can be referred to when the student prepares for the GED exam.

Concurrent students and adult students who are not planning to take the GED are not required to complete the Steck-Vaughn GED lessons.

CLASS CONFIGURATION AND INSTRUCTIONAL APPROACHES

ABE Math classes are multi-level and may include students performing across a wide range of abilities between 0 and 9th grade. ABE students are high-needs students- that is, they lack basic skills and need targeted, sequential instruction in order to address their needs. It should be a goal of an ABE teacher to provide instruction to all students at every class session.

ABE math is taught in a variety of configurations: "stand alone" ABE math labs; combined ABE and Adult Secondary Education (ASE) math labs; teacher directed ABE classrooms; Individualized Instruction Labs; and Alternative Education Work Centers (AEWC).

Optimal instruction should combine individual study, pair work, and small and whole group instruction. Teachers should review diagnosed needs and provide instruction to groups of students on a scheduled basis. Students can then join a learning group that addresses needs that many have in common.

Grouping students in a single classroom can increase opportunities for instruction and learning. There are two kinds of groupings: level-alike and cross-ability. A level-alike group consists of previously assessed students who are at the same general level. A cross-ability group consists of two or more levels of students working together, usually in pairs or teams of 3 to 4. Both grouping types should be exploited in math classes. A level-alike group affords the teacher an opportunity for small group instruction and allows students to support each other as they work on the same material and solve problems together. A cross-ability group allows students who are at a higher level to mentor students at lower levels, thus reinforcing concepts. Cross-ability groups provide lower-level students with more instructional time and free the teacher to work with other students. An ideal math classroom involves both types of groupings.

CASAS

CASAS testing is required of all adult math students. AEWC and concurrently enrolled high school students are not required to take the CASAS test. CASAS tests should be administered according to the following plan.

Course	Pre-test	Schedule	Post-test	Schedule
Math 1	33M	Before Assignment 1	34M	After Assignment 10
Math 2	35M	Before Assignment 1	36M	After Assignment 9
Math 3	37M	Before Assignment 1	38M	After Assignment 3

CASAS results may be used by the instructor to determine needs for student remediation. Students who complete Math 1 by passing all the assessments without doing any coursework should be given the CASAS 35M as their CASAS post test for Math 1. Students who complete Math 2 by passing all of the assessments without doing any coursework should be given CASAS 37M as their post test for Math 2.

ASSISTANCE AND SUPPORT FOR TEACHERS

From Central Office, the ABE Adviser supports classroom teachers through phone consultations, email, training workshops, update meetings, and classroom observations. In addition, the ABE website (http://abe.adultinstruction.org) offers downloadable course outlines, student questionnaires, graphic organizers, and other tools and links.

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HOW TO USE THE COURSE CONTRACTS

Students studying in a math class should be introduced to the following components of Math 1, 2 and 3:

- Contracts
- Worksheets (including “Measurement Conversion” and “Words to Math Symbols” handouts)
- Review Lessons
- Assessments
- GED Preparation Activities
- Calculator Exercises
- Glossary

Contracts

Each assignment for Math 1, 2 and 3 consists of textbook readings and activities, Division-generated worksheets, review lessons and an assessment. Students complete a series of math activities in a prescribed order and demonstrate mastery of a concept (i.e., Whole Numbers) by passing an assessment.

Some lessons may be corrected by the teaching assistant while several are only corrected by the instructor. The last two items in each assignment (review lesson and assessment) are instructor-corrected. They are used to check a student’s understanding before he or she completes the assessment. The GED preparation activity is used by students who are preparing to take the math portion of the GED.

Worksheets

Division-generated student worksheets are used extensively throughout the three contracts. These are consumable and can be photocopied.

Worksheet Answer Key

An answer key is provided for each worksheet. Teachers may correct or assign an aide to correct the worksheets. These worksheets were designed to provide immediate feedback on students’ understanding of math concepts they just studied. Worksheets should be corrected in a timely manner and the score recorded on the contract. Handouts are included with the worksheets.

Review Lesson

The review lesson is the final comprehension check before the student completes the assessment.

Assessments

Assessments are administered after a student has completed the activities of each assignment and the review lesson. Forms A and B of each assessment are provided so that a different version of the assessment is available if re-teaching is necessary.

GED Preparation Activities

These activities prepare the student for the math portion of the GED. See **GED Preparation** on page 8 for a complete explanation of these activities.

Calculator Exercises

Students may use a calculator only after completing Math, 1, 2, and 3 and only for GED preparation. The suggested calculator is the Casio fx-250, the official calculator for the GED test.

Glossary

The glossary contains definitions of general numeracy terms used throughout all three math courses. Students may reference the glossary anytime throughout the course. Students use the glossary throughout the coursework as an aid.

COMPETENCY-BASED COMPONENTS for the Math 3 Course

COMPETENCY AREA AND TOPIC	MINIMAL COMPETENCIES
A. POINTS, LINES, ANGLES, POLYGONS AND TRIANGLES. Identify and describe lines, angles and geometric figures. (20 hours)	1. Identify, name and label basic geometric figures in everyday life. 2. Identify measure and classify angles as right, acute, obtuse, supplementary or complementary. 3. Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms. 4. Identify and name vertical, horizontal, slanting, parallel and perpendicular lines. 5. Identify, describe and classify polygons. 6. Identify and name triangles and their measures. 7. Identify congruent and similar figures and lines of symmetry. 8. Identify corresponding, alternate, interior, and exterior angles.
B. EXPONENTS, SQUARE ROOTS, AND THE PYTHAGOREAN THEOREM Understand exponents and square roots as they apply to the Pythagorean theorem. (20 hours)	1. Identify and explain prime numbers. 2. Write the numbers through 50 as products of their prime factors by using exponents to show multiples of a factor. 3. Interpret exponents and compute powers of whole numbers as examples of repeated multiplication. 4. Define negative exponents. 5. Define scientific notation. 6. Solve and approximate square roots. 7. Define the Pythagorean theorem.

C. PERIMETER, AREA, CIRCUMFERENCE AND VOLUME Determine perimeter, area, circumference, volume and surface area. (20 hours)	1. Find perimeters and missing dimensions of polygons in order to determine perimeters of geometric figures. 2. Use multiplication to find areas of rectangles, parallelograms, triangles and combined figures. 3. Show that rectangles with the same area can have different perimeters, and rectangles with the same perimeter can have different areas. 4. Use formulas to determine the circumference and area of a circle. 5. Use multiplication to find volumes of solids. 6. Use the formulas that determine the volume of triangular prisms and cylinders and relate them to the volume of a rectangular solid. 7. Find the surface area of three-dimensional figures.
D. INTEGERS Solve problems using positive and negative integers. Apply algebraic order of operations. (20 hours)	1. Use concepts of negative numbers (e.g., on a number line, in counting, in temperature, and in "owing money"). 2. Identify on a number line the relative position of positive and negative integers. 3. Add with negative integers, subtract positive integers from negative integers, and verify the reasonableness of the results. 4. Solve multiplication and division problems, including those that arise in real-life situations, which use positive and negative integers and combinations of these operations. 5. Solve addition, subtraction, multiplication, and division problems, including those that arise in real-life situations, which use positive and negative integers and combinations of these operations. 6. Apply algebraic order of operations to evaluate expressions.
E. EQUATIONS AND INEQUALITIES Apply algebraic properties to solve equations and inequalities in real life. (20 hours)	1. Use number patterns to determine mathematical operations. 2. Use a letter to represent an unknown number. 3. Use variables in expressions describing geometric quantities. 4. Manipulate equations using the axiom that "equals" added to or subtracted from "equals" are equal. 5. Manipulate equations, using the axiom that "equals" multiplied or divided by "equals" are equal. 6. Use logic and estimation to solve whole-number equations. 7. Use equations to represent solutions to problems. 8. Write and solve two-step equations. 9. Apply the distributive property in expressions with numbers and variables and simplify expressions of like terms. 10. Solve equations with variables on both sides of an equation. 11. Solve algebraic word problems. 12. Solve inequalities. 13. Solve problems involving rates, average speed, distance and time.

F. NUMBER LINES AND GRAPHING Understand graphing on a number line, coordinate planes, slopes, distances, and graph lines. (20 hours)	1. Graph numbers, fractions, decimals and inequalities on a number line. 2. Determine the absolute value of a number. 3. Use number lines to compare integers. 4. Identify and graph ordered pairs in the four quadrants of the coordinate plane. 5. Write ordered pairs correctly and find the distance between them. 6. Find the distance between two points. 7. Solve problems involving linear functions with integer values, write the equation, and graph the resulting ordered pairs of integers on a coordinate grid. 8. Calculate the slope of a line. 9. Graph functions of the form $y=nx^2$ and $y= nx^3$.

INSTRUCTIONAL STRATEGIES and EVALUATION

METHODS AND PROCEDURES

A. Small group instruction

B. Whole group instruction

C. Individualized Instruction

EVALUATION

A. Placement

TABE 9M Complete Battery

Assignment Assessments

B. Monitoring Progress and Evaluation

1. Assignment Assessments
2. Teacher Observation
3. Review Assignments
4. Division-generated Worksheets
5. Student Portfolios

C. Promotion

Math 1- Assessments

Math 2- Assessments

Math 3- Assessments and TABE 9A Complete Battery

SUGGESTED INSTRUCTIONAL RESOURCES

INSTRUCTIONAL MATERIALS

For vendor and price information, refer to the current Adult Basic Education Instructional Materials/Vendor List (available from the Adult Curriculum Office or http://abe.adultinstruction.org).

Algebra 1: California Edition, (Teacher's Edition), Pearson Education (Prentice Hall/Addison-Wesley). 2001.

Algebra 1: California Edition, Pearson Education (Prentice Hall/Addison-Wesley). 2001.

Casio FX-260 Solar Fraction Calculator, Staples/Office Depot.

Math Sense- Algebra and Geometry, New Readers Press. 2001.

Prentice Hall Mathematics Geometry, (Teacher's Edition). Pearson Education (Prentice Hall/Addison-Wesley). 2004.

Prentice Hall Mathematics Geometry, Pearson Education (Prentice Hall/Addison-Wesley). 2004.

Real Numbers- Algebra Basics, McGraw-Hill/Contemporary. 1991.

Real Numbers- Geometry Basics, McGraw-Hill/Contemporary. 1991.

Steck-Vaughn GED Mathematics, Steck-Vaughn. 2002.

Steck-Vaughn GED Skills Book, (Calculator Exercises). Steck-Vaughn. 2002.

PLACEMENT AND PROMOTION MATERIALS

TABE 9 & 10 Complete Battery Test Books. Forms 9M and 9A.

Scantron Answer Sheet Complete Battery. Levels E—A.

RESOURCE PERSONS

Subject area supervisor and adviser

TEACHER FEEDBACK FORM

The Division of Adult and Career Education would appreciate your feedback on this course outline. Please use a copy of this form to submit any comments or corrections. Include a copy of the course outline page if necessary. You may choose to respond to any and/or all of these questions. All personal information is optional.

Personal Information (Optional)

Name _____ Date _____

School _____ Contact Number _____

Feedback

Course Number and/or Title of Course

_____

Directions: Please respond to these statements. If you choose a "No" or "Sometimes" response, please comment.

Statement	Yes	No	Sometimes
1. This outline is easy to use.			
2. This outline contains appropriate content for the course.			
3. This outline reflects the needs of my students.			
4. This outline reflects the current educational standards.			
5. I use this outline to plan my lessons.			
6. I use the materials/textbooks suggested for use with this course.			
7. The materials/textbooks suggested for use with this course correlate with the competencies.			

Comments for above statements:

Directions: Please answer these questions.

1. If you were revising this course outline, what would you do differently? Why?

2. What is the most helpful section or feature of this course outline? Why?

3. What section or feature of this course outline do you use the least? Why?

4. What do you like the most about this course outline? Why?

Directions: Please list any errors you have found in this outline and the needed corrections. Be sure to list the page numbers involved.

Error	Correction	Page Number

Additional Comments:

Thank you for your feedback.
Please fax this form to Office of Curriculum Development, Tom Calderon, Adviser (213) 241-8998 or send via school mail to DACE/Office of Curriculum Development, Beaudry Building, 18th Floor, Room 170-05.

Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.