Course Outline

Program: Adult Literacy / High School Diploma

Course of Study: Adult Basic Education

Course: 1:1002 Mathematics

53-04-52

VABE/Math/Energy and Utilities

Credits: 5   **Hours:** 90

Prerequisites: A TABE 9M Complete Math Battery GE score of 4.0 or higher.

Note:
To ensure success in this VABE math course, students should have attained an intermediate reading level of 5.0 or higher on the TABE 9/10 D before enrolling. After a student has completed this course, he or she may not be allowed to re-enroll.

COURSE DESCRIPTION:

This competency-based course offers an introduction to the mathematics competencies necessary to prepare a student for Career Technical Education Energy and Utilities courses. The competencies are aligned with the *Mathematics Content Standards for California Public Schools,Kindergarten through Seventh Grade* with an emphasis on the following strands: Number Sense, Statistics, Data Analysis and Probability, and Measurement, Geometry and Algebra and Functions. Course content is selected to support training employment in the energy and utilities field.

TABLE OF CONTENTS

ACKNOWLEDGMENTS

Thanks to LANZI ASTURIAS and ANTHONY DIANGELIS for developing and editing this curriculum. Acknowledgment is also given to instructors ALBERT HATCH, GEORGE RYAN, YASMIN VILLANUEVA, ROBERT ESTRADA, and EDWARD RUIZ for input in developing this course outline and to ERICA ROSARIO for designing the original artwork on the course cover. Thanks to LAURA CHARDIET for spearheading the development of this course.

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KIT BELL
Supervisor
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APPROVED:

Donna Brashear
Executive Director
Division of Adult and Career Education

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   Location

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. 9-13

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 which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and 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 Components	Location

INSTRUCTIONAL STRATEGIES — p. 14

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.9-13

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 — pp. 5-8

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, and 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://adulted-lausd-ca.schoolloop.com (click on "Programs", then "Adult Basic Education")

STUDENT PLACEMENT IN VABE MATH

Students planning to study Photovoltaics, Electrician, HVAC (Heating, Ventilation and Air Conditioning), and Powerline Systems are enrolled in VABE math based upon their Grade Equivalent (GE) score on the TABE 9M complete math battery. Students can be dually enrolled in the VABE math course and their CTE course. Students are assigned to VABE math when their skills fall below the 9th grade level.

Placement in VABE 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 – 3.9 on the TABE 9M are registered in Math 1 for remediation. Students with a GE of 4.0 or higher are registered in the VABE math course. To ensure success in this VABE math course, students should have attained an intermediate reading level of 5.0 or higher on the TABE 9/10 D before enrolling.

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

COURSE COMPLETION AND PROMOTION

Students who complete this VABE Math are prepared for the mathematical elements contained in Energy and Utilities courses. They are proficient in the following competency areas:

- Fractions
- Fraction multiplication and division applications
- Fraction addition and subtraction applications
- Whole number estimation of addition and subtraction / multiplication and division
- Decimal estimation
- Ratio and proportion
- Percent
- Percent applications
- Percent estimation
- Probability
- Statistics / analyzing data
- Measurement
- Points, lines, angles, polygons and triangles
- Trigonometric Functions
- Exponents, square roots, Pythagorean theorem
- Perimeter, area, circumference and volume
- Integers

- Equations / inequalities
- Number lines and graphing

Passage of the assignments with a score of 80% or higher is the requirement for course completion in VABE Math. Once VABE Math students have achieved 80% or higher, they must also achieve a GE of 9.0 or higher on the TABE 9A complete math battery to 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 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 the VABE math course.
Use the following table to determine student grades. A score lower than 80% is not considered a passing grade. A grade and credit should not be awarded.

Course	Percentage Range	Grade
VABE Math	90 – 100%	**A**
	80 – 89%	**B**

CLASS CONFIGURATION AND INSTRUCTIONAL APPROACHES

VABE Math classes are multi-level and may include students performing across a wide range of abilities between 4th and 9th grade. VABE students are high-needs students. They lack basic skills and need targeted, sequential instruction in order to address their needs. The VABE teacher should provide instruction to all students at every class session and utilize cooperative learning strategies.

The VABE instructor should work collaboratively with the energy and utilities instructors to ensure that students receive optimum preparation for their courses.

VABE math is taught in a teacher directed ABE classroom. 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 may also join an in-class learning group that addresses needs that many students 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
VABE/Energy and Utilities	37M Before Course	38M Upon Course Completion

ABE Math Glossary

The ABE Math 1, 2, 3 glossary contains definitions of general numeracy and basic math terms used throughout the VABE math course. Students may reference the glossary anytime throughout the course. Students use the glossary as an aid and will not be tested on these terms.

Assessments

VABE/Energy and Utilities utilizes the assessments from Math 1, 2, and 3 that relate to the competencies taught in this course. 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.

Calculator Exercises

Students may use a calculator only at the end of the course to prepare for their CTE Energy and Utilities courses. The suggested calculator is the Texas Instruments TI-30XS Multi-View Scientific calculator, one of the North American Board of Certified Energy Practitioners (NABCEP) approved calculators. Texas Instruments' "Getting Started" TI-30SX Multiview Activities Workbook can be used for student practice. The Calculator Support page indicates the preferred activities. The TI-30XA Scientific calculator is also recommended for VABE students.

Energy and Utilities Bridge Lessons

After students have learned a basic math competency in the VABE/ Energy and Utilities course, instructors introduce Energy and Utilities Bridge Lessons. These lessons are applications of math concepts relevant to the Energy and Utilities Sector in general i.e. Ohms Law, conversion factors, statistics etc. A second set of bridge lessons are applications of math concepts relevant to a specific Energy and Utilities course, (Photovoltaics, Electrician, HVAC, or Powerline Systems). Bridge Lessons are an appendix to the course outline and will be updated on a regular basis depending upon the needs of the students and instructors. They are to be found on the Course Outline section of the CTE website in the Energy and Utilities Sector http://adulted-lausd-ca.schoolloop.com.

ASSISTANCE AND SUPPORT FOR TEACHERS

From Central Office, the ABE Adviser supports classroom teachers through phone consultations, email, training workshops, update meetings, and classroom visits. In addition, the ABE website http://adulted-lausd-ca.schoolloop.com (click on "Programs", then "Adult Basic Education") offers downloadable course outlines, student questionnaires, graphic organizers, and other tools and links.

ABE PROGRAM OFFICE

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COMPETENCY-BASED COMPONENTS
for the <u>VABE Math/ Energy and Utilities</u> Course

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES
A. FRACTIONS Explain and interpret the various aspects of fractions, including mixed numbers, equivalent fractions, common factors, fraction simplification and decimal equivalents; read and write measurements; use real-life objects to show meaning of fractions. (6 hours)	1. Explain the meaning of proper fractions using pictures and diagrams. 2. Explain the meaning of mixed numbers using pictures and diagrams. 3. Interpret the fractions of a group (set). 4. Compare and order fractions with the same or different denominators 5. Visualize and write equivalent fractions. 6. Compare a part of a set to the whole set. 7. Explain whole number and decimal equivalents. 8. Compare and order fractions and place them on a number line. 9. Explain divisibility rules for 2, 3, 5, and 10 and greatest common factor. 10. Identify the factors and greatest common factor of numbers. 11. Simplify fractions into their lowest terms. 12. Write tenths and hundredths in decimal and fraction notation and know the fraction and decimal equivalents for halves and fourths. 13. Read and write measurements with half, quarter, eighth inch. 14. Use money and gallon scales to show the meaning of fractions.
B. FRACTION MULTIPLICATION AND DIVISION WITH APPLICATIONS Multiply and divide fractions and solve real-life fraction problems (5 hours)	1. Multiply fractions. 2. Use simplification in fraction and whole-number multiplication. 3. Multiply fractions and mixed numbers. 4. Solve life skills problems by multiplying fractions. 5. Divide fractions. 6. Divide fractions and mixed numbers. 7. Solve problems by dividing fractions. 8. Solve real-life problems using fraction division.
C. FRACTION ADDITION AND SUBTRACTION WITH APPLICATION Apply addition and subtraction of	1. Add simple fractions with like denominators. 2. Add and simplify fractions/mixed numbers. 3. Determine the least common multiplier and the greatest common divisor (factor) of whole numbers; use them to solve problems with fractions. 4. Solve simple problems involving the addition of fractions and mixed numbers (like and unlike denominators of 20 or less) and express

fractions to solve real-life problems. (6 hours)	answers in simplest form. 5. Solve addition problems in real-life situations. 6. Subtract simple fractions with like and unlike denominators. 7. Rename whole numbers/fractions. 8. Subtract mixed numbers. 9. Solve fraction addition and subtraction problems. 10. Add/subtract fractions in life skills problems.
D. DECIMAL ESTIMATION Apply estimation to solve addition, subtraction multiplication and division problems with decimals. (5 hours)	(Review basic whole number operations with estimation before lesson) 1. Estimate answers in adding and subtracting amounts of money. 2. Use decimal multiplication estimation/applications. 3. Use decimal division estimation. 4. Use decimal estimation applications. 5. Use estimation to judge the sensibility of the solution in the context of the original situation.
E. RATIO AND PROPORTION Apply knowledge of ratios and proportions to solve problems. (6 hours)	1. Simplify ratios and their equivalents. 2. Interpret and use ratios to show the relative sizes of two quantities using appropriate notations. 3. Solve problems using ratios in real-life situations. 4. Compare two ratios using cross multiplication of fractions and decimals. 5. Find the unknown quantity in a proportion. 6. Apply proportions in real-life situations. 7. Solve proportion problems.
F. PERCENTS Convert fractions, mixed numbers and decimals to percents. (5 hours)	1. Interpret percent as a part of a hundred. 2. Find percent equivalents for simple fractions. 3. Find percent equivalents for mixed numbers. 4. Find percent equivalents for decimals. 5. Change fractions and mixed numbers to percents using proportions and division.
G. PERCENT APPLICATIONS Apply knowledge of percent to solve problems. (5 hours)	1. Interpret the percent problem. 2. Find the part in a percent problem. 3. Find the percent in a problem. 4. Find the total in a percent problem. 5. Solve problems using percent in real-life situations (i.e., rounding, percent off, discounts, sale price, sales tax, and total price). 6. Solve problems using percent in real-life situations (i.e., simple interest, commission, budgets, percent of increase/decrease).

H. PERCENT ESTIMATION Apply knowledge of estimation to solve percent problems. (5 hours)	1. Use percent estimation. 2. Use 100%, 10%, 1%. 3. Use percent estimation applications. 4. Use percent equivalents/compatible numbers. 5. Use percent totals/applications.
I. STATISTICS/ ANALYZING DATA Analyze, compare and apply data. Evaluate data validity. (6 hours)	1. Identify data summary, tally sheet, line plot, and comparing sets of data. 2. Analyze, compare and apply data using tables, schedules, and charts. 3. Analyze, compare and apply data using pictographs and circle graphs. 4. Analyze, compare and apply data using horizontal, vertical and double bar graphs. 5. Analyze, compare and apply data using line and double-line graphs. 6. Analyze, compare and apply data using tally tables, frequency tables/histograms. 7. Identify and compare the mean, median, mode and range for numerical data. 8. Understand ways of selecting a sample of a population and understanding margin of error. 9. Identify data samples that might be biased. 10. Identify claims based on statistical data and evaluate their validity.
J. MEASUREMENTS Apply various measurement standards. (7 hours)	1. Use conversion tables. 2. Use scales to compare whole numbers, decimals and fractions in length measurement. 3. Measure and estimate lengths using nonstandard and standard units of length to the nearest sixteenth of an inch. 4. Compare traditional (U.S.) and metric units of length using parts of the body and other familiar objects for reference. 5. Convert and compare standard units of length. 6. Add and subtract standard units of length. 7. Convert, add, subtract, multiply and divide metric units of length. 8. Measure units of weight in nonstandard and standard measures. 9. Convert, estimate, add and subtract weight measurements. 10. Convert, estimate, add and subtract metric weight measurements. 11. Measure and estimate standard and metric liquid measurements. 12. Convert, compare, add and subtract liquid measurements. 13. Measure and compare Fahrenheit and Celsius temperatures with whole numbers, decimals and negative numbers. 14. Understand and measure standard and digital time. 15. Use a calendar to determine the time remaining until a scheduled event. 16. Determine the time change in elapsed time, time zones, and calendars/ dates. 17. Convert, add and subtract time.

K. POINTS, LINES, ANGLES, POLYGONS AND TRIANGLES. Identify and describe lines, angles and geometric figures. (5 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.
L. TRIGONOMETRIC RATIOS Identify and apply sine, cosine, and tangent. (3 hours)	1. Identify the trigonometry ratios sine, cosine and tangent of an angle. 2. Determine the angle of a triangle using inverse sine, cosine, and tangent. 3. Determine the length of a side using sine, cosine and tangent.
M. EXPONENTS, SQUARE ROOTS, AND THE PYTHAGOREAN THEOREM Understand exponents and square roots as they apply to the Pythagorean theorem. (5 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
N. PERIMETER, AREA, CIRCUMFERENCE AND VOLUME Determine perimeter, area, circumference, volume and surface area. (5 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.
O. INTEGERS Solve problems using	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.

positive and negative integers. Apply algebraic order of operations. (5 hours)	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.
P. EQUATIONS AND INEQUALITIES Apply algebraic properties to solve equations and inequalities in real life. (5 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 divid[ed] 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.
Q. NUMBER LINES AND GRAPHING Understand graphing on a number line, coordinate planes, slopes, distances, and graph lines. (6 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 coordinat[e] 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. Cooperative Learning Strategies

C. Whole group instruction

EVALUATION

A. Placement

   TABE 9M Complete Battery

B. Monitoring Progress and Evaluation

   1. Assignments

   2. Selected Assessments from ABE Math 1, 2, and 3

   3. Teacher Observation

   4. Review Assignments

   5. Worksheets

C. Promotion

   1. Selected Assessments from ABE Math 1, 2, and 3

   2. TABE 9A Complete Battery

Planning is essential for implementation of the VABE/ Energy and Utilities course. Implementation involves assessing student needs, identifying learning objectives, planning lessons to address those learning objectives, and monitoring student progress in acquiring the competencies of the course.

A single learning objective may be addressed in an activity during a lesson, in a full lesson, or even during a unit consisting of several lessons in a row. If a learning objective is to be addressed in more than one day's lesson, each new class period should begin with a new warm up/review and introduction stage to re-focus students on the learning objective. Every daily lesson plan should be prepared in the context of more long-range planning: for the month, the semester, and even the year. Lessons should be related to the energy and utilities subject matter whenever possible.

Warm Up/Review
An initial lesson stage in which content from previous lessons is reviewed and/or a brainstorming or interactive task gets the students thinking about a new topic.

Introduction
An initial stage in which the teacher states the objective of the lesson and tells students what they will be doing. The teacher relates the objective to the CTE course content. This should occur after the warm-up stage of the lesson.

Presentation / Modeling
An initial lesson stage in which the teacher explains, and models the new math competencies which students will be using in that lesson. Any presentation of a new learning objective should be preceded by an introduction.

Comprehension Check
An essential part of the presentation stage in which the teacher confirms student understanding of what has just been taught before going on to the practice stage.

Guided Practice
A mid-lesson stage in which students begin to use the new math competency in a short, controlled activity. This should occur after the presentation stage of the lesson and before the independent practice.

Independent Practice
A mid-lesson stage in which students use the math competency they have been practicing to complete a task usually in pairs or groups. This should occur after the guided practice stage of the lesson.

Evaluation
A final lesson stage in which students demonstrate their knowledge of what they have learned by showing, explaining, analyzing or reflecting on what they have learned during the lesson.

Application
A final lesson stage in which students extend their knowledge of the lesson's material to a new situation or apply their knowledge to complete an activity related to their Energy and Utilities course.

LESSON PLAN TEMPLATE
VABE Math

Lesson Objective:	
Materials/Technology:	

Lesson Steps	Description
Warm Up/Review	
Introduction	
Presentation/Modeling	
Comprehension Check	
Guided Practice	
Independent Practice	
Evaluation	
Application	

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://adulted-lausd-ca.schoolloop.com/ Click "Programs" and then "Adult Basic Education")

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 (see How To Use This Course Outline section)

TEXTS AND SUPPLEMENTAL BOOKS

"Getting Started" TI-30SX Multiview Activities Workbook

TEXTBOOKS

"Pre-Algebra"   Elayn Martin Gay, Pearson 2011

RESOURCES

http://adulted-lausd-ca.schoolloop.com/
Click "Programs" and then "Adult Basic Education"

http://www.khanacademy.org

http://www.atomiclearning.com/k12/en/ti30xs

Calculator Support

The suggested calculator is the Texas Instruments TI-30XS Multi-View Scientific calculator, one of the North American Board of Certified Energy Practitioners (NABCEP) approved calculators. A calculator workbook is used for student practice.

Video Tutorials: The TI-30SX has tutorials that give short specific videos for certain tasks on the calculator. The link to these videos is: http://www.atomiclearning.com/k12/en/ti30xs .

Workbook Activities: The following activities are in the "Getting Started" TI-30SX Multiview Activities Workbook. Note: The asterisk next to the title denotes the instructor recommended activities for this course.

1. Circumference and Area of a Circle
2. Finding the Square Root*
3. What's Your Mileage
4. How Hot Is It?*
5. Let's Count the Ways
6. So Many Zeros!*
7. Who Needs Mixed Numbers?*
8. What's So Special About 11?*
9. The Antics of Statistics*
10. To Simplify or Not to Simplify*
11. Slam Dunk!
12. Absolute Values*
13. What's the Fastest Way to Get Rich

Additional Lessons: The additional lessons below are from the Texas Instrument's website http://education.ti.com/en/us/activity/search/subject.

1. Quilt Blocks*
2. What Makes a Food Nutritious?*
3. What's Half of a Half of a Half?

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. 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 the Curriculum and Instruction Unit, Anthony DiAngelis, Adviser (213) 241-8998 or send via school mail to DACE Curriculum and Instruction Unit, Beaudry Building, 18th Floor, Cubicle 18-167-1 Attn: Anthony DiAngelis

Statement for Civil Rights

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