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**DIVISION OF ADULT EDUCATION**

**8123**

**Code**

**ADULT BASIC EDUCATION: BASIC MATH**

**Advanced 2015**

**Course Length**: 180 Hrs

**Course Number**: 8123

**DURATION**: A minimum of 60 hours or until the student has mastered competencies.

**GRADE LEVEL**: Non-graded Adult.

**CREDIT**: One credit per 60 hours of attendance, with a maximum of 3 credits

**PROGRAM DESCRIPTION**: This course is intended for students who need to develop proficiency in execution and application of basic operations with Problem Solving, Geometry, and Pre-Algebraic Concepts. Mastery of these skills is addressed through drill and practice exercises, accompanied by an emphasis on common, practical applications, basic geometric concepts as well as algebraic thinking as outlined in the mathematics content standards for adult education. These standards were adapted from California’s Common Core State Standards for Mathematics (CCSSM).

**STUDENT LEARNING OUTCOMES:**

* Students will establish personal, academic and/or workforce goals and demonstrate progress toward them
* Students will solve problems
* Students will communicate clearly and collaborate with others
* Students will use resources, including technology, to research, organize and communicate information

**Ratios and Proportional Relationships**

1.0 Students will understand the concept of a ratio and use ratio language to describe a ratio relationship

 between two quantities. For example, *“The ratio of wings to beaks in the bird house at the zoo was 2:1 because for every 2 wings there was 1 beak*.” (CCS M6 RR 1)

2.0 Students will understand the concept of a unit rate a/b associated with a ratio a:b with b≠0, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is a ¾ cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.” (CCS M6 RR 2)

3.0 Students will use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. (CCS M6 RR 3)

4.0 Students will make tables of equivalent ratios relating quantities with whole numbers

 measurements, find missing values in the tables, and plot the pairs of values on the coordinate

 plane. Use tables to compare ratios. (CCS M6 RR 3a)

5.0 Students will solve unit rate problems including those involving unit pricing and constant speed. For

 example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be moved

 in 35 hours. (CCS M6 RR 3b)

6.0 Students will find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100

 times the quantity); solve problems involving finding the whole, given a part and the percent. (CCS

 M6 RR 3c)

7.0 Students will use ratio reasoning to convert measurement units; manipulate and transform units

 appropriately when multiplying or dividing quantities. (CCS M6 RR 3d)

**The Number System**

1.0 Students will interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem . (CCS M6 NS1)

2.0 Students will fluently divide multi-digit numbers using the standard algorithm. (CCS M6 NS2)

3.0 Students will fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. (CCS M6 NS3)

4.0 Students will find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12 and use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36+ 8 as 4(9+2). (CCS M6 NS4)

5.0 Students will understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (CCS M6 NS5)

6.0 Students will understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative numbers coordinates. (CCS M6 NS6)

7.0 Students will recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite. (CCS M6 NS6a)

8.0 Students will understand signs of numbers as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. (CCS M6 NS6b)

9.0 Students will find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane. (CCS M6 NS6c)

10. Students will understand ordering and absolute value of rational numbers. (CCS M6 NS7)

11.0 Students will interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line. (CCS M6 NS7a)

12.0 Students will write, interpret, and explain statements of order for rational numbers in real-world contexts. (CCS M6 NS7b)

13.0 Students will understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute values as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write │-30│= 30 to describe the size of the debt in dollars. (CCS M6 NS7d)

**Expressions and Equations**

1.0 Students will write and evaluate numerical expressions involving whole-number exponents. (CCS M6 EE1)

2.0 Students will write, read, and evaluate expressions in which letters stand for numbers. (CCS M6 EE2)

3.0 Students will identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8+7) as a product of two factors. (CCSM6 EE2b).

4.0 Students will apply properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x etc. (CCS M6 EE3)

5.0 Students will identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y +y +y and 3y are equivalent because they name the same number regardless of which number y stands for. (CCS M6 EE4)

**Geometry**

1.0 Students will find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. (CCS M6 G1)

2.0 Students will know the formula for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (CCS M6 G6)

**Statistics and Probability**

1.0 Students will recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. for example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical questions because one anticipate variability in students’ ages. (CCS M6 SP1)

2.0 Students will understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. (CCS M6 SP2)

3.0 Students will recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. (CCS M6 SP3)

**Instructional Strategies and Times:**

1. Teacher lectures, explanations, and demonstration. 20%

2. Individual or group applications/independent practice of mathematical skills to

 text and exercises. 50%

3. Class discussion of mathematical principles and skills (in individualized instruction,

 teacher/student conferences and direct tutoring) 20%

4. Testing 10%

**Evaluation:**

Student evaluation will be based upon:

1. Satisfactory completion of written assignments as evaluated by the instructor.

2. Satisfactory completion of teacher-made and/or standardized examinations.

3. Satisfactory progress and participation in classroom activities as evaluated by the instructor.

**Conditions for Repetition:**

There are no conditions for repeating this course.

Approved:

BOARD OF TRUSTEES

August 14, 1986

Revised:

May 9, 2006

Title change approved 8/24/95

“Basic Mathematics 2”

Course Revised

July 15, 2013

October 26, 2016