Illinois ABE/ASE

Math (2011)

Adopted 2011

Beginning ABE Literacy (0 - 1.9)

M.1 Number Sense

1. Identify, read, write, count, and recognize values from 0-100. 1.1.1
2. Apply basic vocabulary to concepts. 1.1.2
3. Add and subtract single digit numbers. 1.1.3
4. Demonstrate commutative property. 1.1.4
5. Perform basic operations of the calculator to check work. 1.1.5
6. Identify U.S. currency and coins up to $20.00. 1.1.6
7. Recognize symbols for dollars and cents (e.g., $, ¢). 1.1.7

M.2 Units of Time and Measurement

1. Identify common units of measurement: length, volume, time, weight, and temperature. 1.2.1
2. Identify and match the abbreviations of measurements. 1.2.2
3. Demonstrate knowledge of time using clocks (analog and digital) and calendar. 1.2.3
4. Demonstrate how to solve a simple measurement problem. 1.2.4

M.3 Algebra

1. Complete simple number sentences (equations). 1.3.1
2. Create simple picture pattern replications (colors, shapes, objects). 1.3.2
3. Recognize, describe and create simple picture pattern replications (colors, shapes, object). 1.3.3
4. Recognize, use, and interpret basic symbols (=,-,+) to represent equivalence, taking away and combining. 1.3.4
5. Associate verbal names, written word names, and standard numerals with whole numbers. 1.3.5

M.4 Geometry

1. Name a circle, square, rectangle, and triangle. 1.4.1
2. Match basic shapes in two and three dimensions: circle, square, rectangle, triangle, sphere (ball) and rectangular container (box). 1.4.2

M.5 Data Interpretation and Probability

1. Formulate questions that lead to data collection and simple analysis. 1.5.1
2. Make a picture graph by collecting, organizing, and displaying data. 1.5.2
3. Utilize tally marks up to 20 when describing a set of data. 1.5.3
4. Identify simple probability while determining if future events are more or less likely, impossible, or certain to occur. 1.5.4
5. Group objects by single criterion such as size, color, and length. 1.5.5
6. Using simple charts, graphs, and pictographs, work with data in the context of real-world applications. 1.5.6

Beginning Basic Education (2.0 - 3.9)

M.1 Number Sense

1. Read, write, count, and recognize values from 0-1000. 2.1.1
2. Identify numbers out of sequence. 2.1.2
3. Understand place values. 2.1.3
4. Round whole numbers to nearest 10 or 100 and estimate whole numbers. 2.1.4
5. Add and subtract two and three digit numbers. 2.1.5
6. Recognize patterns of numbers. 2.1.6
7. Count by 2's, 5's, and 10's. 2.1.7
8. Demonstrate multiplication facts to 12. 2.1.8
9. Divide single digit numbers with no remainder. 2.1.9
10. Determine equivalents and make change using U.S. coins and currency up to $20.00. 2.1.10
11. Construct a number line and compare numbers on the line. 2.1.11
12. Identify proper, improper, and mixed fractions. 2.1.12

M.2 Units of Time and Measurement

1. Measure an object or event using different techniques (distance, time, volume, weight, or temperature). 2.2.1
2. Compare different units of measurement in order to determine equivalency. 2.2.2
3. Using previously presented methods, demonstrate how to problem-solve a measurement. 2.2.3
4. Determine the appropriate unit of measurement for various objects. 2.2.4
5. Estimate the measurement of an object by visual observation. 2.2.5

M.3 Algebra

1. Construct, identify, and continue picture patterns using manipulatives. 2.3.1
2. Describe and extend numerical patterns such as twos, fives, and tens. 2.3.2
3. Use positive and negative numbers to describe direction in changes such as temperature or sea level. 2.3.3
4. Identify and explain that less than 0 is negative, and more than 0 is positive. 2.3.4
5. Locate positive and negative numbers on a number line. 2.3.5
6. Translate written or verbal problems into math symbols or equations. 2.3.6
7. Recognize and represent situations that involve variables with expressions. 2.3.7
8. Use substitution to determine solutions in one-step equations. 2.3.8
9. Write statements of inequality using whole numbers. 2.3.9

M.4 Geometry

1. Explain uses of two and three-dimensional shapes in an everyday environment. 2.4.1
2. Find the perimeter of any polygon using whole numbers. 2.4.2
3. Find the area of any square or rectangle that has no side greater than 12 units. 2.4.3

M.5 Data Interpretation and Probability

1. Determine, collect, and analyze appropriate data by plotting simple graphs which utilize information and draw reasonable conclusions based on findings. 2.5.1
2. State most likely or least likely outcomes in a simple probability experiment. 2.5.2
3. Identify ranges with high and low values to describe a simple set of data. 2.5.3
4. Explore and employ multiple strategies for data analysis and interpretation by constructing, reading and interpreting simple graphs such as line, bar and circle in the context of real-world applications. 2.5.4

Low Intermediate Basic Education (4.0 - 5.9)

M.1 Number Sense

1. Read, write, count and recognize values from 0-10,000. 3.1.1
2. Identify place values and round to nearest requested number. 3.1.2
3. Multiply and divide whole numbers with remainders. 3.1.3
4. Determine equivalents of common fractions using pictures and symbols. 3.1.4
5. Reduce fractions to lowest terms. 3.1.5
6. Find the lowest common denominator of two or more fractions. 3.1.6
7. Recognize, differentiate, and demonstrate the rules of addition, subtraction, multiplication, and division for decimals. 3.1.7
8. Make change with all denominations up to $100.00. 3.1.8
9. Calculate the average of a group of numbers. 3.1.9
10. Draw and utilize a number line. 3.1.10

M.2 Units of Time and Measurement

1. Identify and demonstrate knowledge of the appropriate U.S. units of measurement as related to length, width, weight, distance, time, and temperature. 3.2.1
2. Identify and demonstrate knowledge of metric units of measurement as related to length, width, weight, distance, time and temperature. 3.2.2
3. Check the time on a 24-hour (Greenwich Mean Time) clock. 3.2.3
4. Read, compare, and apply temperature applications (positive and negative temperatures). 3.2.4

M.3 Algebra

1. Recognize, create, and solve repeating simple patterns and identify unit/object repeated. 3.3.1
2. Describe a rule for a simple pattern. 3.3.2
3. Read, write, compare, and order integers. 3.3.3
4. Write and solve simple problems using whole numbers, excluding exponents and parentheses. 3.3.4
5. Describe a constant, a variable, a term, and an expression. 3.3.5
6. Recognize simple consumer formulas such as the cost or distance formula. 3.3.6
7. Read and write number operations using algebraic notations. 3.3.7
8. Read, write, and solve one-step number sentences or equations. 3.3.8

M.4 Geometry

1. Recognize, name, describe, and compare various 2 dimensional and 3 dimensional geometric shapes (square, rectangle, triangle, circle, sphere, cube, and rectangular container). 3.4.1
2. Identify basic characteristics of lines on a plane that are parallel, perpendicular, or intersecting. 3.4.2
3. Use the appropriate formulas to find the perimeter and/or area of a square, rectangle, or triangle. 3.4.3

M.5 Data Interpretation and Probability

1. Describe a set of data using high and low values, ranges, mean, median, and mode frequent value. 3.5.1
2. Match and interpret tables, graphs, and charts with appropriate data and draw simple conclusions based on information presented. 3.5.2
3. Construct, read, and interpret tables, charts, and graphs. 3.5.3
4. Predict the probability of an event as a ratio/fraction. 3.5.4

High Intermediate Basic Education (6.0 - 8.9)

M.1 Number Sense

1. Read, write, and count large numbers greater than 10,000. 4.1.1
2. Perform four basic math operations (i.e., addition, subtraction, multiplication, division) using whole numbers, fractions, and decimals. 4.1.2
3. Demonstrate ability to estimate fraction, decimal, and percents. 4.1.3
4. Recognize, write, and solve ratios and proportions. 4.1.4
5. Demonstrate and apply an understanding of the order of operations. 4.1.5
6. Identify and use positive exponents. 4.1.6
7. Recognize and memorize perfect square roots up to 15. 4.1.7
8. Use GED-approved calculator to check and/or solve problems. 4.1.8

M.2 Units of Time and Measurement

1. Plot compass directions on a map. 4.2.1
2. Calculate time changes for U.S. and international time zones. 4.2.2
3. Convert units of measurement using a proportion. 4.2.3
4. Solve problems within either the U.S. or metric system. 4.2.4

M.3 Algebra

1. Solve one-step equations using whole numbers. 4.3.1
2. Use and substitute mathematical symbols (<, >, =, ≠) with numbers. 4.3.2
3. Demonstrate the ability to properly use the distributive property. 4.3.3
4. Identify and construct patterns and sequences using whole numbers, decimals, and fractions, including a 2-step progression. 4.3.4
5. Translate a written phrase into an algebraic expression. 4.3.5
6. Use simple formulas with one or two steps. 4.3.6
7. Write statements of inequalities using integers. 4.3.7

M.4 Geometry

1. Identify lines, line segments, and rays. 4.4.1
2. Draw, measure, label, and classify angles (acute, right, obtuse, straight, and reflex). 4.4.2
3. Identify complementary, supplementary, vertical, and corresponding angles. 4.4.3
4. Classify triangles by sides and angles (scalene, isosceles, equilateral, acute, obtuse, and right triangles). 4.4.4
5. Identify different parts of a circle. 4.4.5
6. Find the area and circumference of a circle. 4.4.6
7. Find the volume of a cube and a rectangular solid. 4.4.7

M.5 Data Interpretation and Probability

1. Gather examples of graphs from a variety of sources for credibility of the source, techniques of collection, organization, and presentation of data, along with missing or incorrect data. 4.5.1
2. Choose and construct the appropriate graph for the type of data given. 4.5.2
3. Analyze and interpret tables, graphs, maps, and charts using keys and legends to make predictions, inferences, and draw conclusions. 4.5.3
4. Extract, interpret, and analyze information by using frequency of distribution including mode and range, along with central tendencies of data including mean and median. 4.5.4
5. Predict probability of an event. 4.5.5
6. Utilize and draw vertical and horizontal number lines. 4.5.6

Low Adult Secondary Education (9.0 - 10.9)

M.1 Number Sense

1. Solve problems using square roots. 5.1.1
2. Recognize and estimate imperfect square roots. 5.1.2
3. Perform all four operations on positive and negative rational numbers. 5.1.3
4. Identify irrational numbers. 5.1.4
5. Solve problems using percents. 5.1.5
6. Solve simple interest problems. 5.1.6
7. Calculate distance between two locations. 5.1.7
8. Use GED-approved calculator to check and/or solve problems. 5.1.8

M.2 Units of Time and Measurement

1. Use scientific notation. 5.2.1
2. Read meters and scales (caliper). 5.2.2

M.3 Algebra

1. Evaluate algebraic expressions using substitution. 5.3.1
2. Graph inequalities. 5.3.2
3. Determine, identify, and define the slope of a line. 5.3.3
4. Evaluate operations using algebraic notation for multiplication and division using parentheses and fraction bar. 5.3.4
5. Analyze, predict, and extend a pattern. 5.3.5
6. Order and compare positive and negative numbers using fractions, decimals, and percents. 5.3.6
7. Simplify expressions with variables. 5.3.7

M.4 Geometry

1. Identify and analyze the characteristics of geometric figures. 5.4.1
2. Identify and apply the appropriate formula to find the perimeter, area, or volume of geometric shapes with the use of the GED formula page. 5.4.2
3. Use the properties of triangles to solve problems. 5.4.3
4. Solve problems using parallel, perpendicular, and intersecting lines. 5.4.4
5. Define and graph ordered pairs on the rectangular coordinate plane including the intercepts. 5.4.5

M.5 Data Interpretation and Probability

1. Organize and display data from probability investigations using appropriate tables, graphs, and/or charts. 5.5.1
2. Compare several sets of data to generate, test, confirm, or deny hypotheses. 5.5.2
3. Analyze, evaluate, and critique the methods and conclusions of statistical information. 5.5.3

High Adult Secondary Education (11.0 - 12.9)

M.1 Number Sense

1. Solve problems using all four operations with real numbers. 6.1.1
2. Demonstrate an understanding of absolute value. 6.1.2
3. Convert equivalencies between fractions, percents, and decimals. 6.1.3

M.2 Units of Time and Measurement

1. Analyze, compare, interpret, and convert measurements as related to distance, length, width, time, volume, weight, and temperature. 6.2.1

M.3 Algebra

1. Solve and check linear equations with one variable. 6.3.1
2. Convert a linear equation into the slope intercept form. 6.3.2
3. Recognize the connection between algebra and geometry by using algebraic equations to illustrate coordinate graphing. 6.3.3
4. Describe the relationship between algebra and geometry by using algebraic equations to illustrate coordinate graphing. 6.3.4
5. Identify/create algebraic expressions when given graphic representations. 6.3.5
6. Express a linear inequality in one variable. 6.3.6
7. Add, subtract, multiply, and divide monomial expressions. 6.3.7
8. Multiply binomials (use the FOIL method). 6.3.8
9. Factor algebraic expressions. 6.3.9
10. Determine the solution to a system of equations with two variables from a given coordinate graph. 6.3.10
11. Solve word problems involving one or two step algebraic equations. 6.3.11

M.4 Geometry

1. Solve problems using congruency and similarity of geometric figures. 6.4.1
2. Recognize and apply the Pythagorean Theorem. 6.4.2
3. Apply appropriate techniques, tools, and formulas to determine measurements of geometric figures. 6.4.3
4. Apply distance and slope formulas between two points on a coordinate graph. 6.4.4
5. Use coordinates to describe translations and rotations of geometric figures. 6.4.5

M.5 Data Interpretation and Probability

1. Organize and display data from statistical investigations using frequency distributions, percentiles, and line of best fit. 6.5.1
2. Determine the probability of an occurrence. 6.5.2