

ABE Mathematics Curriculum Matrix

| Domain | NRS Level 1 | | NRS Level 2 | | | | NRS Level 3 | | | | NRS Level 4 | | | |
|--|---|---|---|---|---|--|--|---|--|--|--|---|---|--|
| 1. Number and Operations: Base Ten | Place Value of 2-Digit Numbers | Add and Subtract 2-Digit Numbers | Place Value of 3-Digit Numbers | Add and Subtract 3-Digit Numbers | Round Whole Numbers to the Nearest Tens or Hundreds | Use Properties of Operations to Perform Multi-Digit Arithmetic | Generalize Understanding of Place Value | Read and Write Multi-Digit Numbers in Names and Expanded Form | Multiply 4-Digit Numbers by 1- to 2-Digit Numbers | Use Place Value to Understand Decimals | | | | |
| | Compare 2-Digit Numbers | Model Addition and Subtraction of 2-Digit Numbers | Compare 3-Digit Numbers | Model Addition and Subtraction of 3-Digit Numbers | Multiply 1-Digit Numbers By 2-Digit Multiples of 10 | Mentally Add and Subtract 10 or 100 to 3-Digit Numbers | Compare Any Multi-Digit Number | Round Multi-Digit Numbers to Any Place Value | Divide 4-Digit Numbers by 1-Digit Numbers | Read, Write, and Compare Decimals to Thousandths | | | | |
| 2. Operations and Algebraic Thinking | Solve Addition and Subtraction Problems within 20 | The Equal Sign | Solve Addition and Subtraction Problems within 100 | Solve Multiplication and Division Problems within 100 | Multiplication Facts within 100 | Solve 2-Step Problems or Equations | Solve Multi-Step Problems Using Basic Operations | Interpret Multiplication as Comparison Statements | Interpret the Remainder in Problems | Multiples of 1-Digit Numbers Up to 100 | | | | |
| | Commutative and Associative Property of Addition | Solving Addition and Subtraction Equations | Commutative and Associative Property of Multiplication | Solve Multiplication and Division Equations | Distributive Property of Multiplication | Model Multiplication and Division within 100 | Check Answers Using Mental Computation and Estimation | Solve Problems Involving Multiplicative Comparisons | Find All Factor Pairs of Any 2-Digit Whole Number | Prime and Composite Numbers within 100 | | | | |
| 3. Measurement and Data | Organize, Represent, and Interpret 3 Categories of Data | Indirectly Measure Lengths through Iteration | Analyze and Generate Picture Graphs and Bar Graphs | Analyze and Generate Line Plots | Measure and Estimate Lengths in Standard Units | Solve Problems Involving Time, Volume and Mass | Solve Problems in Length, Time, Volume, Mass and Money Including Fractions | Solve Problems in Length, Time, Volume, Mass and Money Including Decimals | Solve Problems Involving Information Presented in Line Plots | Recognize Angles | | | | |
| | | | Represent Whole Number Lengths on a Number Line | Measuring and Estimating Areas of Plane Figures | Solve Problems Involving Perimeter of Polygons | Use Areas to Model Addition and Multiplication | Apply Area and Perimeter Formulas for Rectangles | Convert Measurements within a System | Organize Unit Fraction Data (1/2, 1/4, 1/8) in a Line Plot | Understand Concepts of Angle Measurement | | | | |
| 4. Geometry | Analyze, Compare, and Compose 3-Dimensional Shapes | 2- and 3-Dimensional Composite Shapes | Analyze, Draw and Compare Shapes Having Specified Attributes | Identify Common Polygons and 3-Dimensional Figures | Categorize Shapes with Common Attributes | Partition Shapes into Parts with Equal Areas | Draw and Identify Points, Lines, Line segments, and Rays | Solve Problems by Graphing Points on the Coordinate Plane | Solve Problems Involving Area, Surface Area, and Volume | Draw Polygons in a Coordinate Plane | Solve Problems Involving Scale Drawings of Geometric Figures | Produce Congruence and Similarity Using Models | Angle Sum and Exterior Angles of Triangles and Transversals | |
| | | | | | | | Draw and Identify Angles, Perpendicular and Parallel Lines | Classify 2-Dimensional Figures into Categories Based on Properties | Find Areas of Polygons by Composing or Decomposing | Find the Length of a Side with the Same First or Second Coordinate | Solve Problems Involving Angle Meas., Areas, SA and Volume | Recognize Congruence and Similarity from Transformations | Explain and Apply the Pythagorean Theorem | |
| 5. Number and Operations: Fractions | | | Represent Fractions with Denominators 2, 3, 4, 6, or 8 on a Number Line | Recognize Equivalent Fractions on a Number Line | Use Visual Models to Represent Equivalent Fractions | Compare Fractions with the Same Numerator or Denominator | Generate Equivalent Fractions | Compare Fractions Using Common Numerators or Denominators | Decompose Fractions as Sum of Fractions with the same Denominator | Decompose Fractions as Multiples of Unit Fractions | | | | |
| | | | | | | | Use Models to Illustrate Equivalent Fractions | Add and Subtract Mixed Numbers Using Equivalent Fractions | Multiply Fractions by a Whole Number | | | | | |
| 6. Expressions and Equations | | | | | | | Multiply and Divide Fractions | Solve Problems Involving Multiplication and Division of Fractions | Convert Fractions with Denominators 10 or 100 to Decimals | Solve Problems Involving Addition and Subtraction of Fractions | | | | |
| | | | | | | | Write and Evaluate Algebraic Expressions with Exponents | Identify and Generate Equivalent Algebraic Expressions | Use Substitution to Determine If an Equation or Inequality is True | Express One Quantity as the Dependent Variable of the Another Quantity | Add, Subtract, Factor, and Expand Linear Expressions | Construct Equations and Inequalities to Solve Problems | Apply the Properties of Exponents to Generate Equivalent Expressions | Solve Problems Involving Quantities in Scientific Notation |
| 7. The Number System | | | | | | | Perform the Order of Operations on Algebraic Expressions | Reason and Solve One-Variable Equations and Inequalities | Use Variables to Represent Two Related Quantities in a Problem | Use Graphs, Tables and Equations to Show Variable Relationships | Rewrite Expressions to Show Relationships Between Quantities | Solve Problems Using Algebraic Equations with Rational Coefficients | Evaluate Square and Cube Roots of Perfect Squares and Cubes | Graph Proportional Relationships - Unit Rate as the Slope |
| | | | | | | | Fluently Divide Multi-Digit Numbers | Fluently Add, Subtract, Multiply and Divide Multi-Digit Decimals | Find the Greatest Common Factor of Two Numbers ≤ 100 | Apply Distributive Property to Generate Equivalent Expressions | Use Integers to Represent Quantities in Real-World Contexts | Plot/Find Ordered Pairs of Rational Numbers on a Coordinate Plane | Explain Statements of Order and Inequality Using a Number Line | Add and Subtract Rational Numbers Using a Number Line |
| 8. Ratios and Proportional Relationships | | | | | | | Find the Least Common Multiple of Two Numbers ≤ 12 | Use Models to Illustrate, Interpret and Compute Quotients of Fractions | Solve Problems Involving Division of Fractions by Fractions | | Plot/Find Rational Numbers on a Number Line | Understand and Evaluate Absolute Value of Rational Numbers | Solve Problems by Graphing | Multiply and Divide Rational Numbers |
| | | | | | | | | | | Convert a Rational Number to Decimal | Solve Problems Involving Basic Operations on Rational Numbers | Find Rational Approximations of Irrational Numbers | Estimate the Location of Irrational Numbers on a Number Line | |
| 9. Statistics and Probability | | | | | | | Describe a Relationship Between Two Quantities Using a Ratio | | | Explain the Unit Rate a/b Associated with the Ratio $a:b$, with $b \neq 0$ | Use Various Techniques to Solve Problems Involving Ratios | Represent Proportional Relationships by Equations and Graphs | Solve Problems Involving Proportional Relationships | |
| 10. Functions | | | | | | | Discuss Statistical Questions Involving Variability in Data | Discuss Statistical Questions Involving Center, Spread and Overall Shape | Discuss the Measure of Center and Variation for a Numerical Data Set | Display Numerical Data in Plots on a Number Line: Dot Plots, Histograms, Box Plots | Relate Measures of Center and Variability to Data Distribution and Context | Draw Informal Comparative Inferences About Two Populations | Find or Approximate the Probability of Simple & Compound Events with Various Techniques | Construct and Interpret Scatter Plots from Two-Way Tables and Vice Versa |
| | | | | | | | | | | Summarize and Describe Numerical Data Sets | Use Interquartile Range and MAD to Draw Comparative Inferences | Use Random Sampling to Draw Inferences About a Population | Use the Equation of a Linear Model to Solve Problems | |
| | | | | | | | | | | Define, Evaluate and Compare Functions | Interpret the Equation $y = mx + b$ as Defining a Linear Function | Construct a Function to Model Linear Relationships | Describe Qualitatively or Sketch the Functional Relationship Between Two Quantities | |