

# Washington Math Adult Learning Standards

## Standard: Use Math to Solve Problems and Communicate

- Understand, interpret, and work with pictures, numbers, and symbolic information.
- Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.
- Define and select data to be used in solving the problem.
- Determine the degree of precision required by the situation.
- Solve problem using appropriate quantitative procedures and verify that the results are reasonable.
- Communicate results using a variety of mathematical representations, including graphs, charts, tables, and algebraic models.

Beginning Literacy	Beginning	Low Intermediate	High Intermediate	Low Advanced	High Advanced
The following indicators are statements that every Washington ABE student will demonstrate the ability to do in order to advance to the next NRS Educational Functioning Level.					
<p><b>By the end of Level 1, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 1.1 Read, write, and interpret very simple types of mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> whole numbers (three digit numbers), common monetary values, and benchmark fractions (1/2, 1/4).</p> <p><b>Patterns/Functions/Relationships:</b> very simple patterns, commonly-used denominations/groupings</p>	<p><b>By the end of Level 2, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 2.1 Read, write, and interpret very simple types of mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> whole numbers (three digit numbers), common monetary values, and benchmark fractions (1/2, 1/4) and percents (50%).</p> <p><b>Patterns/Functions/Relationships:</b> very simple patterns, commonly-used</p>	<p><b>By the end of Level 3, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 3.1 Read, write, and interpret some common types of mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> whole numbers, monetary values and prices, benchmark fractions (3/4, 1/10), decimals (.25, .50, .75, .10) and percents (25%, 75%, 10%, 100%).</p> <p><b>Patterns/Functions/Relationships:</b> simple</p>	<p><b>By the end of Level 4, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 4.1 Read, write, and interpret a variety of common mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> monetary values, extensions of benchmark fractions (1/8, 1/3, 1/5, etc), decimals, and percents (15%, 30%, etc.).</p> <p><b>Patterns/Functions/Relationships:</b> patterns and simple formulas (such as <math>d=rt</math>, <math>A=lw</math>);</p>	<p><b>By the end of Level 5, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 5.1 Read, write, and interpret a wide variety of mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> money/expenses/prices, percentages, decimals and fractions.</p> <p><b>Patterns/Functions/Relationships:</b> patterns and formulas (such as <math>A=\pi r^2</math>).</p> <p><b>Space/Shape/Measurement:</b> units of</p>	<p><b>By the end of Level 6, every WA ABE student will know and be able to:</b></p> <ul style="list-style-type: none"> <li>• M 6.1 Read, write, and interpret a wide variety of (often) complex mathematical information such as</li> </ul> <p><b>Numbers and number sense:</b> money/expenses/pricing.</p> <p><b>Patterns/Functions/Relationships:</b> formulas for a variety of calculations.</p> <p><b>Space/Shape/Measurement:</b> architectural symbols/models and scale</p>

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<p>(2s, 5s, 10s); mathematical relationships – more, less, larger, smaller, left, right, heavier, longer.</p> <p><b>Space/Shape/Measurement:</b> high frequency standard units of measurement (pounds, feet, months, weeks, days, minutes, hours), and concepts of geometric shape, length and width.</p> <p><b>Data/Statistics:</b> very simple ways to interpret and represent data (checksheets, picture graphs,) emphasizing frequency of occurrence.</p> <ul style="list-style-type: none"> <li>• M 1.2 Recall and use a few simple mathematical procedures such as very basic estimating, counting, sorting, ordering, grouping, adding on (using counting or a calculator), orally counting by 2s, 5s and 10s, addition and subtraction and beginning multiplication.</li> </ul>	<p>denominations/groupings (5s, 10s, 25s), and very simple proportions (2:1, 1:2).</p> <p><b>Space/Shape/Measurement:</b> high frequency standard units of measurement (pounds, feet, quarts, gallons), geometric shapes, and concepts of length and width.</p> <p><b>Data/Statistics:</b> very simple ways to interpret and represent data (checksheets, picture graphs, unambiguous bar graphs, line plots) emphasizing frequency of occurrence.</p> <ul style="list-style-type: none"> <li>• M 2.2 Begin to evaluate reasonableness of solutions. Add and subtract whole numbers through three digits, and multiply and divide three digit numbers by one digit numbers. Recall and use mathematical procedures such as basic estimating, counting, sorting, ordering, grouping, adding on (using</li> </ul>	<p>patterns, probability and proportions (1:4, 4:1); simple decimal/fraction conversions and equivalents.</p> <p><b>Space/Shape/Measurement:</b> commonly used standard units of measurement, common geometric shapes, and the concept of “area”.</p> <p><b>Data/Statistics:</b> simple ways to interpret and represent data (tables, bar graphs with and without gridlines, line graphs and pie graphs).</p> <ul style="list-style-type: none"> <li>• M 3.2 Recall and use mathematic procedures such as addition, subtraction, multiplication and division on whole numbers, benchmark decimals and fractions (with or without use of calculator), grouping, comparing 2 numbers, and basic estimating; and measure length, weight,</li> </ul>	<p><b>Space/Shape/Measurement:</b> standard units of measurement including fractional units and benchmark angle measurements (90 degrees, 360 degrees, etc), geometric shapes including shapes containing a combination of common shapes, concept of pi, and concept of converting between units of measurement.</p> <p><b>Data/Statistics:</b> ways to interpret and represent data (tables and graphs with scaling, basic statistical concepts such as range, mode, mean, and median).</p> <ul style="list-style-type: none"> <li>• M 4.2 Recall and use a good store of mathematical procedures such as estimation, rounding, multiplication and division (with and without use of a calculator), adding and subtracting, multiplying and dividing common fractional amounts and decimals, measure</li> </ul>	<p>measurement including fractional units, geometrical shapes including shapes containing a combination of common shapes, and concept of volume.</p> <p><b>Data/Statistics:</b> ways to interpret, represent and draw implications from data (graphs, tables, and simple forms of statistical analysis).</p> <ul style="list-style-type: none"> <li>• M 5.2 Recall and use multi-step mathematical procedures (such as keeping accounts) that involve whole numbers as well as fractions, decimals, and/or percents, and measure volume using tools with different calibrations.</li> </ul>	<p>modeling.</p> <p><b>Data/Statistics:</b> ways to interpret, represent, identify trends in or draw inferences from data (complex tables and graphs; advanced forms of statistical analysis; graphing equations and generating equations from data and/or line graphs; using concept of slope).</p> <ul style="list-style-type: none"> <li>• M 6.2 Research, select and apply sophisticated, multi-step mathematical concepts and procedures (such as scale modeling, cost analysis, earnings/deductions analysis).</li> </ul>

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<p>counting or a calculator), and measuring length and weight using tools calibrated with whole numbers (rulers, manipulatives).</p> <ul style="list-style-type: none"> <li>• M 1.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 1.4 Extract discrete information from simple and concrete data and graphs, describe patterns, and/or use basic computational procedures effectively to solve a problem and to verify that the solution is reasonable.</li> <li>• M 1.5 Communicate the solution to the problem orally, in role plays, with pictures, or by entries on a simple chart.</li> </ul>	<p>and areas of standard and non-standard shapes using tools calibrated with whole numbers and benchmark fraction and decimal equivalents (rulers, manipulatives).</p> <ul style="list-style-type: none"> <li>• M 2.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 2.4 Extract discrete information from simple and concrete data and graphs, and measure with appropriate tools, describe patterns, and/or use computational procedures effectively to solve a problem and to verify that the solution is reasonable.</li> <li>• M 2.5 Communicate the solution to the problem orally, in role plays, with pictures, or by entries on a simple chart.</li> </ul>	<p>length, weight, area and circumference using tools calibrated to varying degrees of precision and converting units of measurement as appropriate.</p> <ul style="list-style-type: none"> <li>• M 3.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 3.4 Define, select, and organize simple data, and measure with appropriate tools, describe patterns, and/or use computational procedures effectively to solve a problem and to verify that the solution is reasonable.</li> <li>• M 3.5 Communicate the solution to the problem orally, in pictures, or in writing.</li> </ul>	<p>length, weight, area and circumference using tools calibrated to varying degrees of precision and converting units of measurement as appropriate.</p> <ul style="list-style-type: none"> <li>• M 4.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 4.4 Define, select and organize a variety of common mathematical data and measure with appropriate tools, describe patterns, and/or use appropriate procedures effectively to solve a problem and verify that the solution is reasonable.</li> <li>• M 4.5 Communicate the solution to the problem orally, with visual representations, in writing, by entries in a table or appropriate graph, or with basic statistics (range, mode, mean, median).</li> </ul>	<ul style="list-style-type: none"> <li>• M 5.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 5.4 Define, select, organize, and integrate mathematical information of different types in carrying out procedures, describing patterns, and/or measuring with appropriate tools to solve the problem and to verify that the solution is reasonable.</li> <li>• M 5.5 Create appropriate visual or graphic representations such as charts, tables, graphs, etc. and clearly communicate the solution process and results orally or in writing to a variety of audiences.</li> </ul>	<ul style="list-style-type: none"> <li>• M 6.3 Evaluate the degree of precision needed for the solution.</li> <li>• M 6.4 Independently research, select, organize and integrate mathematical information of different types in carrying out procedures, describing patterns, and/or measuring with appropriate tools, to solve the problem and to verify that the solution is reasonable.</li> <li>• M 6.5 Create appropriate visual or graphic representations such as charts, tables, graphs, etc. and clearly communicate the solution process and results orally or in writing to a variety of audiences.</li> </ul>

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<p><b>SHOW FLUENCY, INDEPENDENCE, AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 1 can select and apply the knowledge, skills, and strategies at this level to independently, with some effort but few errors, accomplish simple, well-defined, and highly structured math tasks in one or more comfortable and familiar settings.</i></p>	<p><b>SHOW FLUENCY, INDEPENDENCE, AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 2 can easily select and apply the knowledge, skills, and strategies at this level to independently accomplish simple, well-defined, and highly structured math tasks in one or more comfortable and familiar settings.</i></p>	<p><b>SHOW FLUENCY, INDEPENDENCE, AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 3 can easily select and apply the knowledge, skills, and strategies at this level to independently accomplish simple, well-defined, and structured math tasks in a range of comfortable and familiar, or highly structured, settings.</i></p>	<p><b>SHOW FLUENCY, INDEPENDENCE, AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 4 can easily select and apply the knowledge, skills, and strategies at this level to independently accomplish well-defined and structured math tasks in a range of comfortable and familiar settings.</i></p>	<p><b>SHOW FLUENCY, INDEPENDENCE, AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 5 can easily select and apply the knowledge, skills, and strategies at this level to independently accomplish structured math tasks in a variety of comfortable and familiar settings.</i></p>	<p><b>SHOW FLUENCY, INDEPENDENCE AND ABILITY TO PERFORM IN A RANGE OF SETTINGS</b></p> <p><i>Adults performing at Level 6 can easily select and apply the knowledge, skills, and strategies at this level to independently accomplish minimally structured, complex math tasks in a variety of comfortable and familiar settings.</i></p>