College- and Career-Readiness Standards for Adult Education Addressed in Low-Intermediate ALAN Measurement Lessons

The Standards for Mathematical Practice

- Make sense of problems and persevere in solving them. (MP1)
- Reason abstractly and quantitatively. (MP2)
- Construct viable arguments and critique the reasoning of others. (MP3)
- Model with mathematics. (MP4)
- Use appropriate tools strategically. (MP5)
- Attend to precision. (MP6)
- Look for and make use of structure. (MP7)
- Look for and express regularity in repeated reasoning. (MP8)

Measurement and Operations standards

Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/ "corners") and other attributes (e.g., having sides of equal length). (K.G.4)

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.* (1.MD.2)

Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. (2.MD.2)

Estimate lengths using units of inches, feet, centimeters, and meters. (2.MD.3)

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (2.OA.1)

Recognize area as an attribute of plane figures and understand concepts of area measurement. (3.MD.5)

a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. (3.MD.5a)

b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units. (3.MD.5b)

Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). (3.MD.6)

Relate area to the operations of multiplication and addition. (3.MD.7)

- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. (3.MD.7a)
- Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. (3.MD.7b)
- Recognize area as additive. Find areas of rectilinear figures by decomposing them into non- overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. (3.MD.7d)

Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.* (3.OA.1)

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. (3.MD.8)

Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4.OA.3)

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.2)

Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real world problems. (5.MD.1)

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. (6.EE.5)