DTE@
MATHEMATICS

Learning Trajectory Display of Common Core State Standards for Mathematics, Grades K-5[*]

Measurement Strands

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Content Strand	Kindergarten
Quantity, Measurement, and Data	
Length	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. [K.MD.1]
	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter. [K.MD.2]
Units and Conversion	
Area, Perimeter, and Volume	
Money and Time	
Data and Statistics	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.) [K.MD.3]

Content Strand	Grade 1
Quantity, Measurement, and Data	
Length	Order three objects by length; compare the lengths of two objects indirectly by using a third object. [1.MD.1]
	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]
Units and Conversion	
Area, Perimeter, and Volume	
Money and Time	Tell and write time in hours and half-hours using analog and digital clocks. [1.MD.3]
Data and Statistics	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. [1.MD.4]

Content Strand	Grade 2
Quantity, Measurement, and Data	
Length	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. [2.MD.1]
	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]
	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. [2.MD.4]
	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram. [2.MD.6]
Units and Conversion	Estimate lengths using units of inches, feet, centimeters, and meters. [2.MD.3]
Area, Perimeter, and Volume	
	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. [2.MD.5]
Money and Time	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. [2.MD.7]
	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have? [2.MD.8]
Data and Statistics	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. [2.MD.9]
	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph. [2.MD.10]

Content Strand	Grade 3
Quantity, Measurement, and Data	
Length	
Units and Conversion	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. [3.MD]
Area, Perimeter, and Volume	Recognize area as an attribute of plane figures and understand concepts of area measurement. 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. 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.5]
	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). [3.MD.6]
	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]
	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes compound units such as cm3 and finding the geometric volume of a container.) [3.MD.2]
Money and Time	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. [3.MD.1]
Data and Statistics	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. [3.MD.3]
	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. [3.MD.4]

Content Strand	Grade 4
Quantity, Measurement, and Data	
Length	
Units and Conversion	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ... [4.MD.1]
Area, Perimeter, and Volume	
	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. [4.MD.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]
Money and Time	
Data and Statistics	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. [4.MD.4]

Content Strand	Grade 5
Quantity, Measurement, and Data	
Length	
Units and Conversion	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. [5.MD.1]
Area, Perimeter, and Volume	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. [5.MD.3ab]
	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. [5.MD.4]
	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. [5.MD.5abc]
Money and Time	
Data and Statistics	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. [5.MD.2]