Measurement standards: Book K

Explore concepts of time

M.UN.00.01 Know and use the common words for the parts of the day (morning, afternoon, evening, night) and relative time (yesterday, today, tomorrow, last week, next year).

M.TE.00.02 Identify tools that measure time (clocks measure hours and minutes; calendars measure days, weeks, and months).

M.UN.00.03 Identify daily landmark times to the nearest hour (lunchtime is 12 o'clock; bedtime is 8 o'clock).

Explore other measurement attributes

M.UN.00.04 Compare two or more objects by length, weight and capacity, e.g., which is shorter, longer, taller?

M.PS.00.05 Compare length and weight of objects by comparing to reference objects, and use terms such as shorter, longer, taller, lighter, heavier.

Measurement standards: Book 1

Estimate and measure length

M.UN.01.01 Measure the lengths of objects in non-standard units, e.g., pencil lengths, shoe lengths, to the nearest whole unit.

M.UN.01.02 Compare measured lengths using the words shorter, shortest, longer, longest, taller, tallest, etc.

Tell time

M.UN.01.03 Tell time on a twelve-hour clock face to the hour and half-hour.

Work with money

M.UN.01.04 Identify the different denominations of coins and bills.

M.UN.01.05 Match one coin or bill of one denomination to an equivalent set of coins/bills of other denominations, e.g., 1 quarter = 2 dimes and 1 nickel.

M.UN.01.06 Tell the amount of money: in cents up to $1, in dollars up to $100. Use the symbols $ and ¢.

M.PS.01.07 Add and subtract money in dollars only or in cents only.

Solve problems

M.PS.01.08 Solve one-step word problems using addition and subtraction of length, money and time, including "how much more/less", without mixing units.

Measurement standards: Book 2

Measure, add, and subtract length

M.UN.02.01 Measure lengths in meters, centimeters, inches, feet, and yards approximating to the nearest whole unit and using abbreviations: cm, m, in, ft, yd.

M.PS.02.02 Compare lengths; add and subtract lengths (no conversion of units).

Understand the concept of area

M.UN.02.03 Measure area using non-standard units to the nearest whole unit.

M.TE.02.04 Find the area of a rectangle with whole number side lengths by covering with unit squares and counting, or by using a grid of unit squares; write the area as a product.

Tell time and solve time problems

M.UN.02.05 Using both A.M. and P.M., tell and write time from the clock face in 5 minute intervals and from digital clocks to the minute; include reading time: 9:15 as nine-fifteen and 9:50 as nine-fifty. Interpret time both as minutes after the hour and minutes before the next hour, e.g., 8:50 as eight-fifty and ten to nine. Show times by drawing hands on clock face.

M.UN.02.06 Use the concept of duration of time, e.g., determine what time it will be half an hour from 10:15.

Record, add and subtract money

M.UN.02.07 Read and write amounts of money using decimal notations, e.g., $1.15.

M.PS.02.08 Add and subtract money in mixed units, e.g., $2.50 + 60 cents and $5.75 - $3, but not $2.50 + $3.10.

Read thermometers

M.UN.02.09 Read temperature using the scale on a thermometer in degrees Fahrenheit.

Solve measurement problems

M.PS.02.10 Solve simple word problems involving length and money.

M.TE.02.11 Determine perimeters of rectangles and triangles by adding lengths of sides, recognizing the meaning of perimeter.

Measurement standards: Book 3

Measure and use units for length, weight, temperature and time

M.UN.03.01 Know and use common units of measurements in length, weight, and time.

M.UN.03.02 Measure in mixed units within the same measurement system for length, weight, and time: feet and inches, meters and centimeters, kilograms and grams, pounds and ounces, liters and milliliters, hours and minutes, minutes and seconds, years and months.

M.UN.03.03 Understand relationships between sizes of standard units, e.g., feet and inches, meters and centimeters.

M.UN.03.04 Know benchmark temperatures such as freezing (32°F, 0°C); boiling (212°F, 100°C); and compare temperatures to these, e.g., cooler, warmer.

Understand meaning of area and perimeter and apply in problems

M.UN.03.05 Know the definition of area and perimeter and calculate the perimeter of a square and rectangle given whole number side lengths.

M.UN.03.06 Use square units in calculating area by covering the region and counting the number of square units.

M.UN.03.07 Distinguish between units of length and area and choose a unit appropriate in the context.

M.UN.03.08 Visualize and describe the relative sizes of one square inch and one square centimeter.

Estimate perimeter and area

M.TE.03.09 Estimate the perimeter of a square and rectangle in inches and centimeters; estimate the area of a square and rectangle in square inches and square centimeters.

Solve measurement problems

M.PS.03.10 Add and subtract lengths, weights, and times using mixed units within the same measurement system.

M.PS.03.11 Add and subtract money in dollars and cents.

M.PS.03.12 Solve applied problems involving money, length, and time.

M.PS.03.13 Solve contextual problems about perimeters of rectangles and areas of rectangular regions.

Measurement standards: Book 4

Measure using common tools and appropriate units

M.UN.04.01 Measure using common tools and select appropriate units of measure.

M.PS.04.02 Give answers to a reasonable degree of precision in the context of a given problem.

M.UN.04.03 Measure and compare integer temperatures in degrees.

M.TE.04.04 Measure surface area of cubes and rectangular prisms by covering and counting area of the faces.

Convert measurement units

M.TE.04.05 Carry out the following conversions from one unit of measure to a larger or smaller unit of measure: meters to centimeters, kilograms to grams, liters to milliliters, hours to minutes, minutes to seconds, years to months, weeks to days, feet to inches, ounces to pounds (using numbers that involve only simple calculations).

Use perimeter and area formulas

M.TE.04.06 Know and understand the formulas for perimeter and area of a square and a rectangle; calculate the perimeters and areas of these shapes and combinations of these shapes using the formulas.

M.TE.04.07 Find one dimension of a rectangle given the other dimension and its perimeter or area.

M.TE.04.08 Find the side of a square given its perimeter or area.

M.PS.04.09 Solve contextual problems about perimeter and area of squares and rectangles in compound shapes.

Understand right angles

M.TE.04.10 Identify right angles and compare angles to right angles.

Problem-solving

M.PS.04.11 Solve contextual problems about surface area.

Measurement standards: Book 5

Know, and convert among, measurement units within a given system

M.UN.05.01 Recognize the equivalence of 1 liter, 1,000 ml and 1,000 cm^3 and include conversions among liters, milliliters, and cubic centimeters.

M.UN.05.02 Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations (cm^3, m^3, in^3, ft^3, yd^3).

M.UN.05.03 Compare the relative sizes of one cubic inch to one cubic foot, and one cubic centimeter to one cubic meter.

M.UN.05.04 Convert measurements of length, weight, area, volume, and time within a given system using easily manipulated numbers.

Find areas of geometric shapes using formulas

M.PS.05.05 Represent relationships between areas of rectangles, triangles, and parallelograms using models.

M.TE.05.06 Understand and know how to use the area formula of a triangle: $A = \frac{1}{2}bh$ (where b is length of the base and h is the height), and represent using models and manipulatives.

M.TE.05.07 Understand and know how to use the area formula for a parallelogram: $A = bh$, and represent using models and manipulatives.

Understand the concept of volume

M.TE.05.08 Build solids with unit cubes and state their volumes.

M.TE.05.09 Use filling (unit cubes or liquid), and counting or measuring to find the volume of a cube and rectangular prism.

M.PS.05.10 Solve applied problems about the volumes of rectangular prisms using multiplication and division and using the appropriate units.

Measurement standards: Book 6

Convert within measurement systems

M.UN.06.01 Convert between basic units of measurement within a single measurement system, e.g., square inches to square feet.

Find volume and surface area

M.PS.06.02 Draw patterns (of faces) for a cube and rectangular prism that, when cut, will cover the solid exactly (nets).

M.TE.06.03 Compute the volume and surface area of cubes and rectangular prisms given the lengths of their sides, using formulas.