

Mathematics: New York State Core Curriculum: Measurement Strand
Performance Indicators Organized by Grade Level and Band under Major Understandings

Students will determine what can be measured and how, using appropriate methods and formulas.	
PK.M.1 Units of Meas.	Develop language such as bigger, longer, and taller to discuss length.
PK.M.2 Units of Meas.	Relate specific times such as day and night.
K.M.1 Units of Meas.	Name, discuss, and compare attributes of length (longer than, shorter than).
K.M.2 Units of Meas.	Compare the length of two objects by representing each length with string or a paper strip.
K.M.3 Units of Meas.	Relate specific times such as morning, noon, afternoon, and evening to activities and absence or presence of daylight.
1.M.1 Units of Meas.	Recognize length as an attribute that can be measured.
1.M.2 Units of Meas.	Use non-standard units (including finger lengths, paper clips, students' feet and paces) to measure both vertical and horizontal lengths.
1.M.3 Units of Meas.	Informally explore the standard unit of measure, inch.
2.M.1 Units of Meas.	Use non-standard and standard units to measure both vertical and horizontal lengths.
2.M.2 Units of Meas.	Use a ruler to measure standard units (including whole inches and whole feet).
2.M.3 Units of Meas.	Compare and order objects according to the attribute of length.
2.M.4 Units of Meas.	Recognize mass as a qualitative measure (e.g., Which is heavier? Which is lighter?).
2.M.5 Units of Meas.	Compare and order objects, using lighter than and heavier than.
3.M.1 Units of Meas.	Select tools and units (customary) appropriate for the length measured.
3.M.2 Units of Meas.	Use a ruler/yardstick to measure to the nearest standard unit (whole and $\frac{1}{2}$ inches, whole feet, and whole yards).
3.M.3 Units of Meas.	Measure objects, using ounces and pounds.
3.M.4 Units of Meas.	Recognize capacity as an attribute that can be measured.
3.M.5 Units of Meas.	Compare capacities (e.g., Which contains more? Which contains less?).
3.M.6 Units of Meas.	Measure capacity, using cups, pints, quarts, and gallons.
4.M.1 Units of Meas.	Select tools and units (customary and metric) appropriate for the length being measured.
4.M.2 Units of Meas.	Use a ruler to measure to the nearest standard unit (whole, $\frac{1}{2}$ and $\frac{1}{4}$ inches, whole feet, whole yards, whole centimeters, and whole meters).
4.M.3 Units of Meas.	Know and understand equivalent standard units of length: 12 inches = 1 foot; 3 feet = 1 yard.
4.M.4 Units of Meas.	Select tools and units appropriate to the mass of the object being measured (grams and kilograms).
4.M.5 Units of Meas.	Measure mass, using grams.
4.M.6 Units of Meas.	Select tools and units appropriate to the capacity being measured (milliliters and liters).
4.M.7 Units of Meas.	Measure capacity, using milliliters and liters.
5.M.1 Units of Meas.	Use a ruler to measure to the nearest inch, $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, and $\frac{1}{8}$ inch.
5.M.2 Units of Meas.	Identify customary equivalent units of length.
5.M.3 Units of Meas.	Measure to the nearest centimeter.
5.M.4 Units of Meas.	Identify equivalent metric units of length.
5.M.5 Units of Meas.	Convert measurement within a given system.
5.M.6 Tools	Determine the tool and technique to measure with an appropriate level of precision: lengths and angles.
6.M.1 Units of Meas.	Measure capacity and calculate volume of a rectangular prism.
6.M.2 Units of Meas.	Identify customary units of capacity (cups, pints, quarts, and gallons).
6.M.3 Units of Meas.	Identify equivalent customary units of capacity (cups to pints, pints to quarts, and quarts to gallons).
6.M.4 Units of Meas.	Identify metric units of capacity (liter and milliliter).
6.M.5 Units of Meas.	Identify equivalent metric units of capacity (milliliter to liter and liter to milliliter).
6.M.6 Tools	Determine the tool and technique to measure with an appropriate level of precision: capacity.



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7.M.1 Units of Meas.	Calculate distance using a map scale.
7.M.2 Units of Meas.	Convert capacities and volumes within a given system.
7.M.3 Units of Meas.	Identify customary and metric units of mass.
7.M.4 Units of Meas.	Convert mass within a given system.
7.M.5 Units of Meas.	Calculate unit price using proportions.
7.M.6 Units of Meas.	Compare unit prices.
7.M.7 Units of Meas.	Convert money between different currencies with the use of an exchange rate table and a calculator.
7.M.8 Units of Meas.	Draw central angles in a given circle using a protractor (circle graphs).
7.M.9 Tools	Determine the tool and technique to measure with an appropriate level of precision: mass.
8.M.1 Units of Meas.	Solve equations/proportions to convert to equivalent measurements within metric and customary measurement systems.
A.M.1 Units of Meas.	Calculate rates using appropriate units (e.g., rate of a space ship versus the rate of a snail).
A.M.2 Units of Meas.	Solve problems involving conversions within measurement systems, given the relationship between the units.
A2.M.1 Units of Meas.	Define radian measure.
A2.M.2 Units of Meas.	Convert between radian and degree measures.

Students will use units to give meaning to measurements.	
1.M.4 Units	Know vocabulary and recognize coins (penny, nickel, dime, quarter).
1.M.5 Units	Recognize the cent notation as ¢.
1.M.6 Units	Use different combinations of coins to make money amounts up to 25 cents.
1.M.7 Units	Recognize specific times (morning, noon, afternoon, evening).
1.M.8 Units	Tell time to the hour, using both digital and analog clocks.
1.M.9 Units	Know the days of the week and months of the year in sequence.
1.M.10 Units	Classify months and connect to seasons and other events.
2.M.6 Units	Know and recognize coins (penny, nickel, dime, quarter) and bills (\$1, \$5, \$10, and \$20).
2.M.7 Units	Recognize the whole dollar notation as \$1, etc.
2.M.8 Units	Identify equivalent combinations to make one dollar.
2.M.9 Units	Tell time to the half hour and five minutes using both digital and analog clocks.
3.M.7 Units	Count and represent combined coins and dollars, using currency symbols (\$0.00).
3.M.8 Units	Relate unit fractions to the face of the clock: whole = 60 minutes; $\frac{1}{2}$ = 30 minutes; $\frac{1}{4}$ = 15 minutes.
4.M.8 Units	Make change, using combined coins and dollar amounts.
4.M.9 Units	Calculate elapsed time in hours and half hours, not crossing A.M./P.M.
4.M.10 Units	Calculate elapsed time in days and weeks, using a calendar.
5.M.7 Units	Calculate elapsed time in hours and minutes.
5.M.8 Units	Measure and draw angles using a protractor.



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Students will develop strategies for estimating measurements.	
1.M.11 Estimation	Select and use non-standard units to estimate measurements.
2.M.10 Estimation	Select and use standard (customary) and non-standard units to estimate measurements.
3.M.9 Estimation	Tell time to the minute, using digital and analog clocks.
3.M.10 Estimation	Select and use standard (customary) and non-standard units to estimate measurements.
5.M.9 Estimation	Determine personal references for customary units of length (e.g., your pace is approximately 3 feet, your height is approximately 5 feet, etc.).
5.M.10 Estimation	Determine personal references for metric units of length.
5.M.11 Estimation	Justify the reasonableness of estimates.
6.M.7 Estimation	Estimate volume, area, and circumference (see figures identified in geometry strand).
6.M.8 Estimation	Justify the reasonableness of estimates.
6.M.9 Estimation	Determine personal references for capacity.
7.M.10 Estimation	Identify the relationships between relative error and magnitude when dealing with large numbers (e.g., money, population).
7.M.11 Estimation	Estimate surface area.
7.M.12 Estimation	Determine personal references for customary /metric units of mass.
7.M.13 Estimation	Justify the reasonableness of the mass of an object.

Students will understand that all measurement contains error and be able to determine its significance.	
A.M.3 Error & Magnitude	Calculate the relative error in measuring square and cubic units, when there is an error in the linear measure.

