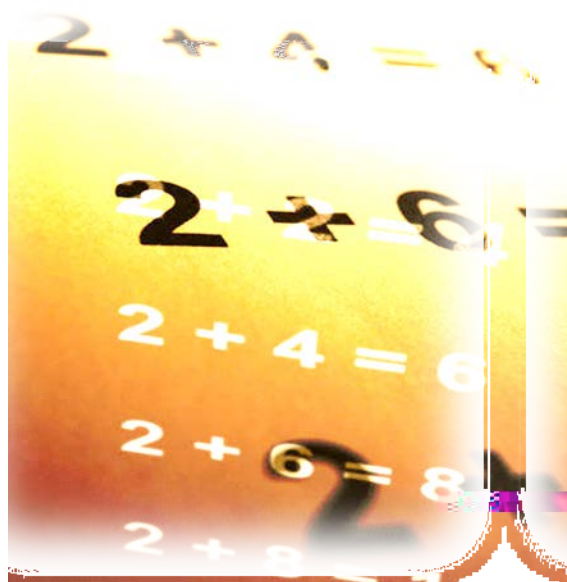


EAST ISLIP SCHOOL DISTRICT



Grade 4 • Module 2

Unit Conversions and Problem Solving
with Metric Measurement

OVERVIEW

Students have become accustomed to thinking of 250 as 2 hundreds 5 tens, but the idea of a mixed unit shows up in many varied contexts, such as 2 hr 5 min, \$2.50, 2 km 5 m, 2' 5", $2\frac{5}{8}$ (hours and minutes, dollars and cents, kilometers and meters, feet and inches, ones and eighths). While the context and the units may vary greatly, there are many common threads present in any mixed unit calculation. Consider the connections and similarities between the following equalities:

	2,437	2	437 ones	=	2,437 ones
		thousands			
2 km 437 m	2,437 m	2 kilometers	437 meters	=	2,437 meters
2 kg 437 g	2,437 g	2 kilograms	437 grams	=	2,437 grams
2 L 437 mL	2,437 mL	2 liters	437 milliliters	=	2,437 milliliters

In order to explore the process of working with mixed units, Module 2 focuses on length, mass, and capacity in the metric system,¹ where place value serves as a natural guide for moving between larger and smaller units.

In Topic A, students review place value concepts while building fluency to decompose or convert from larger to smaller units (**4.MD.1**). They learn the relative sizes of measurement units, building off prior knowledge of grams and kilograms from Grade 3 (**3.MD.2**) and meters and centimeters from Grade 2 (**2.MD.3**). As students progress through the topics, they reason about correct unit sizes and use diagrams such as number lines with measurement scales to represent problems. Conversions between the units are recorded in a two-column table. Addition and subtraction single-step problems of metric units provides an opportunity to practice mental math calculations as well as solve using the addition and subtraction algorithms established in Module 1. Students reason by choosing to convert between mixed and single units before or after the computation (**4.MD.2**). Connecting their familiarity of metric units and place value, the module moves swiftly through each unit of conversion, spending only one day on each type. This initial understanding of unit

conversions. The beauty both of our place value and measurement systems is the efficiency and precision permitted by the use of different size units to express a given quantity. As students solve word problems by adding and subtracting metric units, their ability to reason in parts and wholes is taken to the next level, which is important preparation for multi-digit operations and for manipulating fractional units in future modules. Tape diagrams and number lines will serve as models throughout to support applying the standard algorithm to word problems.

Terminology

New or Recently Introduced Terms

Kilometer (km, a unit of measure for length)
Mass (the measure of the amount of matter in an object)
Milliliter (mL, a unit of measure for liquid volume)
Mixed units (e.g., 3 m 43 cm)

Familiar Terms and Symbols²

=, <, > (equal, less than, greater than)
Capacity (the maximum amount that something can contain)
Convert (to express a measurement in a different unit)
Distance (the length of the line segment joining two points)
Equivalent (equal)
Estimate (an approximation of the value of a number or quantity)
Kilogram (kg), gram (g) (units of measure for mass)
Larger or smaller unit (used in a comparison of units)
Length (the measurement of something from end to end)
Liter (L) (unit of measure for liquid volume)
Measurement (dimensions, quantity, or capacity as determined by comparison with a standard)
Meter (m), centimeter (cm) (units of measure for length)
Table (used to represent data)