



# MATH NEWS



LAFAYETTE  
PARISH SCHOOL SYSTEM

Grade 4, Module 2, Topic A

## 4<sup>th</sup> Grade Math

*Module 2: Unit Conversions and Problem Solving with Metric Measurement*

### Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 2 of Eureka Math (Engage New York) covers Unit Conversions and Problem Solving with Metric Measurement.



### Focus Area ▶ Topic A: Metric Unit Conversions

#### Words to Know:

**Measurement** – quantity as determined by comparison with a standard unit

**Convert** - to express a measurement in a different unit

**Distance** -the length of the line segment joining two points

**Mixed Unit** – refers to numbers that are paired but represent individual entities or units. Take the number 35. Written this way, it represents 35 ones. That is 35 of the same unit.

However, if we write 3 tens 5 ones, then we have mixed units because the 3 and the 5 are conveying different meanings.

### These are all examples of mixed units!

2 hundreds 5 tens  
2 hr 5 min  
2 km 5 m  
2 ft 5 in  
\$2.50  
2  $\frac{5}{8}$

## OBJECTIVES OF TOPIC A

- ▶ Express metric length measurements in terms of a smaller unit; model and solve addition and subtraction word problems involving metric length.
- ▶ Express metric mass measurements in terms of a smaller unit; model and solve addition and subtraction word problems involving metric mass.
- ▶ Express metric capacity measurements in terms of a smaller unit; model and solve addition and subtraction word problems involving metric capacity.

### Focus Area ▶ Topic A: Metric Unit Conversions

#### Converting Units

Students review place value concepts while building fluency to decompose or convert from larger to smaller units. They learn 1 meter (m) is equal to 100 centimeters (cm) just as 1 hundred is equal to 100 ones. The table below continues this thinking.

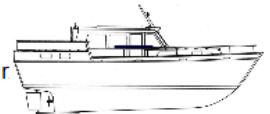
Length km = kilometers m = meters	Weight/Mass kg = kilograms g = grams	Capacity L = liters mL = milliliters
1 km = 1,000 m	1 kg = 1,000 g	1 L = 1,000 mL
2 km = 2,000 m	2 kg = 2,000 g	2 L = 2,000 mL
15 km = 15,000 m	15 kg = 15,000 g	15 L = 15,000 mL
24 km = 24,000 m	24 kg = 24,000 g	24 L = 24,000 mL

Students use this knowledge of unit conversion to solve addition and subtraction problems involving mixed units.



#### Example Problem and Answer

The length of Tom's boat is 11 m 62 cm.  
His neighbor's boat is 2 m 59 cm longer.  
How long is the neighbor's boat?



Neighbor's Boat  
?

Tom's Boat: 11 m 62 cm  
Amount Longer: 2 m 59 cm

This student set up tape diagram to better understand the problem.

The tape diagram shows that the length of the neighbor's boat can be found by adding the two parts together.

11 m 62 cm  
+ 2 m 59 cm  
-----  
13 m 121 cm

A number bond is used to convert 121 cm into 1 m 21 cm.

13 m + 1 m + 21 cm = 14 m 21 cm

The length of the neighbor's boat is 14 m 21 cm.

In this example, the units are added separately. The meters are added together and the centimeters are added together. Then the centimeters are converted to meters.

**Can you think of another way to solve it?**

**Focus Area ▶ Topic A:** *Metric Unit Conversions*

**Converting Units**

Conversions between the units are recorded in a two-column table. Recording the unit conversions in a table allows students to see the ease of converting from a smaller unit to a larger unit.

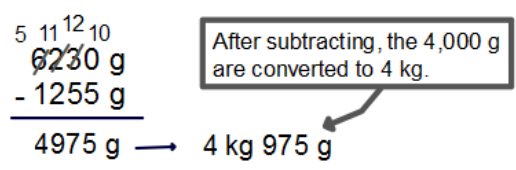
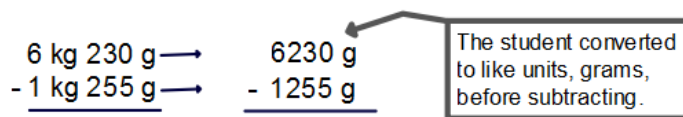
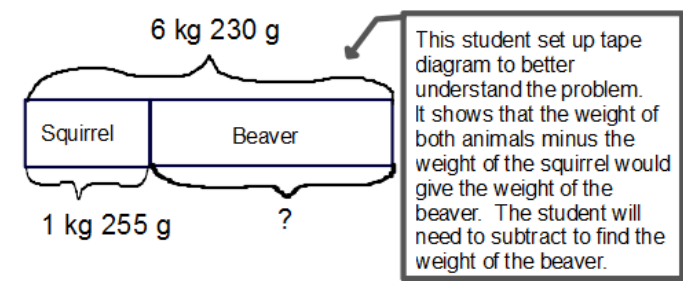
Example Problem		Answer	
Liquid Capacity		Liquid Capacity	
L	mL	L	mL
1	1,000	1	1,000
5		5	5,000
38		38	38,000
	49,000	49	49,000
54		54	54,000
	92,000	92	92,000

**Strategies for Adding and Subtracting Mixed Units**

Students will be taught several different strategies for adding and subtracting mixed units. In the following example, the student will use an **algorithm strategy** and decompose or convert the kilograms to grams before solving.

**Example Problem and Answer**

Together, a squirrel and a beaver weigh 6 kg 230 g. If the squirrel weighs 1 kg 255 g, how much does the beaver weigh?



The beaver weighs 4 kg 975 g.

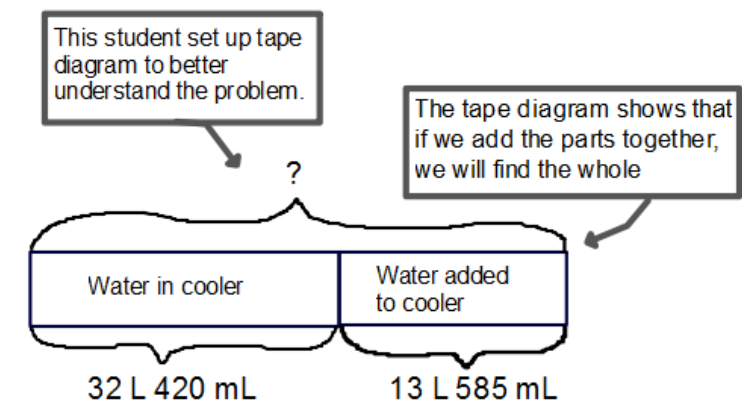
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**Strategies for Adding and Subtracting Mixed Units**

Addition and subtraction single-step problems of metric units provide an opportunity to practice using simplifying strategies as well as solve using the addition and subtraction algorithm. In this next example, the student uses the simplifying strategy.

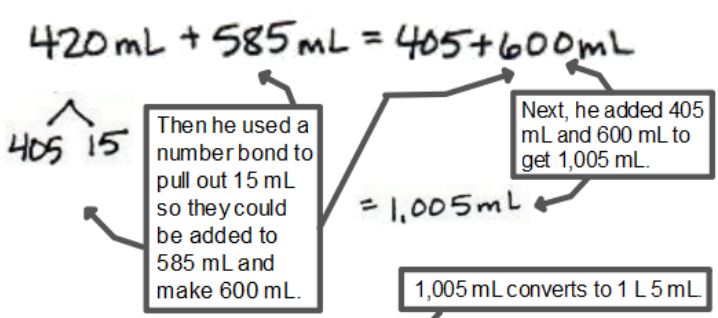
**Example Problem and Answer**

Jon had a cooler that had 32L 420mL of water in it. He emptied a container with 13L 585mL of water into the cooler. How much water is in the cooler now?



The first thing this student added was the liters.

$$32 \text{ L} + 13 \text{ L} = 45 \text{ L}$$



$$45 \text{ L} + 1 \text{ L} + 5 \text{ mL} = 46 \text{ L } 5 \text{ mL}$$

The cooler has 46 L 5 mL of water in it.