



# MATH NEWS



Grade 5, Module 2, Topic D

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

Module 2: Multi-Digit Whole Number and Decimal Fraction Operations

### 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. Grade 5 Module 2 of Eureka Math ( Engage New York) covers Multi-Digit Whole Number and Decimal Fraction Operations. This newsletter will discuss Module 2, Topic D.

Topic D. Measurement Word Problems with Whole Number and Decimal Multiplication

### Words to know

- millimeter (mm)
- centimeter (cm)
- kilometer (km)
- inch (in)
- foot/feet (ft)
- yard (yd)
- mile (mi)
- cup (c)
- pint (pt)
- quart (qt)
- gallon (gal)
- milligram (mg)
- gram (g)
- kilogram (kg)
- ounce (oz)
- pound (lb)
- ton
- fluid ounce (fl oz)
- liter (L)
- milliliter (ml)
- kiloliter (kl)
- unit

### Things to Remember!!!

- When converting **bigger unit** to **smaller unit**, you multiply by the bigger **unit** by whole number of smaller **units**.

## OBJECTIVES OF TOPIC D

- Use whole number multiplication to express equivalent measurements.
- Use decimal multiplication to express equivalent measurements.
- Solve two-step word problems involving measurement and multi-digit multiplication.

## Focus Area– Topic D

Measurement Conversions through multiplication

### Knowing the unit conversions

- 1 foot = 12 inches
- 1 mile = 5,280 feet
- 1 centimeter = 10 millimeter
- 1 meter = 100 centimeters = 1,000 millimeters
- 1 kilometer = 1,000 meters
- 1 pound = 16 ounces
- 1 gram = 1,000 milligrams
- 1 cup = 8 fluid ounces
- 1 quart = 2 pints
- 1 liter = 1,000 milliliters
- 1 yard = 3 feet = 36 inches
- 1 mile = 1,760 yards
- 1 ton = 2,000 pounds
- 1 kilogram = 1,000 grams
- 1 pint = 2 cups
- 1 gallon = 4 quarts
- 1 kiloliter = 1,000 liters

### Convert.

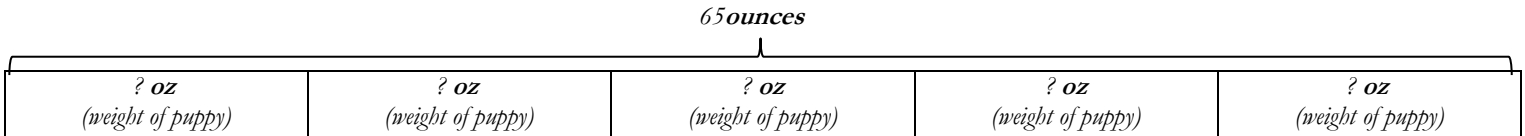
- 15 yd = \_\_\_\_\_ ft  
*yards to feet: big unit to small unit - multiply*  
3 ft = 1 yd      15 yd x 3 ft per yd = 45 ft
- \_\_\_\_\_ g = 18 kg  
*kilograms to gram: big unit to small unit - multiply*  
1,000 g = 1 kg      18 kg x 1,000 g per kg = 18,000 g
- 16 gal = \_\_\_\_\_ qt = \_\_\_\_\_ pt  
*gallons to quarts to pints: big unit to small unit to smaller unit – multiply twice*  
4 qt = 1 gal      1 qt = 2 pt  
16 gal x 4 qt per gal = 64 qt  
64 qt x 2 pt per qt = 128 pt
- \_\_\_\_\_ fl oz = 6.32 c  
*cups to fluid ounces: big unit to small unit - multiply*  
8 fl oz = 1 cup  
6.32 c x 8 fl oz per c  
= 632 hundredths c x 8 fl oz per c  
= 5056 hundredths fl oz  
= 50.56 fl oz
- 9.54 g = \_\_\_\_\_ mg  
*grams to milligrams: big unit to small unit - multiply*  
1,000 mg = 1 g  
9.54 g x 1000 mg per g  
= 954 hundredths g x 1000 mg per g  
= 954,000 hundredths mg  
= 9540.00 or 9540 mg

John's dog had 5 puppies! When John and his sister Peggy weigh all the puppies together, they weigh **4 pounds 1 ounce**. Since all the puppies are about the same size, how many **ounces** does each puppy weigh?

*Answer:* First, we need to put all of the puppies' weight in the same **units**. We are looking for a final answer of **ounces**. So, we are converting from **pounds to ounces**: big **unit** to small **unit** - multiply. **16 ounces = 1 pound**

$$4 \text{ pounds} \times 16 \text{ ounces per pound} = 64 \text{ ounces} \qquad 64 \text{ ounces} + 1 \text{ ounce} = 65 \text{ ounces}$$

$$65 \text{ ounces} = 5 \text{ puppies weight in ounces}$$



$$65 \text{ ounces} \div 5 \text{ puppies} = 13 \text{ ounces}$$

**Each puppy weighs 13 ounces.**

$$\begin{array}{r} 13 \\ 5 \overline{) 65} \\ \underline{-5} \phantom{0} \\ 15 \\ \underline{-15} \\ 0 \end{array}$$

Susan is training to be in the Mrs. Fitness contest. She ran 3.75 **km**, swam 0.76 **km**, and biked for 23.2 **km**. Susan completed this routine three times a week. How far did Susan travel in one week while training? Express your answer in meters.

*Answer:* First, we will convert from **km to m**: big **unit** to small **unit** - multiply. **1,000 m = 1 km**

$$3.75 \text{ km} \times 1000 \text{ m per km} = 3,750 \text{ m} \qquad 0.76 \text{ km} \times 1000 \text{ m per km} = 760 \text{ m} \qquad 23.2 \text{ km} \times 1000 \text{ m per km} = 23,200 \text{ m}$$

*(Susan ran) \qquad \qquad \qquad (Susan swam) \qquad \qquad \qquad (Susan biked)*

$$\begin{array}{r} 3,750 \text{ m} \\ 760 \text{ m} \\ + 23,200 \text{ m} \\ \hline 27,710 \text{ m} \end{array} \qquad \begin{array}{r} 27,710 \text{ m} \\ \times \quad 3 \text{ (trainings in a week)} \\ \hline 83,130 \text{ m} \end{array}$$

*27,710 m (Susan's travel for 1 time)*

Susan traveled a total of **83,130 meters** in one week of training.

**Another Approach:** 3.75 **km**

0.76 **km**

23.20 **km**

$$27.71 \text{ km} \times 1000 \text{ m per km} = 27,710 \text{ m}$$

27,710 **m**

$\times \quad 3$  (trainings in a week)

83,130 **m** (total distance in one week of training)

Fast Mail charges \$5.35 to ship a 2 **lb**-package. For each ounce over 2 **lb**, they charge an additional \$0.18 per **ounce**. How much would it cost to ship a package weighing 3 **lb 8 oz**?

*Answer:* First we need to see how many 2 **pounds** can be taken out of the total weight of the package.

3 **lb 8 oz** (weight of package)

$- 2 \text{ lb } 0 \text{ oz}$  (\$5.35 - cost for shipping 2 **lb**)

1 **lb 8 oz** (left over weight)

Now we need to convert our packages left over weight into the same **unit** of **ounces**.

Convert **pounds to ounces**: big **unit** to small **unit** (multiply) **16 oz = 1 lb**

$$\begin{array}{r} 16 \text{ oz} \\ + 8 \text{ oz} \\ \hline 24 \text{ oz} \end{array} \begin{array}{l} (\$0.18 \text{ per oz}) \\ 0.18 \times 100 = 18 \end{array} \qquad \begin{array}{r} 24 \text{ oz} \\ \times 18 \\ \hline 192 \\ + 240 \\ \hline 432 \end{array} \qquad \begin{array}{r} \$5.35 \text{ (cost for 2 lb)} \\ + \$4.32 \text{ (cost for 24 oz)} \\ \hline \$9.67 \end{array}$$

$432 \div 100 = 4.32$

It will cost \$9.67 to ship a package weighing 3 **lb 8 oz**.