



# MATH NEWS

## Grade 5 | Module 2 | Topic D | Measurement Word Problems

### Welcome

This document is created to give parents and students a better understanding of the math concepts found in the Eureka Math (© 2013 Common Core, Inc.) that is also posted in the Engage New York material taught in the classroom. Grade 5 Module 2 of Eureka Math (Engage New York) Multi-Digit Whole Number and Decimal Fraction Operations. This newsletter will Module 2 Topic D which focuses on measurement word problems with whole number and decimal multiplication.

### Objectives

- 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.

### Online Practice

Visit [www.zearn.com](http://www.zearn.com) for extra practice as well! Each part of the Zearn program is specifically designed to assist in growing mathematical understanding.

## Important Information

### Words to Know

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

### Things to Remember

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

### Knowing the Unit Conversions - Measurement Conversions Through Multiplication

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

## Measurement Conversions

Convert.

a.  $15 \text{ yd} = \underline{\hspace{2cm}} \text{ ft}$

**yards to feet:** big unit to small unit - multiply

$3 \text{ ft} = 1 \text{ yd} \quad 15 \text{ yd} \times 3 \text{ ft per yd} = 45 \text{ ft}$

Convert.

b.  $\underline{\hspace{2cm}} \text{ g} = 18 \text{ kg}$

**kilograms to gram:** big unit to small unit -

multiply

$1,000 \text{ g} = 1 \text{ kg} \quad 18 \text{ kg} \times 1,000 \text{ g per kg} = 18,000 \text{ g}$

Convert.

c.  $16 \text{ gal} = \underline{\hspace{2cm}} \text{ qt} = \underline{\hspace{2cm}} \text{ pt}$

**gallons to quarts to pints:** big unit to small unit to smaller unit - multiply twice

$4 \text{ qt} = 1 \text{ gal} \quad 1 \text{ qt} = 2 \text{ pt}$

$16 \text{ gal} \times 4 \text{ qt per gal} = 64 \text{ qt}$

$64 \text{ qt} \times 2 \text{ pt per qt} = 128 \text{ pt}$

Convert.

d.  $\underline{\hspace{2cm}} \text{ fl oz} = 6.32 \text{ c}$

**cups to fluid ounces:** big unit to small unit -

multiply

$8 \text{ fl oz} = 1 \text{ cup}$

$6.32 \text{ c} \times 8 \text{ fl oz per c}$

$= 632 \text{ hundredths c} \times 8 \text{ fl oz per c}$

$= 5056 \text{ hundredths fl oz}$

$= 50.56 \text{ fl oz}$

Convert.

e.  $9.54 \text{ g} = \underline{\hspace{2cm}} \text{ mg}$

**grams to milligrams:** big unit to small unit -

multiply

$1,000 \text{ mg} = 1 \text{ g}$

$9.54 \text{ g} \times 1,000 \text{ mg per g}$

$= 954 \text{ hundredths g} \times 1,000 \text{ mg per g}$

$= 954,000 \text{ hundredths mg}$

$= 9540.00 \text{ or } 9540 \text{ mg}$

## Application Problems

**Problem:** John's dog has 5 puppies! When John and his sister Peggy weigh all the puppies together, they weigh 4 pounds 1 ounce. Since all the puppies are 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 five pounds to ounces: big unit to small unit - multiply.*  
 $16 \text{ ounces} = 1 \text{ pound}$

$4 \text{ pounds} \times 16 \text{ ounces per pound} = 64 \text{ ounces}$

$64 \text{ ounces} + 1 \text{ ounce} = 65 \text{ ounces}$

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

6	? oz (weight of puppy)
5	? oz (weight of puppy)
0	? oz (weight of puppy)
u	? oz (weight of puppy)
n	? oz (weight of puppy)
c	? oz (weight of puppy)
e	? oz (weight of puppy)
s	? oz (weight of puppy)

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

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

$13 \text{ ounces}$

**Each puppy weighs 13 oz.**

**Problem:** 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.  $1,000 \text{ m} = 1 \text{ km}$*

$3.75 \text{ km} \times 1000 \text{ m per km} = 3,750 \text{ m}$  (Susan ran)

$0.76 \text{ km} \times 1000 \text{ m per km} = 760 \text{ m}$  (Susan swam)

$23.2 \text{ km} \times 1000 \text{ m per km} = 23,200 \text{ m}$  (Susan biked)

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

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

## Continued from Page 2

Another Approach:

$$\begin{array}{r} 3.57\text{km} \\ 0.76\text{km} \\ + 23.20\text{km} \\ \hline 27.71\text{km} \end{array} \times 100\text{m/km} = 27,710\text{m}$$
$$\begin{array}{r} 27,710\text{m} \\ \times 3 \text{ (trainings/wk.)} \\ \hline 83,130\text{m} \end{array} \text{ (total distance/1 wk.)}$$

**Problem:** 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.

$$\begin{array}{r} 3 \text{ lb } 8 \text{ oz} \text{ (weight of package)} \\ - 2 \text{ lb } 0 \text{ oz} \text{ ($5.35 - cost for shipping 2 lb)} \\ \hline 1 \text{ lb } 8 \text{ oz} \text{ (left over weight)} \end{array}$$

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**

$$\begin{array}{r} 16\text{oz} \\ + 8\text{oz} \\ \hline 24\text{oz} \end{array} \begin{array}{r} 24\text{oz} \\ \times 18 \\ \hline 192 \\ + 240 \\ \hline 432 \end{array}$$

$0.18 \times 100 = 18$   
 $432 \div 100 = 4.32$

$$\begin{array}{r} \$5.35 \text{ (cost for 2 lb)} \\ + \$4.32 \text{ (cost for 24 oz)} \\ \hline \$9.67 \end{array}$$

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

## Homework Help

Looking for assistance for to help complete nightly homework? Check out the following website to get digital copies of homework, as well as detailed explanations in video format:

[http://www.oakdale.k12.ca.us/cms/page\\_view?d=x&piid=&vpid=1401784829350](http://www.oakdale.k12.ca.us/cms/page_view?d=x&piid=&vpid=1401784829350)

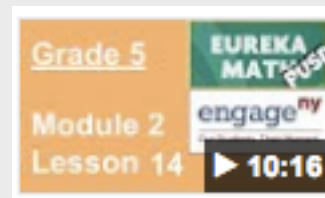
## Flipped Learning

Flipped learning is a great way to review topics that your student is learning in the classroom. The following are links to videos that give detailed explanations for each lesson in this topic.

Lesson 13: <https://www.youtube.com/watch?v=9d7yigjip8M>



Lesson 14: <https://www.youtube.com/watch?v=LAlwQ7YMsXI>



Lesson 15: <https://www.youtube.com/watch?v=WqSOkN-t9-8>

