6th Grade

Week 6

May 4th - 8th

	Let me know ahead of time if you need me to set up a Google Meet for the class. . ***I can help you with this week's homework, or I can help you study for Friday's Quiz***
MONDAY May 4th COS 3d	**Lesson 12.4: Mass and Capacity in the Metric System** ❑ Watch Mrs. Taylor's video for Monday, May 4th ❑ I will also include supplementary videos in Google Classroom ❑ **Assignment: p.486 (1 - 11 odd). You do not have to estimate the mass or capacity in #3 - 11. Simply tell me what metric unit you would use to measure the item..** ❑ **Check your answers with the back of the book.** ❑ Submit Assignment by Friday, May 8th via Google Classroom
TUESDAY May 5th COS 3d	**Lesson 12.5: Changing Metric Units** ❑ Watch Mrs. Taylor's video for Tuesday, May 5th ❑ I will also include supplementary videos in Google Classroom ❑ **Assignment: p. 492 (11 -23 odd). Show full details.** ❑ **Check your answers with the back of the book.** ❑ Submit Assignment by Friday, May 8th via Google Classroom
WEDNESDAY May 6th COS 3d	**Lesson 12.6: Measures of Time** ❑ Watch Mrs. Taylor's video for Wednesday, May 6th ❑ I will also include supplementary videos in Google Classroom ❑ **Assignment: p. 496 (11 - 21 odd) Show full details.** ❑ **Check your answers with the back of the book.** ❑ Submit Assignment by Friday, May 8th via Google Classroom
THURSDAY May 7th COS 3d	**Review of Sections 12.1 - 12.6** ❑ Re-watch Mrs. Taylor's videos.for May 4th thru May 8th ❑ Look back over the supplementary videos that I posted ❑ **Assignment: p. 501 (5 - 23 odd).** ❑ **Study for tomorrow's quiz.** ❑ **Check your answers with the back of the book.** ❑ Submit Assignment by Friday, May 8th via Google Classroom
FRIDAY May 8th COS 3d	**Quiz on 12.1 - 12.6**

Week 6 Notes

Mass the weight of an object **Capacity** the amount of liquid an object or item can hold.

What is mass in the metric system?

gram ( ) The basic **unit** of **mass in the metric system**, equal to 1,000 grams (2.2 pounds). See Table at measurement. See Note at weight. **metric system** A decimal **system** of weights and measures based on the meter as a **unit** of length, the kilogram as a **unit** of **mass**, and the liter as a **unit** of volume.

I. **Identify Equivalence of Metric Units of Mass**

In the United States, the most common system of measurement is the ***Customary system*** of measurement. The Customary system of measurement for ***mass*** or weight is measured in pounds and tons. Outside of the United States and when people work with topics in science, people use a system called the ***Metric system***. The metric system measures mass or weight differently from the customary system.

How do we measure mass in the Metric system?

In the metric system we use different standard units to measure mass or weight.

Metric Units of Mass

Kilograms

Grams

Milligrams

This text box lists the units of measuring mass from the largest unit, the kilogram, to the smallest unit, the milligram. If you think back to when you learned about measuring length, the prefix “milli” indicated a very small unit. That is the same here as we measure mass.

How can we find equivalent metric units of mass?

The word ***equivalent*** means equal. We can compare different units of measuring mass with kilograms, grams and milligrams. To do this, we need to know how many grams equal one kilogram, how many milligrams equal one gram, etc. Here is a chart to help us understand equivalent units.

Equivalent Units of Mass - Metrics

1 kilogram (kg) = 1000 grams (g)

1 gram = 1000 milligrams (mg)

Here you can see that when we convert **kilograms to grams you multiply by 1000.**

When you convert **grams to milligrams, you multiply by 1000.**

To convert from a large unit to a small unit, we multiply.

To convert from a small unit to a large unit, we divide.

<u>Example</u>

5 kg = _____ g

When we go from kilograms to grams, we multiply by 1000.

5 kg = 5000 g

These two values are equivalent.

Example

2000 mg = _____ g

When we go from milligrams to grams, we divide.

2000 mg = 2 g

These two values are equivalent.

II. **Identify Equivalence of Metric Units of Capacity**

When we think about ***capacity***, often referred to as volume, we think about measuring liquids. In the Customary system of measurement, we measure liquids using cups, pints, ounces, gallons etc. In the Metric System of measurement, we measure capacity using two different measures, liters and milliliters.

Metric Units of Capacity

1 liter (L) = 1000 milliliters (mL)

Since there are only two common metric units for measuring capacity, this text box shows them and their equivalent measures.

Liters are larger than milliliters. Notice that prefix “milli” again.

When converting from large units to small units, you multiply.

When converting from small units to large units, you divide.

Let’s apply this in an example.

Example

4 liters = _____ milliliters

Liters are larger than milliliters, so we multiply by 1000.

4 liters = 4000 milliliters

III. **Choose Appropriate Metric Units of Mass or Capacity for Given Measurement Situations**

When you think about the metric units for measuring mass, how do you know when to measure things in grams, milligrams or kilograms? To really understand when to use each unit of measurement we have to understand a little more about the size of each unit. If you know measurements in the customary or standard system of measurement, such as ounces and pounds, you can compare them to measurements in the metric system of measurement, such as milligrams, grams, and kilograms. **Grams compare with ounces, which measure really small things like a raisin. Kilograms compare with pounds, which we use pounds to measure lots of things, like a textbook. What about milligrams?**

Milligrams are very, very tiny. Think about how small a raisin is and recognize we would use grams to measure that. Scientists are one group of people who would measure the mass of very tiny items. These things would be measured in milligrams.

If you think about things that would be seen under a microscope, you would measure the mass of those items in milligrams.

A milligram is 1/1000 of a gram.

What about capacity? How do we choose the correct unit to measure capacity?

There are two metric units for measuring capacity, milliliters and liters.

This comparison may seem a little more obvious that the units for mass. A milliliter would be used to measure very small amounts of liquid. Milliliters are much smaller even than ounces. A liter would be used to measure much larger volumes of liquid.

A milliliter is 1/1000

Would you measure a bottle of soda in liters or milliliters?

You would measure it in liters. A 2 liter bottle of soda is a standard size for soda bottles. Think about milliliters as the amount of liquid in an eyedropper.

Vocabulary

Here are the vocabulary words that are found in this lesson.

Customary System

The system of measurement common in the United States, uses feet, inches, pounds, cups, gallons, etc.

Mass - the weight of an object

Capacity -the amount of liquid an object or item can hold

Adding and Subtracting with Time

Time is most commonly measured using the units: second, minute, and hour. Of the three, the second is the smallest unit and the hour is the largest unit.

60 seconds = 1 minute

60 minutes = 1 hour

Just as with other conversions such as length, weight, or speed, you multiply when converting a larger unit to a smaller unit, and divide when converting a smaller unit to a larger unit.

Let's look at some examples.

Convert 120 seconds to minutes.

120 seconds = _____ minutes

This involves converting a smaller unit to a larger unit. 60 seconds equals 1 minute. Divide the number of seconds by 60.

$120 \div 60 = 2$

120 seconds = 2 minutes

Now, convert 4 hours to minutes.

4 hours = _____ minutes

This involves converting a larger unit to a smaller unit. 1 hour equals 60 minutes. Multiply the number of hours by 60.

$4 \times 60 = 240$

4 hours = 240 minutes

To add measures of time, add the like units first. Start with the smallest unit. Add seconds to seconds, minutes to minutes, and hours to hours. Then, simplify the answer when necessary by converting the units.

Find the sum of 1 hour 55 minutes and 45 minutes.

Example 1

Maria leaves her house at 1:00 pm and thinks she will spend 15 minutes at the post office, 1 hour and 25 minutes at the mall, and 20 minutes driving to her friend's house. Find the total time of her errands and the drive time to determine what time Maria will arrive at her friend's house.

First, add the time for each activity.

$$\begin{array}{rrr} & 1\text{ hr} & 25\text{ min} \\ & & 20\text{ min} \\ + & & 15\text{ min} \\ \hline & 1\text{ hr} & 60\text{ min} \end{array}$$

Then, simplify 60 minutes. 60 minutes equals 1 hour. This will add 1 hour to the total number of hours.

$$\begin{aligned} & 1\text{ hr}\ \ 60\text{ min} \\ =& 1\text{ hr} + 1\text{ hr} \\ =& 2\text{ hr} \end{aligned}$$

2 hours after 1:00 pm is 3:00 pm. Maria should arrive at her friend's house at 3:00 pm.

Example 2

What is $\frac{1}{8}$ of an hour in minutes?

To figure this out, multiply $\frac{1}{8}$ times 60 minutes.

$$\frac{1}{8}(60) = \frac{60}{8} = \frac{15}{2} = 7\tfrac{1}{2}$$

$\frac{1}{8}$ of an hour is $7\frac{1}{2}$ minutes.

Example 3

Convert the following units: 180 minutes = _____ hours.

Convert minutes to hours. There are 60 minutes in 1 hour. Divide the number of minutes by 60.

180 ÷ 60 = 3

180 minutes = 3 hours

180 minutes is equal to 3 hours.

Example 4

Convert the following units: 1 hour 5 minutes + 45 minutes = _____

First, add the like units.

$$\begin{array}{rrr} & 1\text{ hr} & 5\text{ min} \\ + & & 45\text{ min} \\ \hline & 1\text{ hr} & 50\text{ min} \end{array}$$

The sum is 1 hour 50 minutes.

Example 5

Convert the following units: 5 hours 10 minutes – 30 minutes = _____

First, subtract the like units starting from the smallest unit.

$$\begin{array}{rrr} & 5\text{ hr} & 10\text{ min} \\ - & & 30\text{ min} \\ \hline \end{array}$$

You cannot subtract 30 from 10 so you must borrow from the hour unit. 1 hour equals 60 minutes. Add 60 minutes to the 10 minutes and subtract.

$$\begin{array}{rrr} & \overset{4}{\cancel{5}}\text{ hr} & \overset{70}{\cancel{10}}\text{min} \\ - & & 30\text{ min} \\ \hline & 4\text{ hr} & 40\text{ min} \end{array}$$