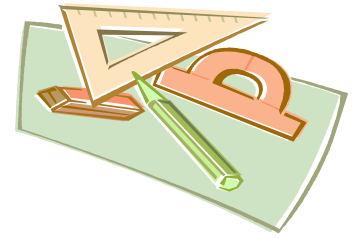


Algebra/Geometry Institute Summer 2005

METRIC MEASUREMENTS



Faculty Name: Sandra H. Jones

School: Weddington Math, Science, and Technology Academy

Grade Level: 6th

Teaching objective(s):

A) Students will convert between metric units of measurement.

*Use and explore the concept of measurement.

e. Convert units within a measurement unit.

Instructional Activities:

- i. The teacher will present students with a dilemma that she is having about purchasing a Persian rug for her dining room. She explains to them that she needs their help in solving her problem. She tells them about the beautiful rug that she has picked out, but the units of measurement for her room are different from the units of measurement for the rug. The room's measurements are 5 meters long by 4 meters wide, and the rug's measurements are 490 centimeters long by 390 centimeters wide. Because of this she doesn't know if the rug will fit her room.
- ii. The students will discuss possible ways of helping the teacher solve her problem.
- iii. The teacher should conduct review of U.S. customary unit of measurement, listing them on the board as students call them out.
- iv. The teacher will conduct a review of equivalent standard units of measurement by displaying chart on overhead.
- v. Students will read and discuss student created mnemonics for remembering which unit of standard measurement is the largest. Ex: **Mom Yelled Feed Ike!**
- vi. Students will participate in reviewing rules of converting between units by practicing concept.

Rule: To convert from a larger unit to a smaller unit, multiply.

To convert from a smaller unit to a larger unit, divide.

- vii. Teacher will mention her dilemma once again telling students that they are going to be able to help her solve it after this lesson.
- viii. Teacher will ask students if they are familiar with the metric system and if so what are some of the units of measurement in the metric system.
- ix. Teacher will list the units on the overhead, and then have students give examples of each.
- x. Display mnemonic "King Hector Died Monday, Don't Call Me" asking students what do they think it means.

- xi. After listening to student's comments, teacher will explain how the mnemonic is used to change measurements from one metric unit to another.
- xii. Ask students what they know about prefixes and suffixes. After listening to their responses explain that we will be working with prefixes in math.
- xiii. Teacher will display and discuss chart of metric prefixes and their values.
- xiv. Teacher will review converting rules, when changing from a larger unit of measurement to a smaller unit, multiply and when changing from a smaller unit to a larger unit, divide. Inform students that the same rules that are used when converting customary units of measurement can also be applied when converting metric units of measurement.
- xv. Teacher will display several problems on overhead and allow students to work in pairs to solve. (See attachment)
- xvi. Students will discuss solutions as a class.
- xvii. Teacher will discuss and model how when multiplying and dividing by units of tens there are no calculations required.
- xviii. Teacher will explain to students to go back to the problems that were worked in pairs and determine which way the decimal point was moved and how many spaces and explain why.
- xix. Display the following problem: **0.355L _____mL** and have students decide which way the decimal should be moved without calculating the answer.
- xx. Students will discover a rule for solving the problem and discuss.
- xxi. Distribute and explain copy of "Math Inquiry Activity" for students to complete in small groups. (See Attachment)
- xxii. Check for understanding by discussing the results of the inquiry activity.
- xxiii. Summarize lesson by returning to the introduction dilemma, and have students solve.

Materials and Resources

Overhead Projector
Transparency

Assessment

Teacher observation: Teacher will observe students as they participate in group activities, paired activities, and whole class activities by asking questions and assisting when needed.

Journal Writing: Students will be graded on the following journal prompt:
Jessica and Pauly measured the length of the math lab. Jessica's measurement is 13.7m and Lola's is 137cm. Who is correct? Explain.

Reference:

Mississippi Framework
Harcourt Mathematics (Activities Adapted)

Attachment 1.

Directions: Convert to the given measurement.

$$8\text{km} = \underline{8000}\text{m}$$

$$3\text{ mm} = \underline{0.3}\text{ cm}$$

$$198\text{ g} = \underline{0.198}\text{ Kg}$$

$$5,000\text{m} = \underline{5}\text{ Km}$$

Prefix and Value Chart

Kilo = 1000

Hecto- = 100

Deka- = 10

Meter, Gram, Liter = 1

Deci- = 0.1

Centi- = 0.01

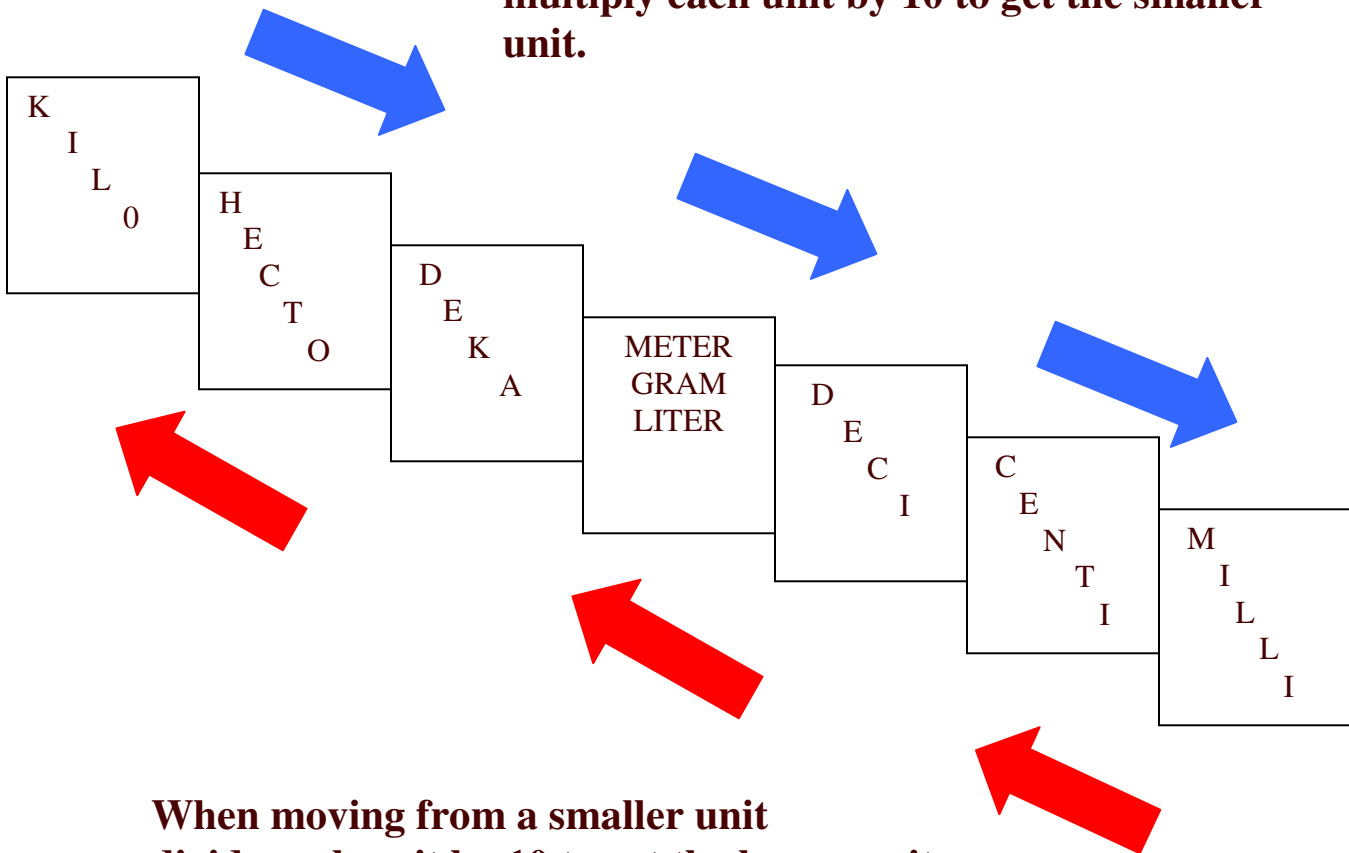
Milli- = 0.001

- Prefixes may be combined with meter, gram, and liter to form a unit of measurement.

Ex: Kilometer kM: Centiliter-cL

Attachment 2: Math Inquiry

When moving from a large unit multiply each unit by 10 to get the smaller unit.



When moving from a smaller unit divide each unit by 10 to get the larger unit.

1. Convert 25 hm to meters. What direction did the decimal point move and how many times? (moved down or right; 2 places)
2. Convert 46.3 mL to dekaliters. What directions did the decimal point move and how many times? (moved up or left; 4 places)
3. Using this chart describe how to convert between metric units of measurement. (Beginning with the given measurement, locate the new measurement to determine which direction to move the decimal. After doing this, count the number of spaces between the units. Doing this tells you how many spaces to move the decimal point and in which direction. Make sure you are moving in the same direction as the unit of measurement and the same number of spaces between the measurements.)