

Metric Conversions

Grade Level 9

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Students learn fundamentals of converting metric measurements.

Objectives:

Standards/PASS Objectives:

- Students will translate a mathematical idea from one form to another.
- Students will compare and convert a given measurement to another unit within the same measurement system.

Teaching Strategies

- teacher directed
- cooperative learning
- questioning

Classroom Management

- whole class for introduction
- groups of 2-3

Vocabulary

- gram-basic metric unit of mass
- meter- basic unit of length
- liter-basic unit of capacity

Materials:

- metric measuring tape or meter sticks
- Worksheet Page 1:
www.atozteacherstuff.com/lessons/reproducibles/work_metric.shtml
- Worksheet Page 2 :
www.atozteacherstuff.com/lessons/reproducibles/work_metric2.shtml
- items to be measured (see worksheet)

Plan:

What could you measure using.... (answers written on board)

meters--desk, chair leg, height (length)

grams- school bus, body weight book (mass)

liter- milk, coke, water in bathtub or pool(capacity)

How do these measurements compare to English units of measuring?

Do they measure the same types of things? How do you know?

DEVELOPMENT OF THE LESSON

Metric units are families. The meter family, the gram family, the liter family.

When we measure something using a metric unit, we can change the unit to another metric unit within the same base unit of family.

For example, we can change centimeters to millimeter, kilometers, etc...

Why do you think we can change these and not others?

However, we cannot change meters to grams or liters because the units measure different things.

Remember...each unit has a family and must stay in its family

* What did we say grams measured?

mass

* How about liters?

capacity

* And meters?

length

Can we change meters to grams? or grams to liters? Or meters to liters?

Why or why not?

Sometimes, we may want to change one unit to another in its family.

(centimeters to decameters)

I am going to show you an easy way to convert units within a certain base unit. Liters, meters, grams

"Put on Board"

K H D unit D C M

Explain that:

K stands for kilo h stands for hecto d stands for deka

d stands for deci c stands for centi m stands for mili

* notice that there are 2 D's and they each stand for something different

To remember the order of these, THINK:

UNIT

Kings over Humans over Dragons over _____ Dog over Cat over Mouse

To convert, start at the from unit and count over either left or right to the to unit. However many places you count and which way you move, is the amount of places and direction the decimal point is moved.

Example-

* 32 kilograms = _____ grams

How many places do we count to get to grams? 3

What direction did we move? right

So the answer would be 32000

We move our decimal point 3 places to the right

* 40 milligrams = _____ dekagrams (.0040)

What answer did you come up with?br> How did you get this answer? Explain

How many places do we count over? 4

What direction did we move? left

We move the decimal 4 places to the left

* Can someone make up a problem to convert using grams, meters or liters?

Do several of these.

Have students come to board and solve the problem and have them explain what they are doing as they do it.

BREAK INTO GROUPS OF 2-3

Using your metric measuring tape, measure the items listed on your worksheet (page 1 <

www.atozteacherstuff.com/lessons/reproducibles/work_metric.shtml> , page 2 <

www.atozteacherstuff.com/lessons/reproducibles/work_metric2.shtml >). You may work in groups.

After you have measured the items, convert those measurements to other meter measurements.

Answer the questions on the worksheet. Work together to come up with all of your answers and explain your thinking to the members of your group and be prepared to discuss your findings with the class.