Bell Ringer #4:

Density Problems

Note: Please go to my website and bookmark it if you have not already.

http://drmoad.weebly.com/

Agenda

Bell Ringer
Measurement
SI System and Base Units
Unit Conversions
Equipment/Safety Quiz
Conversion Homework
Exit Ticket

Measurement:

A measurement is a quantity that has both number and unit.

SI System

Scientists use a set of measuring units called SI, or the International System of Units.
- SI is an abbreviation for Système International d'Unités
- SI is a revised version of the metric system, originally developed in France in 1791.
- Scientists around the world use the same system of measurements so that they can readily interpret one another's measurements.

SI Units

http://physics.nist.gov/cuu/Units/units.html

English Measurements

In the U.S. we often use English Measurements instead of the metric system.

Sometimes you will need to convert units of measurement into a different unit. (e.g. inches to feet; centimeters to inches)

https://en.wikipedia.org/wiki/English_units

Converting between units of measurement

- In order to convert from one unit to the next, you can use a conversion factor.
- A conversion factor is a ratio of equivalent measurements used to convert a quantity expressed in one unit to another unit.

http://www.nist.gov/pml/wmd/metric/common-conversion.cfm

Practice Problems

Convert:

20 cm to inches

35 inches to feet

Practice Problems

Convert:

20 cm to inches

$$\frac{20\text{cm}}{1} \times \frac{1\text{in}}{2.54\text{cm}} = 7.87\,\text{in}$$

35 inches to feet

$$\frac{35\,\text{in}}{1} \times \frac{1\text{ft}}{12\,\text{in}} = 2.92\,\text{ft}$$

https://www.google.com/search?q=20+cm+in+inches
https://www.google.com/search?q=35+inches+in+feet

Ok you try this now...

Factor:
1 m = 100 cm

Convert:

100 meters to centimeters

Ok you try this now...

Convert:

100 meters to centimeters

$$\frac{100\,m}{1} \times \frac{100\,cm}{1m} = 10,000\,cm$$

https://www.google.com/search?q=100+m+in+cm

And now this...

Factor:
1 mi = 1.6 km

Convert:

10 miles to kilometers

And now this...

Convert:

10 miles to kilometers

$$\frac{10\,\text{mi}}{1} \times \frac{1.6\,\text{km}}{1\text{mi}} = 16\,\text{km}$$

https://www.google.com/search?q=10+mi+in+km

And finally this...

Convert:

523 mL to L

And finally this...

Convert:

523 mL to L

$$\frac{523\,\text{mL}}{1} \times \frac{1L}{1000\,\text{mL}} = 0.523\,L$$

https://www.google.com/search?q=523+mL+in+L

Multiple conversion factors

100 centimeters = 1 meter
1000 meters = 1 kilometer
2.54 centimeters = 1 inch
12 inches = 1 foot
3 foot = 1 yard
1 mile = 1760 yards

What is:

5 yards = _____ kilometers

Multiple conversion factors

100 centimeters = 1 meter
1000 meters = 1 kilometer
2.54 centimeters = 1 inch
12 inches = 1 foot
3 foot = 1 yard
1 mile = 1760 yards

What is:

5 yards = 0.004572 kilometers

$$\frac{5\,yd}{1} \times \frac{3\,ft}{1\,yd} \times \frac{12\,in}{1\,ft} \times \frac{2.54\,cm}{1\,in} \times \frac{1\,m}{100\,cm} \times \frac{1\,km}{1000\,m} = 0.004572\,km$$

https://www.google.com/search?q=5+yd+in+km

How to make your life easier.

$$\frac{5\,yd}{1} \times \frac{3\,ft}{1\,yd} \times \frac{12\,in}{1\,ft} \times \frac{2.54\,cm}{1\,in} \times \frac{1\,m}{100\,cm} \times \frac{1\,km}{1000\,m} = 0.004572\,km$$

$$\frac{1\,yd}{1} \times \frac{3\,ft}{1\,yd} \times \frac{12\,in}{1\,ft} \times \frac{2.54\,cm}{1\,in} \times \frac{1\,m}{100\,cm} \times \frac{1\,km}{1000\,m} = 0.0009144\,km$$

so...
1 yd = 0.0009144 km
1093.6 yd = 1 km

$$\frac{5\,yd}{1} \times \frac{1\,km}{1093.6\,yd} = 0.004572\,km$$ **much nicer!**

https://www.google.com/search?q=5+yd+in+km

Activity

Students will measure the length of various blocks of wood and convert the unit of measurement to several different units.

Equipment/Safety Quiz

Conversion Homework

Exit Ticket #4:

Conversion Problem