

What are ‘units’?

Bruce Larson, March 2008

If you buy soda, what size does it come in? How do you measure the distance from your house to work? How do you tell how fast your car goes? How much do you weigh?

Oops – can’t ask that! The answer to these questions will vary depending on the system being used to measure, the quantity being measured, and sometime the state of matter or time. Without knowing what **units** are being used, a number has no meaning except to a mathematician!

So, liquids could be purchased in **liter** or **quart** size, distance to work in **miles** or **kilometers**, and speed with a ratio: **miles/hour**. In each case we are talking about the units of measurement.

How important are units?

“CNN(September 30, 1999) -- NASA lost a \$125 million Mars orbiter because one engineering team used metric units while another used English units for a key spacecraft operation, according to a review finding released Thursday.”

Ouch! In science and engineering, metric is the safe option for all calculations. All of the related physics measurements use units based on the metric system, but if you don’t list what you are using in your equations or descriptions, confusion can be very expensive.

Elementary teachers will be blessed by all of their student’s future math and science teachers if they get in the habit of using **units** of measurement when doing math problems and using and highlighting appropriate **units** when doing projects. As much as I prefer metric units, students need to be exposed to all measurement units so they know which are which.

Here is a tribute to units:

***I bicycled four miles to save a gallon of gas
on my way to buy a liter of soda. I was going
twenty kilometers per hour until I
remembered the package I needed to mail.
It weighed 1 pound, 3 ounces, but was going to Italy
where they use kilograms and grams. By the
time I finished, it had already taken me
two hours, eleven minutes to do my errands!***