

MAKING SCIENTIFIC (CHEMICAL) MEASUREMENTS

All that we know about chemistry depends on **experimentation**.

Experiments require making numerical **measurements**.

Measurements are made by comparing the quantity of interest to some standard, using *instruments made by humans*.

Measurements have two parts: the **number** and the **units**.

Based on the **precision** of any human-made instrument, every measurement in science has some "error" or **uncertainty** in the number obtained.

It is important to be honest when reporting a measurement, so that it does not appear to be more precise than the instrument used to make the measurement allows.

We can achieve this by controlling the number of digits, or **significant figures**, used to report the number.

Significant figures convey the **uncertainty** of the measurement.

As the number of significant figures increases, the more certain the measurement.

Scientific Notation is the most reliable way of expressing a number with the correct significant figures.