Measuring Devices: Calibration and Precision

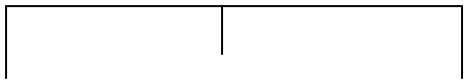
Calibration:

- **The meaning of the smallest marking on a measuring device.**
- **Precision of a measuring device is a function of its calibration.**
- **The more precise a measuring device, the more "decimal places" it has.**
    - **A tool which measures mass to .0001 grams is *more precise* than a tool which measures mass to .01 grams.**
    - **A tool which measures length to .01 cm is *more precise* than a tool which measures length to 1 cm.**

How do you determine calibration?

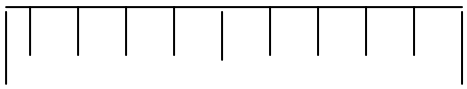
- **Find the markings that have numbers on them.**
- **Look to see how many smaller marks (without numbers) that are between the marked numbers. Count them.**
- **Determine the "value" of each of the smallest markings.**

Ruler A:



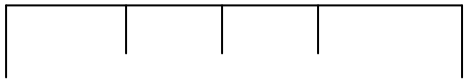
10 cm **11 cm** **Calibration: 0.5 cm**

Ruler B:



10 cm **11 cm** **Calibration: 0.1 cm**

Ruler C:



10 cm **11 cm** **Calibration: 0.25 cm**

How to do know where to determine the "estimated" digit?

- **Typically, if the calibration is in any value of 100, 10, 1, .1, .01, .001 etc., and there is some space in between the calibration value, your recorded answer will be one decimal place to the *right* of the calibration.**
    - ***Ruler B* above – your answer would be recorded to the .01 place.**

- **However, for *non*-standard calibration units, you have to use some common sense.**
    - ***Ruler A* – answer recorded to the .1 place.**
    - ***Ruler C* – answer recorded to the .01 place**