

Welcome Back!

Sit where you were last class period.

If you were gone last time, please wait at the front of the room

Data and Measurements

Collecting



Analyzing



Reporting

Data and Measurements

Types of Data

- 2 types of information
 - Qualitative data
 - Derived from observation
 - Descriptive
 - Quantitative data
 - Derived from measuring or counting
 - Always includes a number with appropriate accuracy and units
 - Appropriate Accuracy
 - Varies depending on how the measurement is made
 - Using a digital readout
 - Record all the digits given in the display
 - Using an analog scale
 - Estimate 1 decimal place past the accuracy of the scale

Data and Measurements

Digital Measurements

When measuring digitally,
there is no opportunity for estimating. All digits are recorded

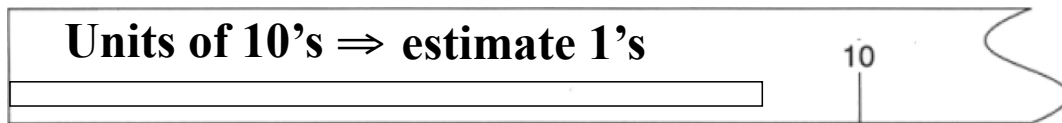


Data and Measurements

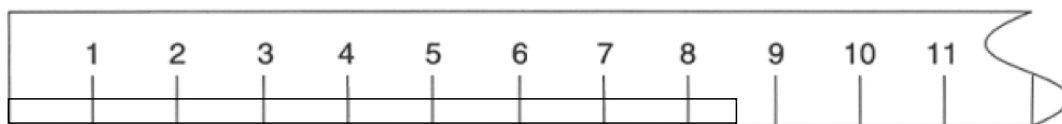
Measuring With an Analog Scale

When measuring against an analog scale,
estimate 1 decimal place past the units of the scale

Units of 10's \Rightarrow estimate 1's

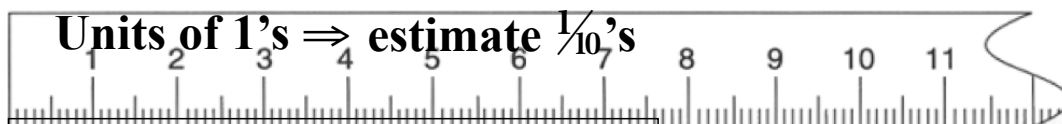


9 cm



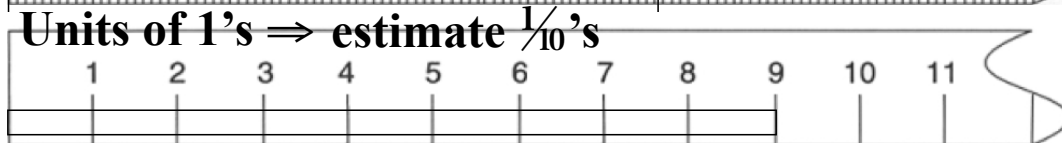
8.6 cm

Units of 1's \Rightarrow estimate $\frac{1}{10}$'s



7.64 cm

Units of 1's \Rightarrow estimate $\frac{1}{10}$'s



9.0 cm

Data and Measurements

Equipment You'll Encounter

- Balances
 - Hit re-zero every time you approach a balance
 - Never put liquid directly on the balance - zero a weighing boat
- pH Meters
 - Never leave a pH probe in a test solution
 - Always return the probe to distilled water
- Micrometer
 - Gently close the jaws and press re-zero every time

Data and Measurements

Appropriate Behavior in a Lab Context

- Lab can be a dangerous place and your behavior will always honor this reality
- Appropriate use of equipment
- Working only within lab groups
- Hushed voices
- Focused attention



Data and Measurements

Measurement Activity

During this activity, you make quantitative and qualitative observations of several objects. The objects are set up at several stations in the lab. Follow the instructions at each station to make your observations.

Station	Object	Qualitative observation - do not include color for this activity	Measurement (quantitative data) - circle any estimated digits - include units	# sig figs	Round measurement to one less sig fig - include units
1					
2					
3					
4					
5					