Uncertainty in Measurement  
•All measuring instruments are subject to some error  
•Could be due to changes in temperature, pressure (different elevations), magnetic fields etc.  
•Parallax- describes how objects change (an apparent shift) their positions when viewed from different angles  
  
Precision  
•The degree of divisions of a unit that the instrument is capable of  
Ex. The cm side of a ruler vs. the mm side  
•The closeness of repeated measurements to the same value  
  
Accuracy  
•How close to the true or accepted value your measurement is  
•The accuracy of the instrument is reflected in your measurement (to calibrate)  
Ex. pH probe, measuring tape with rivets  
  
Measuring Instruments  
•Have varying degrees of precision and therefore the measurements attained will have varying precisions  
  
Ex. Measure distance with:  
Car odometer vs. meter  
Odometer= 100m/0.1km, meter= 89.013m  
  
Ex 2. Ruler Precision  
41cm 42cm  
  
│ │ │ │ │ │ │ │ │ │ │  
◊  
(we guessed that the ◊ was at 41.35 cm)  
  
With the mm being divided into 10 parts, one can make a guessing digit at the end of the known digits  
So 41.3 would be the certain part, and the 5 would be uncertain (a guess).  
  
Significant Figures  
  
•Most digits are certain with some guessed digits at the end  
•They incorporate all valid digits (not 0)