Physics notes

**Significance of measurements**

* Equipment has the ability to measure to a certain precision. That precision will have an effect on how “good” your answer can be.
* A place to be tiled measures 3.1m by 1.7257m. The area of this space when calculated would be 5.34967m2
* A ridiculous answer since 3.1m is only good to the 0.1m
* The answer can only be as precise as the lowest amount of significant figures.
* When measuring with scaled instruments, meter sticks, etc., you must estimate one decimal place past the smallest increment.
* If decimal point physically present, start on Pacific (left) side of number. Move across (to right) begin counting with the first non-zero number and count the rest.
  + 0.001205 4 sig figs
  + 0.0012050 5 sig figs
* If decimal point is physically absent, start Atlantic (right) side and move across (to left) begin counting with first non zero and count all remaining.
  + 120500 4 sig figs
  + 120500. 6 sig figs
* **To apply sig figs to your calculations:** 
  + If multiplying or dividing, your answer should have the same number of sig figs as the least number in the problem
    - 37.5 X 2.1 = 78.75
    - Answer must be 2 sig figs, so 78.75 rounds to 79
  + For addition and subtraction, answer should be expressed to the smallest decimal place that all the numbers have in common.
    - 27.5

+32.87

60.37

* + - Both good to 0.1 so 60.37 rounds to 60.4
* **Scientific Notation**
  + Often, expressing large or small numbers can be simplified by use of scientific notation. This involves breaking numbers into two factors. The first factor will represent all the significant figures in the number and the second factor will be 10n, where n is any digit. n positive for numbers greater than 1 and negative for numbers less than 1
  + The decimal will always go after the first non zero number.
    - 6,525,000 (express in 3 sig figs)
      * 6.56 x 106
    - 327,500 (express in 4 sig figs)
      * 3.275 x 105
    - .0003275
      * 3.275 X 10-4