**GRAPHING GUIDELINES**

Remember “TALKS” as a general guideline

T = Title – Generally the **TITLE** should be something along the lines of y-axis vs. x-axis written in large block letters at the top of the graph.

A = Axis – Decide which variable will be placed on each **AXIS**. Generally, the rules for graphing put the DEPENDENT VARIABLE on the y-axis and the INDEPENDENT VARIABLE on the x-axis. In our class it is often convenient to reverse the variable depending on the information we are trying to extract from the graph.

L=Labels –Each axis should have a **LABEL** including units in parentheses such as VELOCITY (m/s) or TIME (s).

K = Key – The **KEY** or legend identifies “sets” of data if more than one set of data is plotted on the graph.

S = Scale –The **SCALE** is very important because choosing an appropriate numbering system on your graph will make it easier to analyze and interpret the data. Basic rules for selecting an appropriate scale include:

* Using consistent intervals for each axis (i.e. 0,1,2,3 or 0,2,4,6,8 or 0,5,10,15, etc.). Each axis can have its own numbering system, but it must be internally consistent. Logarithmic graphs are different, but we will discuss them as needed.
* Each scale should use increments that are easy to work with, for example increments of 1,2,4,5 and 10 are all easy to divide. Stay away from increments like 3,6,7,9 and 11 as they do not divide as easily.
* The scales you choose should present the data at least half way up and half way across the page. NEVER extend the data beyond the printed gridlines.

The above rules are for graphing by hand. You will have many opportunities to create hand drawn graphs in this class, but there are also many opportunities to create graphs using Excel or Graphical Analysis. One of the most valuable aspects of a graph is being able to calculate the slope, remember that $slope=\frac{Rise}{Run}$. In many cases, the slope represents a physical quantity like velocity, acceleration or mass.

**When drawing a best fit line** the line should follow the trend. If the data appears to follow a linear trend then a straight line should be drawn through the data. Remember, not all (and in most cases none) of the data points will actually be on the best fit line. If the data seems to follow a curved trend then carefully draw a curved line that smoothly “averages out” the curve. Plastic rulers are good for this. If you hold the ruler on edge against your graph you can curve it to match the trend.