

## HOW TO DRAW A GRAPH

1. Obtain graph paper; 5 or 10 squares to the inch, or 10mm to the cm.
2. Sharpen pencil. Do *not* use ink or ballpoint.
3. Choose a scale for your variables that utilizes most of the paper in both dimensions. The scale should correspond to the main divisions of the graph paper (1,2,3...2,4,6...5,10,15...avoid choices like 3 m/s = 2 cm).
4. Draw the x and y axes.
5. Indicate the scale divisions to the left of the y axis and below the x axis, respectively.
6. Label each axis with the name of the variable and its units. Do not abbreviate the name of the variable.
7. Draw your data points by marking the position with a sharp point, surrounded by a small circle.
8. Draw a smooth curve that fits through your data points without necessarily passing through each data point. Some points will lie above the curve, some below. If the data indicate a straight line, use a ruler. Do not force the line through the origin even if you think it should logically go through the origin.
9. If your graph shows a straight line, choose two well-defined points on the line for the slope calculation. **DO NOT USE DATA POINTS** (since they may not reside on your line!). The two points on your line that you use to calculate the slope should be far apart and not close together. Indicate the choice of slope points by marking them with the symbols  $\square$  or  $\Delta$ .
10. In the lower right-hand corner of the graph paper, calculate the slope of the line from the rise/run. Show your work in detail and carry the units.
11. If there is an intercept, write it underneath the slope calculation. Check units.
12. Write a title for the graph which describes the plot and its source; “Position as a function of time for a glider on an air-track...”, followed by your name and the date.
13. You will most likely *not* be graphing ‘y’ vs. ‘x’, but rather two other quantities, say ‘a’ vs. ‘F’. Thus, your slope calculation will be  $(\Delta a/\Delta F)$ . Be sure to include proper units in your calculations.