GRAPH DRAWING

GRAPHS, WHY USE THEM?

This can be best demonstrated. by means of an example.

Time / min	Pulse rate / beats min^{-1}
-5	65
-4	69
-3	75
-2	65
-1	70
0	71
10 minute run	
0	156
1	110
2	85
3	50
4	65
5	90
6	66
7	56
8	81
9	71
10	62
11	80
12	79
13	68
14	70
15	67
16	70
17	66
18	72
19	71
20	69

The table opposite shows a typical response of pulse rate, measured at one minute intervals, before and after a period of exercise. Notice the table contains pure dimensionless numbers (e.g. 4 and not 4 min). The column headings contain the relevant information including the units.

Just by looking at the table you can see the pulse has increased after the 10 minute run and then returns to normal after about 10 minutes, as you might expect. Plotting a curve of these data, however, reveals an interesting phenomenon. The return to normal is not a smooth one. The pulse rate passes below its resting value several times. This overshoot is normal and illustrates the control of heart beat is under negative feedback control.

- The curve gives the experimenter a global impression of the spread and the trends in these data at a glance.
- Any points which stand out as unusual are easily seen on the graph because their distance from the other points is much greater than the other data points.
- A graph makes it easy to make estimates between measured points.

All this interpretation of data could have been determined from the list of readings in the table but it is a lot easier to see what is going on when the results are displayed in the form of a graph.

Pulse rate of a male 16 year old before and after a 10 minute run.