How find out how many numbers in a Minitab column are in a given range.

The answer to the question posed, do you have to go through all 1000 numbers you have just generated one by one and count how many lie within a given range is, of course, no. There are much quicker ways of getting Minitab to do this for you and some of these are described here. If you want to convince yourself that the methods really are doing the right thing, you could start by applying the techniques described below to a sample of size 10, as you used in Question 1. This way you can count by hand as well and verify that the automatic methods are doing the right thing.

1. Sorting the data

[remember that there is a hint in Exercise Sheet 1 of week 3 about how to do this]

If you sort the column concerned into ascending order, then the values below 4 will be in the first few rows of the column, the values between 4 and 6 will then be in a block of rows together and the values greater than 6 in the last rows of the column. You can scroll down the Data window until you reach the point at which the numbers change from being less than 4 to greater than 4. The row numbers at the left of the window will tell you how many numbers are less than 4. You can keep scrolling until you find the point at which numbers less than 6 change to numbers greater than 6 and again use the row number to tell you how many are between 4 and 6. The remaining numbers in the column must, of course, be greater than 6.

This method is easy to use and understand but is a bit cumbersome, especially if there are many numbers in the sample (scrolling down a column of 100,000 numbers is remarkably tedious)

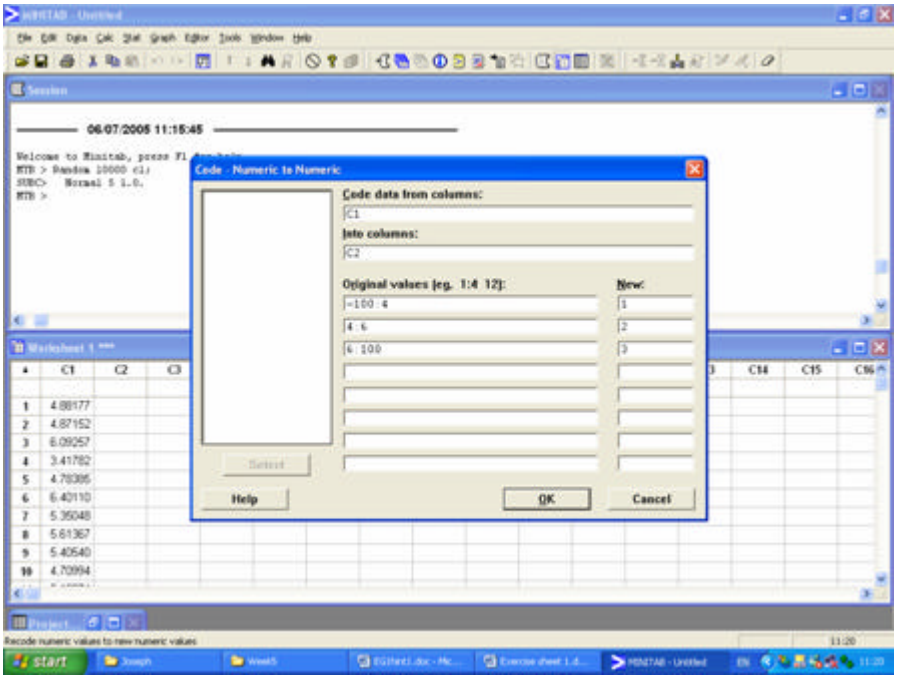
2. Coding and tabulating

The above method implicitly puts the values into three groups, those below 4, those between 4 and 6 and those above 6, and then counts the sizes of these groups. The second method does this explicitly.

Suppose, for definiteness, that the column containing the sample is C1. First it produces a new column (C2 say) in which there are only three arbitrary values (1, 2 and 3 will do fine): the column has a 1 if the value in the corresponding row of C1 is below 4, a value 2 if the value in C1 is between 4 and 6, and finally the value C2 is 3 if the corresponding value in C1 is greater than 6.

> How to do this*: choose* **Code** *from the* **Data** *menu and select the* **Numeric to Numeric.**. *option. Enter* C1 (*or whichever column contains the sample) in the* **Code data from columns:** *box and* C2 *(or another column for the labels) in the* **Into columns:** *box. In the first (long) box under* **Original values (eg , 1:4 12):** *you need to enter the values in C1 which will be coded as '1' in C2. This is not a single value but a range of values, namely all values below 4. You enter this as a range, so start from a very low value which will be smaller than the smallest value in C1, so e.g., you should type* –100:4 *in this box. The ':' is used by Minitab to indicate the range of all values from –100 to 4. If you now click on the corresponding box under* **New:** *and type 1, then this has told Minitab to create, in C2, a column which has value 1 whenever the corresponding row of*

C1 contains a number between –100 and 4 (which, for our circumstance s is the same as any value below 4). You now need to tell Minitab what to do when it encounters values in C1 that are greater than 4.
The first thing is to go to the box in the next row below **Original values (eg , 1:4 12):** *and type 4:6, signifying the range from 4 to 6, and then to type 2 in the corresponding box below* **New:**. *Finally go to the next row and type 6:100 and 3, respectively, in the two boxes. The screen should now look as follows:*



Now click on **OK**.

Having produced the column with the original data recoded into the three categories, 1,2 and 3, you can now use Minitab to count how many 1s, how many 2s and how many 3s there are in C2.

How to do this*: From the* **Stat** *menu, choose* **Tables** *and then* **Tally Individual Variables...** *Select C2 (or the newly formed column if not C2) to be in the* **Variables:** *box. Make sure that the* **Counts** *item is checked under* **Display**. *Now click on* **OK**. The display will show the number of 1s, 2s and 3s in C2.

Return to Example Sheet 1