Chapter 8 / **Example 4**

χ^2 goodness of fit test

The GDC can work out the values of the chi squared statistic and the *p*-value.

The students in Year 8 are asked what day of the week their birthdays are on this year. The table shows the results.

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Frequency	12	14	18	17	15	15	14

a Write down the table of expected values, given that each day is equally likely.
b Conduct a χ^2 goodness of fit test at the 5% significance level for this data.
c The critical value is 12.592. Write down the conclusion for the test.

First you will enter the observed frequencies in a list.

Press [stat] 1:Edit and press [enter]

Enter the frequencies in the first column.

Press [enter] or [▼] after each number to move to the next cell.

Note: *If the list contains other numbers, you can clear it by pressing* [stat] *4:ClrList and press* [enter]*. The home screen displays* ClrList*. Press* [2nd] [1] [L1] *and press* [enter]*. Press* [stat] *1:Edit and press* [enter] *to return to the table*.

The expected values will all 15.

Press [▶] to move to the next column.

Enter 15 in each of the first 7 cells in L_2.

Press [2nd] [quit] to enter the home screen.

Press [stat]. Press [▶] [▶] to access the TESTS menu.

Select D: χ^2GOF-Test…

Select L_1 as the observed list, L_2 as the expected list and enter 6 for df.

Use [▼] to navigate down to Calculate. Press [enter].

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The χ^2 statistic is 1.6 and the *p*-value is 0.953.

Since 0.953 > 0.05 or 1.60 < 12.592, you can accept the null hypothesis: the data does satisfy a uniform distribution.

```
χ²GOF-Test
χ²=1.6
p=.9525774039
df=6
CNTRB={.6 .0666666667 .6…
```