

Chapter 14 / **Example 12** $\chi^2$  goodness-of-fit test

In this example, instructions are only shown for the final part of the solution.

- e** Perform the  $\chi^2$  goodness-of-fit test, writing down the degrees of freedom used. (The critical value for this test is 9.488.)

Length of fish, $x$ cm	Observed frequency	Expected frequency
$x \leq 15$	27	22.75
$15 \leq x < 18$	71	69.6
$18 \leq x < 21$	88	94.5
$21 \leq x < 24$	52	51.2
$24 \leq x$	12	11.9

Open a new document and add a Lists & Spreadsheet page.

Type 'obs' in the first cell.

Type the observed values in the first column.

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

**Note:** 'obs' is a label that will be used to calculate the  $p$ -value. You can use any letter or name to label the list.

A	obs	B	C	D
1	27			
2	71			
3	88			
4	52			
5	12			

Type 'ex' in the cell to the right of 'obs'

Enter the expected values in the second column.

Use the **▲ ▼ ► ◀** keys on the touchpad to navigate the spreadsheet.

A	obs	B	ex	C	D
1	27	22.75			
2	71	69.6			
3	88	94.5			
4	52	51.2			
5	12	11.9			

To calculate the  $p$ -value

Press **menu** 4:Statistics | 4:Stat Tests | 7:  $\chi^2$  GOF...

Open the drop down lists with **►** and select using **▼** and **enter**

Observed List: obs

Expected List: ex

For this test you must enter the degrees of freedom yourself.

Enter df: 4

Click the touchpad on OK or press **enter**

$\chi^2$  GOF

Observed List: **obs**

Expected List: **ex**

Deg of Freedom, df: **4**

1st Result Column: **c[]**

Draw: ☐ Shade P Value

**OK** **Cancel**

# Chapter 14 / **Example 12**

## $\chi^2$ goodness-of-fit test

$\chi^2 = 1.28$  and the p-value = 0.864

Either:  $1.28 < 9.488$ ,

or  $0.864 > 0.05$

Hence not significant so no reason to reject the null hypothesis.

	A	obs	B	ex	C	D
=						= $\chi^2$ GOF(
1		27	22.75	Title	$\chi^2$ GOF	
2		71	69.6	$\chi^2$	1.28255	
3		88	94.5	PVal	0.86433	
4		52	51.2	df	4.	
5		12	11.9	Complis...	(0.79395...	
DI		=" $\chi^2$ GOF "				