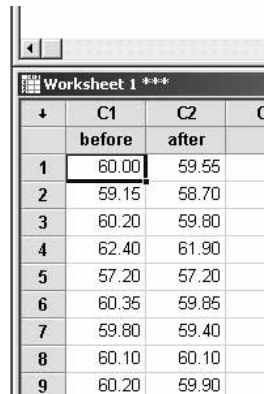


7.3. z and t tests for matched data

EXAMPLE 7.3. Weight loss by members of a fencing club during a 1-day competition

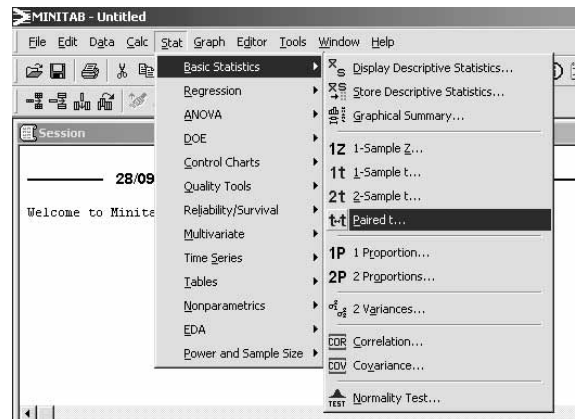
BOX 7.4. How to carry out a z and t test for matched data

Step 1. Put your data into the Minitab worksheet. Use sensible column headings.

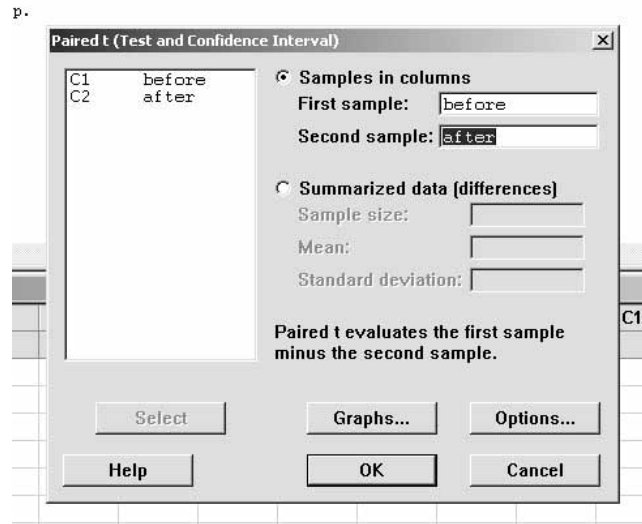


	C1	C2	C3
	before	after	
1	60.00	59.55	
2	59.15	58.70	
3	60.20	59.80	
4	62.40	61.90	
5	57.20	57.20	
6	60.35	59.85	
7	59.80	59.40	
8	60.10	60.10	
9	60.20	59.90	

Step 2. Perform the test.
Go to 'Stat', 'Basic Statistics', 'Paired t'.



Click in the window for 'First sample', highlight your first sample column, and click on 'Select' to transfer it across. Repeat for the second sample.



Click on 'OK'. The results will appear in the 'Session' window.

Paired T-Test and CI: before, after

Paired T for before–after

	N	Mean	StDev	SE Mean
before	13	59.9231	1.2315	0.3415
after	13	59.6231	1.1659	0.3234
Difference	13	0.30000	0.214087	0.059377

95% CI for mean difference: (0.170628, 0.429372)

T-Test of mean difference=0 (vs not =0) : T-Value=5.05

P-Value=0.000

Step 3. Decide what the results mean.

The value of t in this case is 5.05, and the associated p value is less than 0.001. Therefore we can reject the null hypothesis at $p=0.001$, and conclude that there is a significant difference between the mean weights of individuals before and after a fencing competition.