



9 This table shows the data collected from a survey of Year 11 students about the how many hours they spend watching television during the week:

Class	Class centre	Frequency	Cumulative frequency	Class centre $\times$ Frequency
0-4	2	7	7	14
5-9	7	15	22	105
10-14	12	13	35	156
15-19	17	8	43	136
20-24	22	2	45	44
Total: 455				

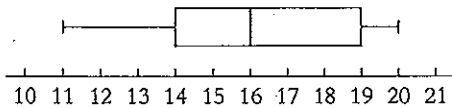
The approximate mean time spent watching television by a Year 11 student is:

- A 5-9 hours                      B 9 hours  
C 10 hours                         D 10.1 hours

10 Find the range of the set of scores given below:

- 8, 9, 12, 7, 9, 11, 8, 9, 5, 13, 7, 9  
A 7                                      B 9  
C 4                                        D 8

11 The difference between the range and the interquartile range for this box-and-whisker plot is:



- A 4                                      B 5  
C 9                                        D 11

12 A class of students sat an exam that resulted in a mean of 75 and a standard deviation of 3.2.

If another student sits the exam a day later and achieves 75, which of the following changes?

- A Mean increases, standard deviation stays the same  
B Mean decreases, standard deviation stays the same  
C Mean stays the same, standard deviation decreases  
D Mean stays the same, standard deviation increases

13 HOW NOW BROWN COW

Study the letters in this phrase. Which one of the answers below gives the mode?

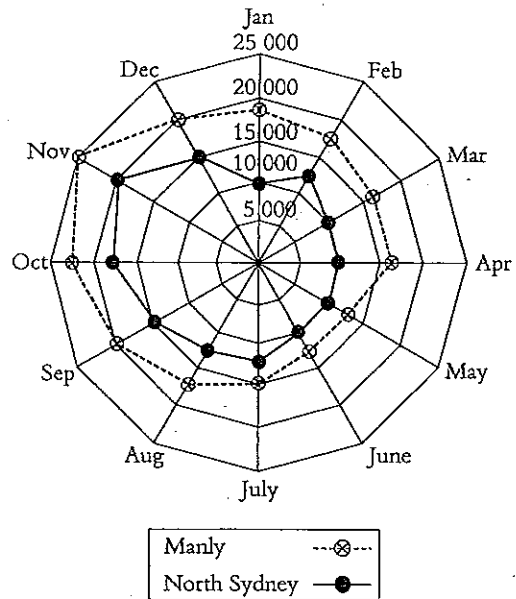
- A O only                                B W only  
C O and W only                        D O, W and N

14 What is the standard deviation for the following set of scores?

8, 9, 15, 15, 16, 18, 21, 26

- A 5.0                                      B 5.2  
C 5.3                                        D 5.5

15 The largest difference in sales for two shops shown in the radar chart below occurs in which month?



- A April                                      B January  
C July                                        D May

**16** The number of breakdowns of motor vehicles attended to daily, for 14 consecutive days, by the NRMA were 125, 119, 114, 117, 138, 144, 121, 118, 126, 120, 117, 141, 173, 122.

Calculate the mean and standard deviation for these data (answer to the nearest whole number).

2 marks

c Find the range.

1 mark

d Find the interquartile range.

1 mark

**17** For the set of scores:

32	28	18	20	25	31
15	21	36	29	21	15
26	31	35	29	23	25
30	30	32	21	18	21
24	28	30	28	23	19
18	19	16			

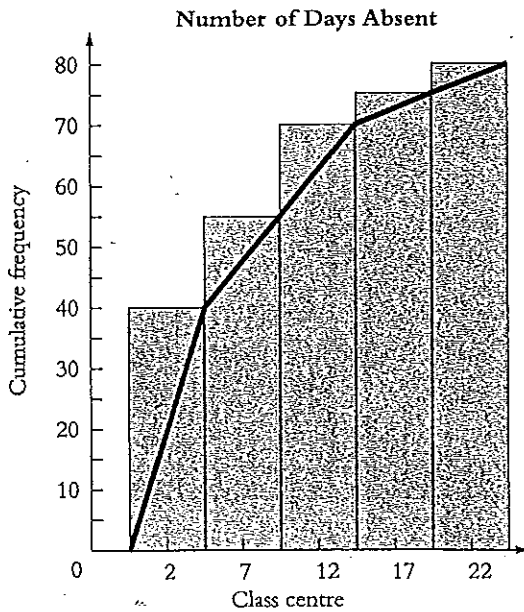
a Draw an ordered stem-and-leaf plot. 2 marks

e Draw a box-and-whisker plot.

2 marks

b Determine the five-number summary. 5 marks

- 18** The following cumulative frequency histogram and polygon display the number of days absent for Year 11 students so far during the year:



- d From the graph, estimate the upper and lower quartiles, and the median. 3 marks

- a How many students are in this Year 11 group? 1 mark

- b Complete the following Cumulative Frequency Distribution table: 2 marks

Class	Class centre	Frequency	Cumulative frequency	Class centre $\times$ Frequency
0-4	2		40	
5-9	7			105
10-14	12			180
15-19	17		75	
20-24	22		80	
Total: 560				

- c From the table, find the approximate mean number of days absent for Year 11 students. 1 mark

- 1 Total number of scores = 20,  
 $\therefore$  the middle scores should be the 10th and 11th.  
 The 10th score is 3 and 11th score is 4.

$$\text{Median} = \frac{3 + 4}{2} = 3.5 \quad \checkmark$$

- 2 Cost for 1 kg = \$1.00  
 Cost for 3.75 kg = \$1.60  
 Total cost = \$2.60  
 Total cost if sent together (4.75 kg) = \$1.80  
 Saving = \$2.60 - \$1.80  
 = 80 cents  $\checkmark$

3  $20\% \times 360^\circ = 72^\circ \quad \checkmark$

- 4 The process of statistical inquiry involves posing questions, collecting data, organising data, summarising and displaying data, analysing data and drawing conclusions, and writing a report.  
 Describing data is not a step in the process.  $\checkmark$

- 5 Favourite pizza topping is an example of categorical nominal data, since there is no inherent order to it.  $\checkmark$

- 6 Choosing names from a hat is an example of random sampling.  $\checkmark$

Score ( $x$ )	Frequency ( $f$ )	$f \times x$
1	10	10
2	4	8
3	3	9
4	2	8
5	1	5
	$\Sigma f = 20$	$\Sigma fx = 40$

$$\text{Mean} = \frac{\Sigma fx}{\Sigma f} = \frac{40}{20} = 2 \quad \checkmark$$

- 8 The mode, median and range are all 4, while the mean is 3.5.  $\checkmark$

- 9 The mean for grouped data is found by:

$$\frac{\text{Sum of (Class centre} \times \text{Frequency)}}{\text{Total frequency}} = \frac{455}{45} = 10.1 [1 \text{ d.p.}] \quad \checkmark$$

- 10 Range = Highest score - Lowest score  
 = 13 - 5  
 = 8  $\checkmark$

- 11 The range = 20 - 11  
 = 9

$$\text{The interquartile range} = 19 - 14 = 5$$

Therefore, the difference between the range and the interquartile range is 9 - 5 = 4.  $\checkmark$

- 12 If another score equal to the mean is added to the data set, the mean remains unchanged; however, the standard deviation will decrease, reflecting a slightly smaller spread of scores.  $\checkmark$

- 13 The mode is the most popular score.  
 O and W both occur four times,  
 $\therefore$  mode = O and W only.  $\checkmark$

- 14 Using STAT mode on a calculator,  $\sigma_s$  (standard deviation) is 5.522  
 $\therefore$  5.5  $\checkmark$

- 15 Reading from the chart, January shows the sales to be furthest apart therefore giving the greatest difference.  $\checkmark$

- 16 By using a calculator:  
 Mean = 128.21429 = 128  
 [correct to the nearest whole number]  
 Standard deviation = 15.4234 = 15  
 [correct to the nearest whole number]  $\checkmark \checkmark$

17 a

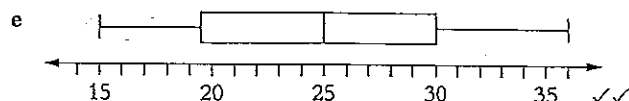
1	5 5 6 8 8 9 9
2	0 1 1 1 4 5 6 8 8 8 9 9
3	0 0 0 1 1 2 2 5 6

$\checkmark \checkmark$

- b The scores in order are: 15 15 16 18 18 18 19 19 | 20 21 21 21 21 23 23 24 25 25 26 28 28 28 29 29 30 | 30 30 31 31 32 32 35 36  
 $\therefore$  Lower extreme = 15  $\checkmark$   
 Lower quartile = 19.5  $\checkmark$   
 Median = 25  $\checkmark$   
 Upper quartile = 30  $\checkmark$   
 Upper extreme = 36  $\checkmark$

- c Range = Upper extreme - Lower extreme  
 = 36 - 15  
 = 21  $\checkmark$

- d Interquartile range = Upper quartile - Lower quartile  
 = 30 - 19.5  
 = 10.5  $\checkmark$

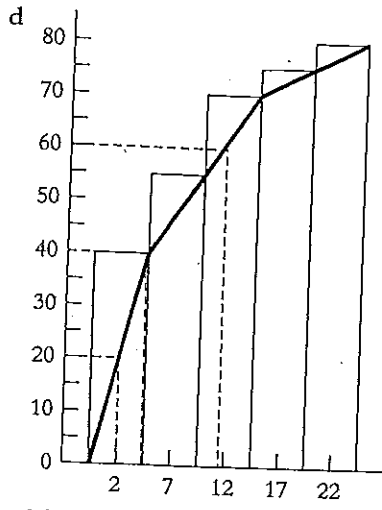


- 18 a There are 80 students as the final cumulative frequency score is 80.  $\checkmark$

b

Class	Class centre	Frequency	Cumulative frequency	Class centre $\times$ Frequency
0-4	2	40	40	80
5-9	7	15	55	105
10-14	12	15	70	180
15-19	17	5	75	85
20-24	22	5	80	110
Total:				560

c The approximate mean number of days absent is  $560 \div 80 = 7$  days. ✓



The upper quartile is 11.5, the lower quartile is 2 and the median is 4.5. ✓✓✓