





# SOLUTIONS

## Topic Test ..... p79

1 3, 9, 9, 10, 11, 12

$$\text{Mean} = \frac{3+9+9+10+11+12}{6} = 9$$

$$\text{Median} = \frac{9+10}{2} = 9.5$$

Mode = 9

$$\text{Range} = 12 - 3 = 9$$

The median is not equal to 9. B

2 Range = 9 - 2 = 7

$$\text{Interquartile range} = 8 - 5 = 3$$

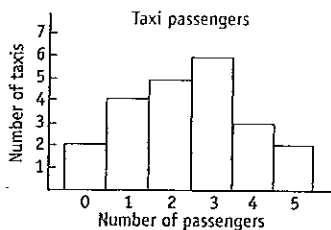
Median = 7

The data is skewed.

The interquartile range is 3 not 2. B

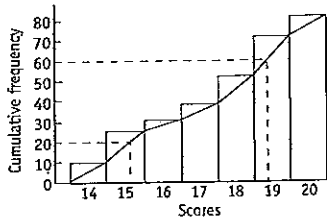
3 Total passengers

$$= 1 \times 4 + 2 \times 5 + 3 \times 6 + 4 \times 3 + 5 \times 2 = 54$$



llenge Q1-6 and Topic Test Q1-3

4 Interquartile range = 19 - 15 = 4



5

X	Y
6 4	5 1 7 8
7 7 3 1	6 0 4 4 6 9
9 8 5 4 2 0	7 1 3 5 6 7 8
9 8 6 5 5 3 1	8 2 3 6 8 9
2 9	0 4 7

X: range = 92 - 54 = 38

Y: range = 97 - 51 = 46

Y has the greater range.

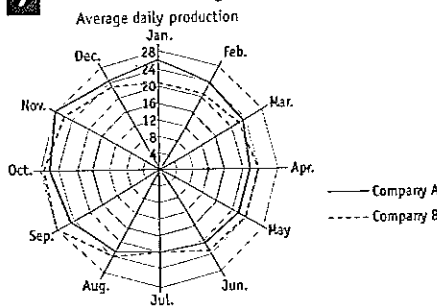
$$\text{X: median} = \frac{75+78}{2} = 76.5$$

$$\text{Y: median} = \frac{75+76}{2} = 75.5$$

X has the higher median. D

6 The mean will be higher (by 20 marks). The standard deviation will remain the same. [The spread of the scores is the same.] B

7 The difference is greater in January. A



8 Only B is both smooth and symmetrical and with two modes. B

9

	Brand X	Brand Y
Girls	50	30
Boys	40	60

$$\text{Number of girls} = 50 + 30 = 80$$

$$\text{Percentage of girls who prefer brand Y} = \frac{30}{80} \times 100\% = 37\frac{1}{2}\%$$

10 17 18 19 19 19 20 20  
21 22 23 24 25 25 94  
Outlier is 94. If the outlier is ignored the mode (19) will not change. C

11 72 68 80 77 76 69 82 74 85  
61 73 78 72 76 67 80 73 68

a Mean = 73.944 444 ... = 73.94 (2 d.p.) ✓  
 $\sigma_{n-1} = 6.014 416 233 ... = 6.01 (2 \text{ d.p.})$  ✓

b Mean for class Y = 75.23 and the standard deviation = 5.78  
Class Y had slightly more consistent results because the standard deviation is lower. ✓

c Class Y performed better because the mean is slightly higher. ✓

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A	B
8	0 3 9
9 5 0	1 3 4 7 8
9 8 7 2 1	2 0 3 5 5 6 9 9
8 6 4 4 4 0	3 2 4 7 8
6 6 4 2	4 1 5 7

a Modal score of group A = 34 ✓

b Median for group B =  $\frac{25+26}{2} = 25.5$  ✓

c The scores in B are fairly symmetrical whereas the scores in A are skewed with more higher scores than lower ones. ✓

13 a, b

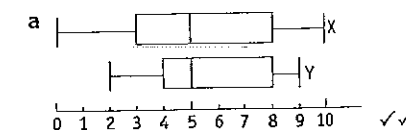
x	f	fx	c.f.
5	8	40	8
6	12	72	20
7	15	105	35
8	17	136	52
9	9	81	61
Total	61	434	

c Mean =  $\frac{\sum fx}{\sum x} = \frac{434}{61} = 7.114 754 098 ... = 7.1 (1 \text{ d.p.})$  ✓

d Mode = 8 ✓

e Median = 7 ✓

14 Person X: 0 3 5 8 10  
Person Y: 2 4 5 8 9



b Person X used the full range of rankings and her scores are symmetrical. Person Y did not use the top or bottom rankings and the scores were slightly skewed with 25% of ranks being 4 or 5. ✓