## Topic Test: Interpreting Sets of Data

Remember: these are HSC-type questions.

(Suggested time: 15 minutes)

Choose the correct answer (A, B, C or D) One mark each for each question.

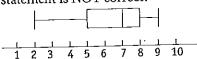
For the scores 11, 3, 9, 9, 12, 10; which is NOT equal to 9? equal to 9?

A mean C mode B median

D range



Referring to the box-and-whisker plot, which statement is NOT correct?



A the range is 7

B the interquartile range is 2

C the median is 7

D the data is skewed



The graph shows the number of passengers in a selection of taxis surveyed recently.



What is the total number of passengers?

A 15

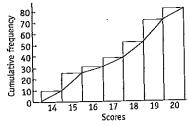
B 22

C 54

D 56



A cumulative frequency histogram and polygon have been drawn from some data.



What is the interquartile range?

A 3

B 4

C 5

D 6

Referring to the back-to-back stem-and-leaf plot, which is correct?

A X has a larger range and a higher median

B X has a larger range but Y has a higher median

C Y has a larger range and a higher median

D Y has a larger range but X has a higher median



A class did the same test before and after studying a particular unit of work. In the second test, every student achieved twenty more marks than they did in the first test. Which statement is correct concerning the mean and standard deviation of the second test compared to the first?

A The mean will remain the same but the standard

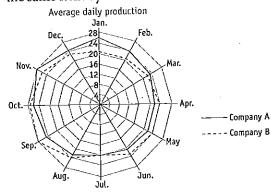
deviation will be higher.

B The standard deviation will remain the same but the mean will be higher.

C The mean and standard deviation will both be higher.

D The mean and standard deviation will both remain the same.

The radar chart shows the average daily production of the same item by two different factories.



In what month was the difference in average daily production greatest?

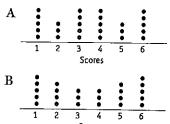
A January

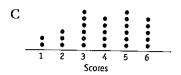
B July

C September

D November

A set of data was correctly described as smooth, symmetrical and with two modes. Which dot plot could illustrate the data?









A two-way table was drawn up to show the results of survey of children to see which of two brands of fruit juice they preferred. What is the percentage of girls who prefer brand Y?

	Brand X	Brand Y
Girls	50	30
Boys	40	60

A	60%	В	50%
C	$37\frac{1}{2}\%$	D	$33\frac{1}{3}\%$



The times, in minutes, that students took to complete a certain task were recorded:

Which will not change if the outlier is ignored?

A mean C mode

B median D range

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the scc

below

Part B

(Suggested time: 25 minutes)

Show all working.



Find the mean and standard deviation  $(\sigma_{n-1})$  for this set of scores, which are marks in an exam scored by the students in class X. Give each answer correct to two decimal places.

72 68 80 77 76 69 82 74 85

61 73 78 72 76 67 80 73 68 2 marks

Another class, class Y, did the same exam. The mean for class Y was 75.23 and the standard deviation was 5.78.

b Which class had the more consistent results?

I mark

Which class performed better on the exam?

1 mark



Groups A and B both did a test and the results, out of 50, are shown in the back-to-back stem-and-leaf plot.

A		B 3 9 3 4 7 8 0 3 5 5 6 9 9 2 4 7 8 1 5 7
8	0	3 9
950	1	3 4 7 8
98721	2	0355699
864440	3	2478
6642	4	157

a What is the modal score of group A?

1 mark

What is the median for group B?

1 mark

c Compare the scores with reference to any patterns that can be seen from the display.

1 mark

The following table was drawn up to show the results A z-scc of a quiz.

X	f	fx	c.f.
5	8		
6	8 12 15		
7	15	:	
8	17		
9	9		

a Complete the  $f \times x$  column.

1 mark

Complete the cumulative frequency column.

1 mark

Calculate the mean correct to one decimal place.

1 mark

d What is the mode?

1 mark

What is the median?

1 mark

Two people were asked to rank a large selection of books. The rankings were from one to ten, with ten being the highest. The resulting five-number summaries of the rankings are:

Person X: 0 3 5 8 10

Person Y: 2 4 5 8 9

a Draw two box-and-whisker plots on the same scale to illustrate this information.

2 marks

b Briefly comment on any similarities and differences.

1 mark

Go to p 286 for Quick Answer or to pp 314–15 for Worked Solution

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## SOLUTIONS

## Topic Test ..... p79

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

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

$$Range = 12 - 3$$
$$= 9$$

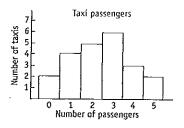
В

Range = 
$$9 - 2$$
  
= 7

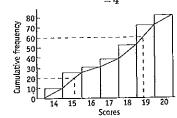
Interquartile range = 
$$8 - 5$$

$$Median = 7$$

$$=1\times4+2\times5+3\times6+4\times3+5\times2$$
  
=54



llenge Q1-6 and Topic Test Q1-3



X: range = 
$$92 - 54$$

$$=38$$

Y: range = 
$$97 - 51$$
  
=  $46$ 

X: median = 
$$\frac{75 + 78}{2}$$
  
= 76.5  
Y: median =  $\frac{75 + 76}{2}$ 

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

The mean will be higher (by 20 marks).

The standard deviation will remain the same. (The spread of the scores is the same.)

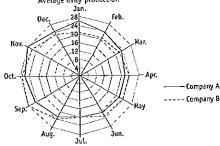
B

Đ

 $\mathbf{C}$ 

The difference is greater in January.

Average daily production



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

9		Brand X	Brand Y
20000	Girls	50	30
	Boys	40	60

Number of girls 
$$= 50 + 30$$

$$= \frac{30}{80} \times 100\%$$
$$= 37\frac{1}{2}\%$$

$$\sigma_{n-1} = 6.014 \, 416 \, 233 \dots$$
  
= 6.01 (2 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.

**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.

c Mean = 
$$\Sigma fx \div \Sigma x$$
  
=  $434 \div 61$   
=  $7.114754098...$   
=  $7.1$  (1 d.p.)

$$d$$
 Mode = 8

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.