Yr 10

Name: Date:

Topic: **STATISTICS WITH UNIVARIATE DATA**

Question 1 [1 + 1 + 1 + 1 + 1 = 5 marks]

For the following data:
2, 3, 5 ,7, 3, 6, 9, 12, 11, 12, 6, 4, 0, 6, 8

Find :

(a) the mean

(b) the mode

(c) the median

(d) the range

(e) the standard deviation

Question 2 [1 + 1 + 1 = 3 marks]

The following six positive scores are in ascending order
x, 5, 8, y, 11, 12

If x is increased by 2 and y is decreased by 3 then comment on the effect this has on:

(a) the mean

(b) the range

(c) the standard deviation

Question 3 [2 + 2 + 2 = 6 marks]

Consider the following set of scores:
s, t, u, v, w

The mean of this set of scores is x and the standard deviation is y.

Find the mean and standard deviation of the following sets of scores.

(a) s + 2, t + 2, u + 2, v + 2, w + 2

(b) 3s – 4, 3t – 4, 3u – 4, 3v – 4, 3w – 4

(c) –2s, -2t, -2u, -2v, -2w

Question 4 [1 + 1 + 1 + 1 = 4 marks]

A survey was conduct at a local high school concerning the number of hours Year 12 students study per night. The following table summarises the information.

Hours of Study	Number of Students
0	10
1	15
2	18
3	9

Use the table to find :

(a) the mean number of hours studied per night

(b) the median number of hours studied per night

(c) the standard deviation

One of the students decided that he made an error and instead of saying 2 hours he should have said 3 hours.

(d) What effect will this have on the standard deviation ?

Question 5 [3 + 2 + 1 = 6 marks]

The following is a set of data from the Bureau of Statistics. The data concerns Housing Prices in March 1993.

Housing Price	Number of Houses
$50000 - $100000	16
$100000 - $150000	15
$150000 - $200000	10
$200000 - $250000	8
$ 1450000	1

Find:

(a) the mean housing price

(b) the median class interval housing price

The Bureau uses the media price to display average housing prices.

(c) Use the above statistics to explain why.

Question 6 [4 marks]

A Mathematics class was given a test on statistics and the teacher gave the following results:

Mean = 60
Standard Deviation = 10
Sum of the squares of the scores = 92500

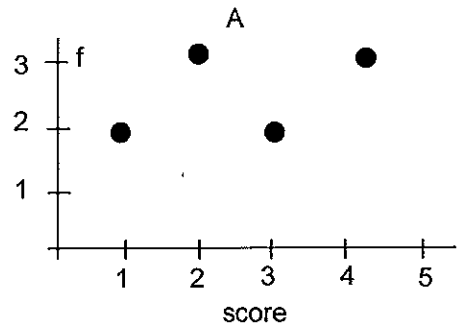
Find the number of students in the class.

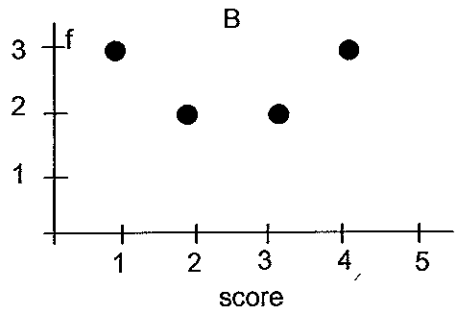
Question 7 [1 + 1 = 2 marks]

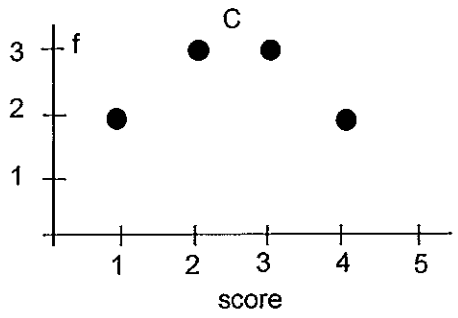
For the following frequency distributions, find which have the same:

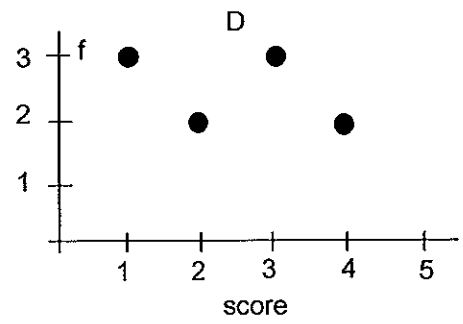
(a) mean

(b) standard deviation.









(5 + 3 + 6 + 4 + 6 + 4 + 2 = 30 marks)

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Question 1

(a)	Mean	=	6.27 (2 dec.pl)	[1]
(b)	Mode	=	6	[1]
			0,2,3,3,4,5,6,6,6,7,8,9,11,12,12	[1]
(c)	Median	=	6	[1]
(d)	Range	=	12	[1]
(e)	St.Dev	=	3.51 (2 dec.pl)	[1]

Question 2

(a)	Mean decreases	[1]
(b)	Range decreases	[1]
(c)	Standard deviation decreases	[1]

Question 3

(a)	Mean	=	$x + 2$	[1]
	St.Dev	=	y	[1]
(b)	Mean	=	$3x - 4$	[1]
	St.Dev	=	$3y$	[1]
(c)	Mean	=	$-2x$	[1]
	St.Dev	=	$2y$	[1]

Question 4

(a)	Mean	=	1.5	[1]
(b)	Median	=	2	[1]
(c)	St.Dev	=	0.99 (2 dec.pl)	[1]
(d)	Standard deviation is increased			[1]

Question 5

Housing Price	Number of Houses
$75000	16
$125000	15
$175000	10
$225000	8
$1450000	1

(a)	Mean	=	$161500	[3]
(b)	Median	=	$100000 - $150000	[2]
(c)	The mean is affected by outliers.			[1]

Question 6

$$s^2 = \frac{\sum x^2}{n} - \bar{x}^2$$

$$100 = \frac{92500}{n} - 3600 \qquad [2]$$

$$3700 = \frac{92500}{n} \qquad [1]$$

$$n = \frac{92500}{3700}$$

$$n = 25 \qquad [1]$$

Question 7

(a) B and C have the same mean [1]

(b) A and D have the same standard deviations [1]

(5 + 3 + 6 + 4 + 6 + 4 + 2 = 30 marks)