Name: _____

S.G.H.S. – AUG 2007

Year 10 Topic Test – Statistics

Tine Allowed: 50 minutes

1. The results of 25 Year One students in a weekly spelling test are:-

7	8	9	10	4	7	6
4	5	3	8	5	6	7
9	9	8	7	6	5	7
8	6	4	9			

x	tally	f	$f \times x$	cf

a. Complete the frequency distribution table above.

b. Find the range. _____

c. Find the mode. _____

d. Find the median. _____

e. Calculate the mean, using whichever method you prefer.

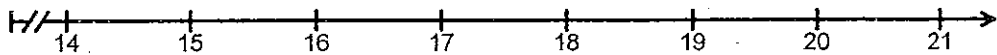f. On the graph paper provided, draw a frequency histogram and polygon.

2. For the scores:

18   20   16   16   18   14   18   21

Find:

a) The median   _____

b) The interquartile range

_____

_____

c) Draw a box and whiskers plot for this data.
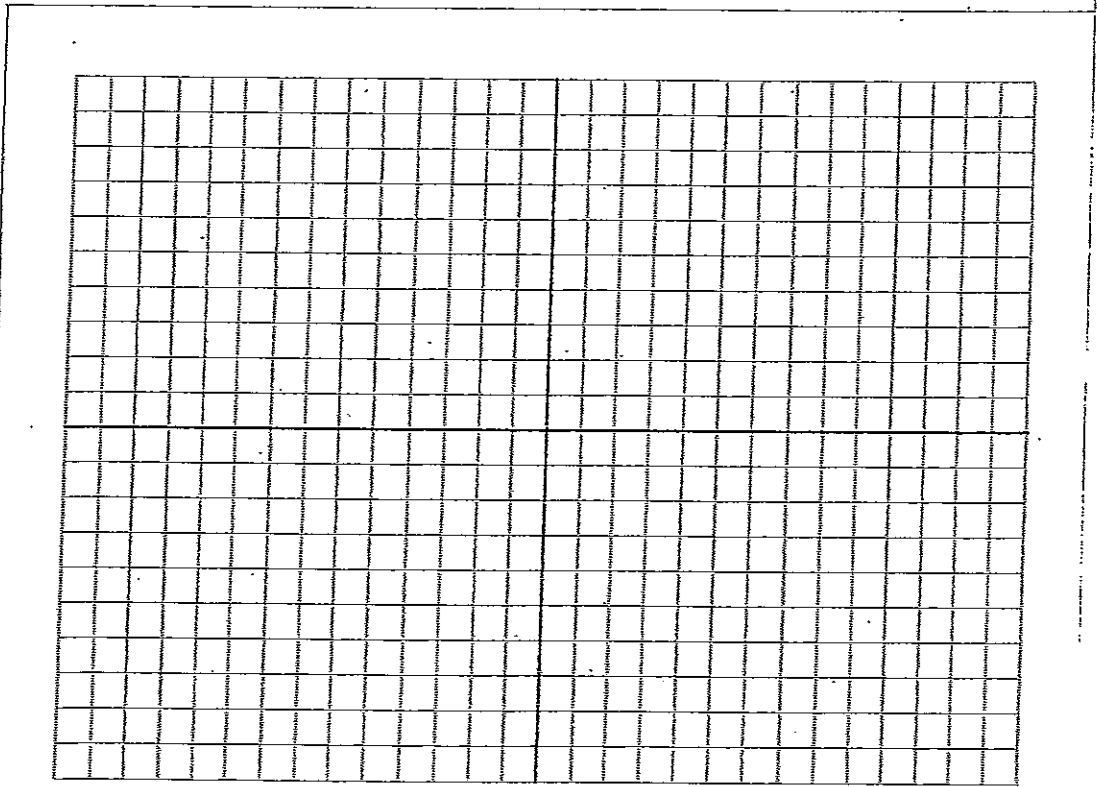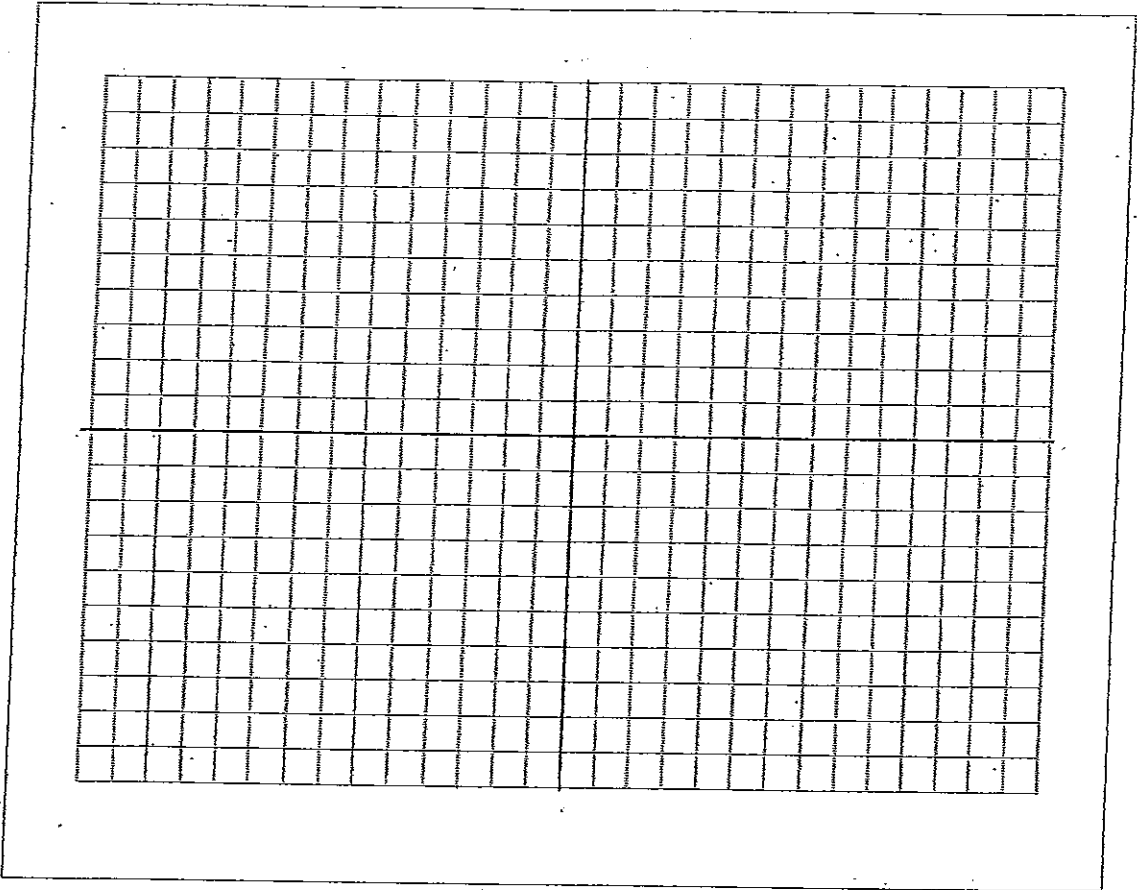

3. Jodie notes the time she devotes to homework each night for 30 consecutive school days. The results (in minutes) are:

25   72   64   38   29   36   42   63   49   50

39   55   61   59   27   39   54   27   60   32

42   46   54   71   27   52   68   63   69   60

a. By taking the group 25 − 29 as the first class, construct a grouped frequency distribution table in the space below.   (3)

Class	c.c	Frequency	Fx	cf

GRID PAPER

b. Calculate the mean. _____

c. Within which group is the median_____

d. Draw a cumulative frequency histogram and polygon on the grid paper.

4. Eleanor has an average of 76% after three tests this semester. What mark does she need in the next test in order to raise her average to 80%?

5. A dart was thrown 20 times at a dartboard. The results were recorded in the form of a stem and leaf plot.

Stem	Leaf
3	2 5
4	0 1 5 7
5	3 4 6 7 9
6	1 2 3 5 9
7	3 4 4 6

Find the interquartile range.

6. Find the standard deviation for the scores below:

| 21 | 19 | 12 | 8 | 23 | 6 | 30 |

_____

7. The table shows Jessica's results on consecutive class tests.

	Mark	$\bar{x}$	δ
Test 1	69	60	6
Test 2	82	72	10

On which test did Jessica perform better, relative to the class? Justify your answer.

8. Shoe laces for a particular new line of joggers are manufactured 60 cm long with a standard deviation of 0.5 cm. What percentage of shoelaces would:

   a. Be longer than 61.5 cm?

   _____

   b) Be between 61 and 62 cm long?

   _____

   c) Be between 60 and 60.5 cm long?

   _____

(

Name: *Solutions*

Year 10 Topic Test – Statistics

Time Allowed: 50 minutes

1. The results of 25 Year One students in a weekly spelling test are:-

7 8 9 10 4 7 6
4 5 3 8   5 6 7
9 9 8 7   6 5 7
8 6 4 9

	Tally			
3	I	1	3	1
4	III	3	12	4
5	III	3	15	7
6	IIII	4	24	11
7	IIII	5	35	16
8	IIII	4	32	20
9	IIII	4	36	24
10	I	1	10	25
		25	167	

a. Complete the frequency distribution table above.

b. Find the range. 7 (1)

c. Find the mode. 7 (1)

d. Find the median. 7 (1)

e. Calculate the mean, using whichever method you prefer. (2)

$$\bar{x} = \frac{\sum fx}{\sum f}$$
$$= \frac{167}{25}$$
$$= 6.68$$

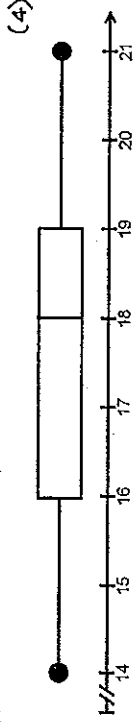f. On the graph paper provided, draw a frequency histogram and polygon. (4)

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2. For the scores:

18 20 16 16 14 18 18 18 14 18 21

14 16 16   18 20 21

$Q1 = 16$ $Q3 = 19$

Find:

a) The median ___ 18 ___ (1)

b) The interquartile range (2)

$$IQR = Q3 - Q1$$
$$= 19 - 16$$
$$= 3$$

c) Draw a box and whiskers plot for this data. (4)

14 15 16 17 18 19 20 21

3. Jodie notes the time she devotes to homework each night for 30 consecutive school days. The results (in minutes) are:

25 72 64 38 29 36 42 63 49 50
39 55 61 59 27 39 54 27 60 32
42 46 54 71 27 52 68 63 69 60

a. By taking the group 25 – 29 as the first class, construct a grouped frequency distribution table in the space below. (3)

Class	c.c	Frequency	Fx	cf
25 – 29	27	5	135	5
30 – 34	32	1	32	6
35 – 39	37	4	148	10
40 – 44	42	2	84	12
45 – 49	47	2	94	14
50 – 54	52	4	208	18
55 – 59	57	2	114	20
60 – 64	62	6	372	26
65 – 69	67	2	134	28
70 – 74	72	2	144	30

b. Calculate the mean. $\bar{x} = \dfrac{1465}{30} = 48.83$ (2 dec. pl) (1)

c. Within which group is the median _____ 50 - 54 _____ (1)

d. Draw a cumulative frequency histogram and polygon on the grid paper. (4)

4. Eleanor has an average of 76% after three tests this semester. What mark does she need in the next test in order to raise her average to 80%? (3)
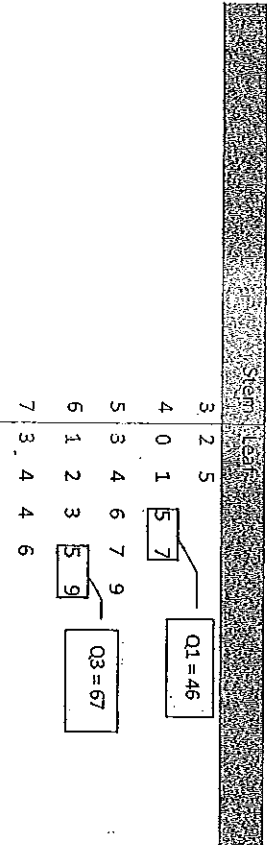
Let the mark needed = x

$$80 = \dfrac{76 \times 3 + x}{4}$$

$$320 = 228 + x$$

$$x = 92$$

5. A dart was thrown 20 times at a dartboard. The results were recorded in the form of a stem and leaf plot.

Stem	Leaf					
3	2	5				
4	0	1	5	7			Q1 = 46
5	3	4	6	7	9	
6	1	2	3	5	9		Q3 = 67
7	3	4	4	6		

Find the interquartile range.

$$IQR = Q3 - Q1$$
$$= 67 - 46$$
$$= 21$$

6. Find the standard deviation for the scores below: (1)

21   19   12   8   23   6   30

8.04 (2 dec. pl)

7. The table shows Jessica's results on consecutive class tests.

	Mark	$\bar{x}$	δ
Test 1	69	60	6
Test 2	82	72	10

On which test did Jessica perform better, relative to the class? Justify your answer. (2)

She scored better in Test 1 as she is 1.5 standard deviations above the mean, whereas in Test 2, she is only 1 standard deviation above the mean.

8. Shoe laces for a particular new line of joggers are manufactured 60 cm long with a standard deviation of 0.5 cm. What percentage of shoelaces would:

a. Be longer than 61.5 cm? (1)

0.15%

b) Be between 61 and 62 cm long?

c) Be between 60 and 60.5 cm long? (1)

34%

Score (class centre)

72 67 62 57 52 47 42 37 32 27

Cumulative Frequency

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Frequency

5

4

3

2

1

3   4   5   6   7   8   9   10   11

Score