Name: Anne sics	Date:
Class:	

Baldivis Secondary College

Year 11 Essential Mathematics

Major Test 4 2018

Topic -Representing and Comparing Data

/ 41

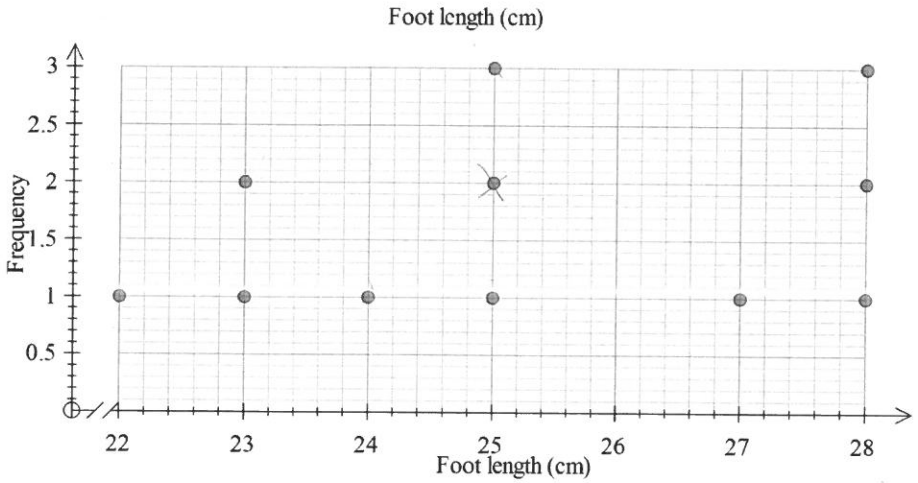
6 %

Total Time:	55 minutes
Weighting:	6%
Equipment:	To be provided by the student: Pen, pencil, ruler,1 double sided A4 page of notes, scientific calculator Teacher will provide grid paper

Full working out must be shown to get full marks. Attempt all questions.

Question 1 — ~~5~~ 6 marks

This dot plot shows the foot length of a group of students.



a) Calculate the range of the scores, showing your working. $28 - 22 = 6$ ✓

b) Determine the mode.

25 and 28 ✓

c) Determine the median.

$\frac{11+1}{2} = 6$ 25 ✓

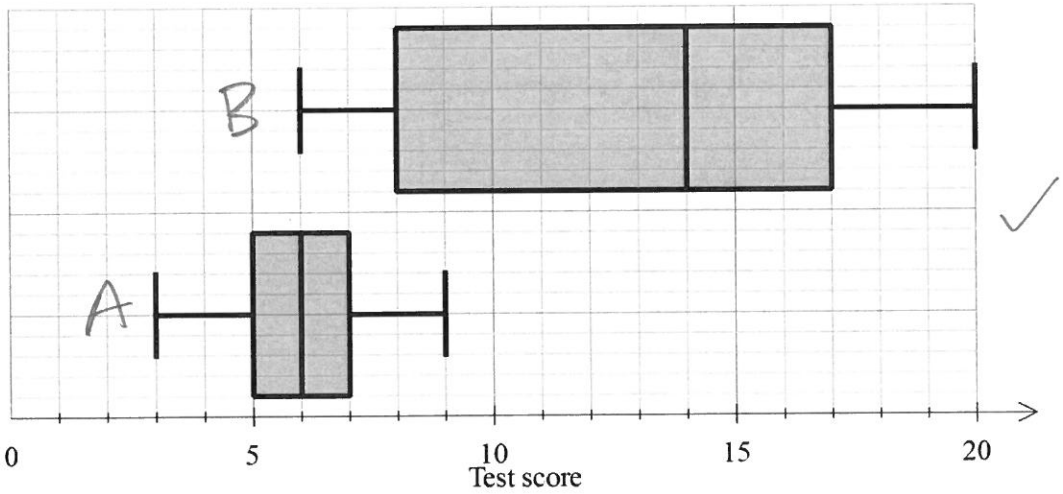
d) Calculate the mean, showing your working. ✓

$(22 + 2\times23 + 24 + 3\times25 + 27 + 28\times3) \div 11 = 25.27$ ✓

e) Complete this sentence: For a student in this group, you would expect them to have a foot length of about 25 cm. ✓

Question 2 — 11 marks-1, 5 ,2 , 3

Test scores for Class A and Class B



a) Eric is in Class A, he scored 5 on the test. Label the two box plots with their class names.

b) Use the table below to enter the appropriate values for each of the plots. -½ each

Statistic	Class A	Class B
Minimum	3	6
First quartile	5	8
Median	6	14
Third quartile	7	17
Maximum	9	20

c) Calculate the range and interquartile range for each class, showing the working, in the table below.

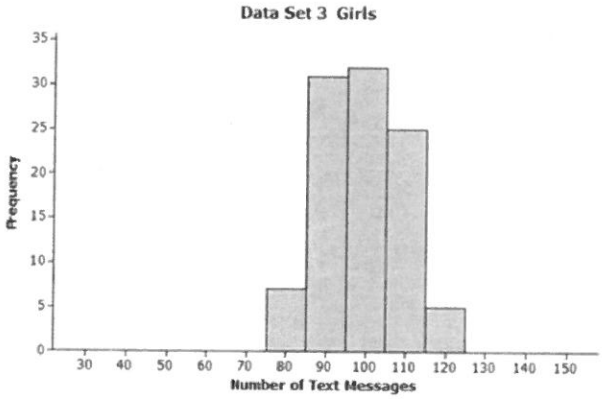
Statistic	Class A	Class B
Range	9-3 = 6 ½	20-6 = 14 ½
Interquartile range	7-5 = 2 ½	17-8 = 9 ½

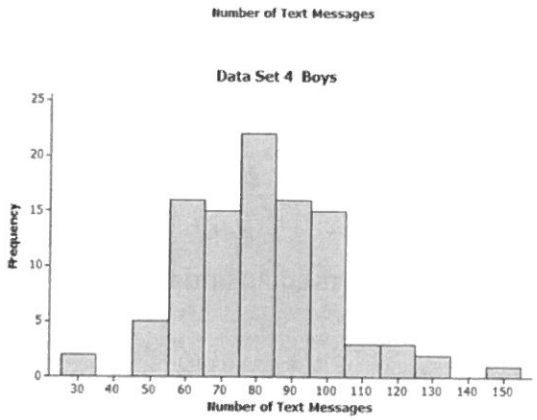
d) In each of the statements below, write A and B as appropriate to make the statement true.

- Class B has a much greater range than Class A
- The minimum for Class B is the same as the median for Class A
- For Class A, the second and third quartiles are the same width, whereas for Class B, the second quartile is much greater than the third quartile

Question 3 — 6 marks (2, 2, 1, 1)

Data Set 3 consists of data on the number of text messages sent in one month for 100 teenage girls who have a cell phone. Data Set 4 consists of data on the number of text messages sent in one month for 100 teenage boys who have a cell phone. Histograms of the two data sets are shown below.





a) Describe the data distribution of number of text messages for the girls (Data Set 3). Be sure to comment on symmetry, skewness and bimodality and unimodality, where applicable.

unimodal, symetrical

b) Are Data Set 3 and Data Set 4 centred in about the same place? If not, which one has the greater centre?

No, set 3 is centred higher at 100
set 4 is centred at 80

c) Which of Data Set 3 and Data Set 4 has greater spread? Explain.

Data Set 4, greater range (150-30=120)

d) On average, did the girls (Data Set 3) or the boys (Data Set 4) send more text messages? Explain

girls sent more, median and mode is higher

Question 4 — 6 marks (3, 1, 1, 1)

Mum and Lucy were having an argument about the number of hours she spends on Facebook each night. They decided to record how many hours she spent on Facebook for one week. The results are shown below.

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Hours on Facebook	4	2	2	1	6	4	8

1 2 2 4 4 6 8

a) Find the mode, median and mean for this data.

Mean: $27 \div 7 = 3.86$ ✓

median: 4 ✓

mode: 2 and 4 ✓

b) Which of these measures could Mum use to demonstrate that Lucy spends too long on Facebook? Explain your reasoning.

Median, more than half the day she's on for more than 4 hours

c) Which of these measures could Lucy use to show that she doesn't spend too much time on Facebook? Explain your reasoning.

Mean - less than 4 hours a night.

Mode - most of the time she is on for 2 hours (excluding the 4)

Question 5 — 3 marks

Two classes are marked on the same tests.

Class P has a mean of 65% and standard deviation of 5.

Class Q has a mean of 50% and standard deviation of 15.

a) Write a statement comparing the scores of the two classes, that is, who had the better scores?

Class P has the better scores higher mean

b) Write a statement comparing the spread of the scores for the two classes.

P - scores close together small SD (5)

Q - scores spread out higher SD (15)

c) Which class would you expect to have the highest score? Explain.

class P 65+5 = 70%

Question 6 — 10 marks (5, 3, 2)

Peter and Kingi are arguing about which local rugby league team is the best. The points scored by their favourite teams in each match over the previous season are listed here:

Lions: 20, 10, 40, 12, 17, 20, 22, 20, 34, 19, 36, 18, 24, 12, 38, 24, 34, 36, 32, 22, 6, 7, 38, 18

Cougars: 14, 18, 24, 39, 14, 4, 4, 14, 10, 13, 28, 22, 16, 18, 18, 12, 18, 28, 21, 6, 10, 18, 36, 12

a) What is the best graph to use to show this data? Construct this graph

Stem + leaf ✓ key 3|4 = 34

Lions		Cougars
76	0	446
9887220	1	0022344468888
4422000	2	1248
886642	3	69
0	4	

√ - stem + leaf
✓ - key
✓√ - correct graph
√ - numbers in order

b) Which is the better team based on this data? Justify your answer using mathematical terminology about distribution shape and or the measures of central tendency.

√ - medians
√ - spread
√ - lions are better

Lions have a higher median ✓ and have scores spread evenly over the teens, 20s and 30s,
Cougars have a lower median and are clustered around the teens
Lions are better!

c) What additional data might you need to know in order to decide which is the better team?

- opposition points ✓
- games won ✓

END OF TEST