Mathematics Essentials 2017
Unit 2 Test 1
Task Weighting: 8%

Eastern Goldfields College

Student Name: SOLUTIONS TOTAL 51 Marks

Time Allowed: 15 Minutes Marks: 15

Calculator Free **No calculator or notes permitted for this section.**

Question 1 [3 Marks]

Complete the table by choosing the most appropriate Data Display and Data Type from the options provided.

Data Display

- Column graph
- Dot frequency diagram
- Back to back stem and leaf diagram
- Histogram
- Box & whisker Plot

Data Type

- Numerical
- Categorical

	Data Display	Data Type
The heights (measured in cm) of 20 boys and 20 girls to compare them.	Back to Back Stem & Leaf Diagram	Numerical
The eye colour of all Year 11 students.	or (Dot Freq) Column Graph	Categorical
The foot length, measured in cm, of the members of your class	Box & Whisker Histogram	Numerical
House prices in various suburbs	Histogram Box & Whisker Plot	Numerical
The birth month of all Essentials students.	Dot Frequency Diagram or (Column)	Categorical

√√√ All correct (10)

√√ 7-9 correct

√ 5-6 correct

Question 2 [4 marks: 2, 2]

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) Which class performed better and why?

Class P as they have a greater mean ✓ ✓

b) Write a statement comparing the spread of the scores for the two classes and justify your comment.

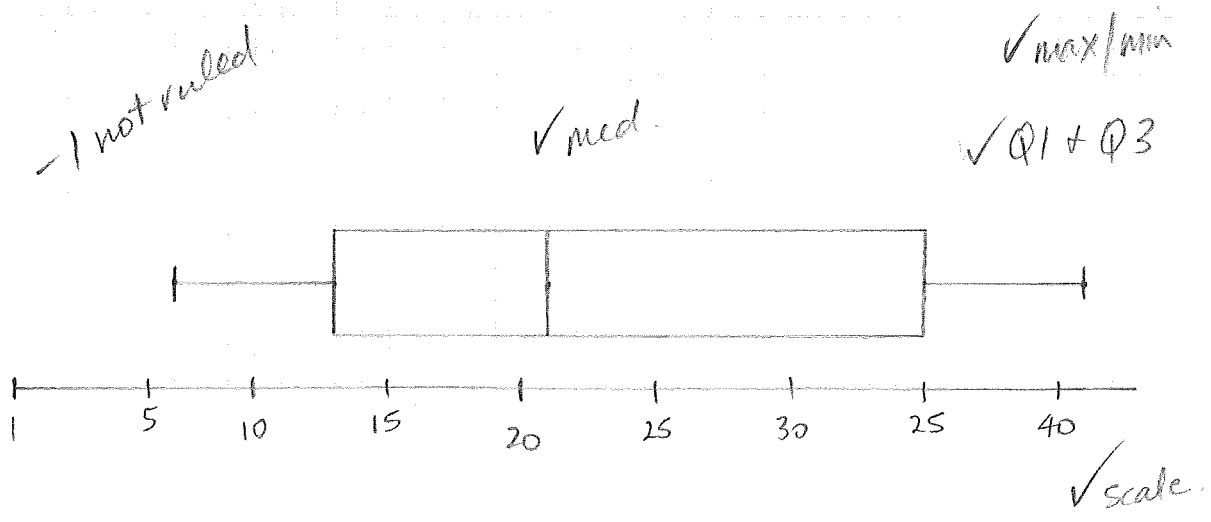
Class Q scores are more spread as σ is greater ✓ ✓

Question 3 [4 marks]

The number of break-and-enter offences in a rural city were recorded over a number of months.

21, 25, 17, 23, 16, 21, 41, 22, 25, 20, 22, 11, 20, 12, 13, 12, 6, 12, 10, 19, 30, 22, 21, 14, 34, 33, 34

Draw a boxplot for this data on the grid below.

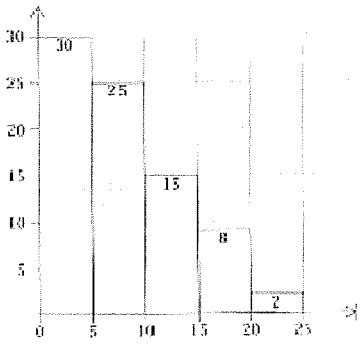


6 10 11 12 12 12 13 14 16 17 19 20 20 21 21 21 22 22 22 23 25 25 30 33 34 34 41

MIN Q1 MED Q3 MAX

Question 4 [4 marks – 2, 2]

a) Describe the distribution below.



- Histogram / distribution is skewed
- Modal group is 0 - 5
- Range is 25

✓ per each relevant accurate statement.

b) Give an example of what data could be represented in this graph and justify your answer.

Ages (YRS) of people at school holiday program as lots of younger people and older ages could be carers or organisers.

Accept any sensible response

✓ Example
✓ Explanation.

End of Calculator Free Section

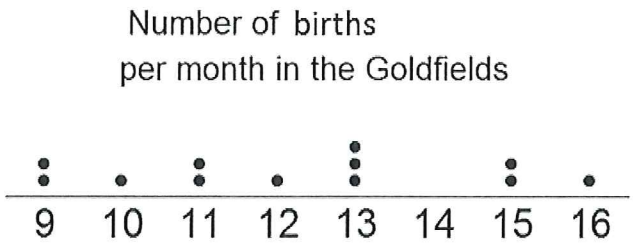
Time Allowed: 40 Minutes Marks: 36

Calculator Assumed - Calculators and files are allowed in this test.
Show all working to maximise marks.

Question 5 [7 marks: 1, 1, 1, 2, 1, 1]

This dot plot shows the number of births in the Goldfields region of Western Australia recorded each month for one year.

9 9 10 11 11 12 13 13 13 15 15 16



a) What type of data is represented in this graph? Numerical ✓

b) Calculate the range of the scores, showing your working. 16 − 9 = 7 (must show working.)
½ ½

c) Determine the mode. 13 ✓

d) Determine the median. 12·5 ✓

e) Calculate the mean, showing your working. 147 ÷ 12 = 12·25
✓ ✓

f) Complete this sentence:
For the Goldfields region, you would expect approximately 13 ✓ births per month.

Question 6 [15 marks: 2, 2, 3, 4, 2] 2

Consider the data to the right, showing the heights of 20 male and 20 female Year 7 students, taken from CensusAtSchool.

Height (cm) Year 7 students

Female	Male
106	141
142	142
143	148
144	148
147	149
147	149
152	150
152	150
153	154
153	154
155	156
155	156
157	156
160	158
162	159
164	164
165	165
170	169
172	170
176	170

a) Identify any outliers in the data. or circled

i. For any you find, explain why you consider it an outlier.

✓ 106, much smaller/less than other heights ✓

b) Explain the effect the outlier(s) have on the:

i. Mean Decreases mean ✓

ii. Median No effect ✓

c) Make a back-to-back stem and leaf diagram to display this data.

Female | Male

Female	Stem	Male
	10	
	11	
	12	
	13	
7 7 4 3 2	14	1 2 8 8 9 9
7 5 5 3 3 2 2	15	0 0 4 4 6 6 6 8 9
5 4 2 0	16	4 5 9
6 2 0	17	0 0

✓ stem
✓ male
✓ female

d) Complete the table below, showing your working, to summarize the statistics for this data.

Statistic	Female	Male
Mode	None	156
Median	154	155
Range	70	29
Mean	153.75	155.4

✓✓✓ all correct (8)
✓✓ 6-7 correct
✓✓ 4-5 correct
✓ 1-3

e) Using your stem and leaf plot and/or the table in d), compare the data for males and females.

- Females has greater range/more spread.
- Same number of males & females
- Median Height is greater for males etc

any sensible comparison

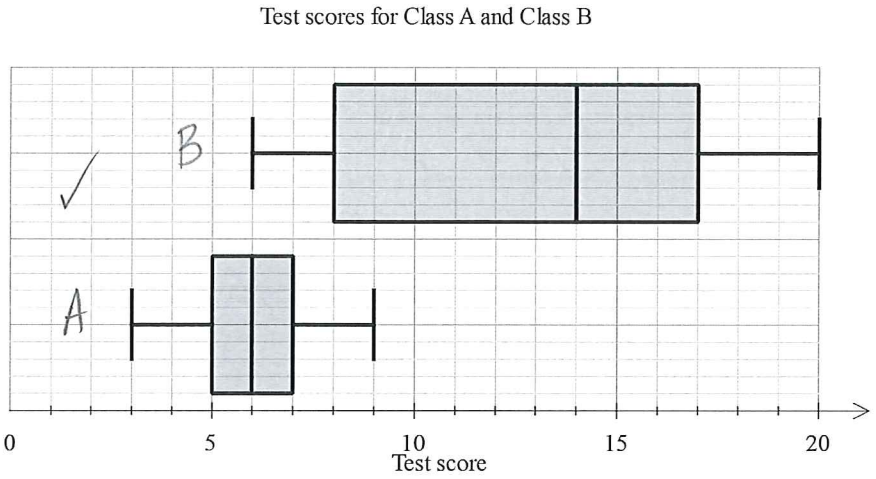
f) Which average is best and and justify your choice.

Median or Mean — All scores used, no mode for females. ✓ ✓

If Range X

Question 7 [~~10~~ 8 marks: 1, ~~5~~ 3, 2, 2]

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.

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

√√ all correct
√ 6-9 correct
√ 5 correct

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

Statistic	Class A	Class B
Range	6	14
Interquartile range	2	9

√ √

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

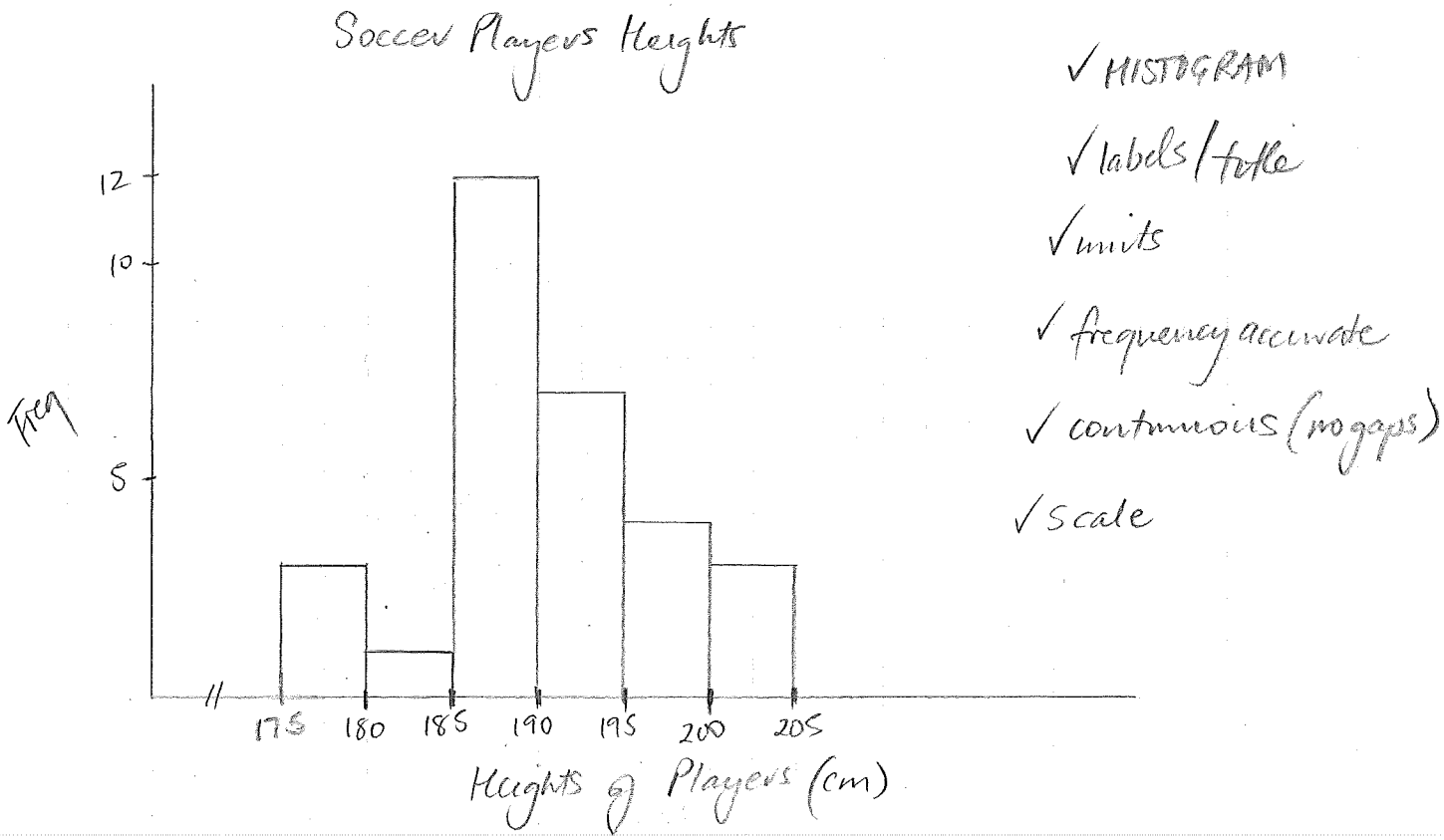
- Class B has a much greater range than Class A
- The minimum for Class B is the same as the median for Class A
- For Class A, the data is symmetrical and for Class B, 100% of the scores are greater than 6.

√√ all correct
√ 2 correct

Question 8 [6 marks]

The frequency table for the heights of a group of soccer players is given below.
Graph this information below.

Height	Frequency
175 up to 180	3
180 up to 185	1
185 up to 190	12
190 up to 195	7
195 up to 200	4
200 up to 205	3



End of Test