Personal Tutor

UK - Year - 11

Shailendra Prasad

(* Student Assessment Report)

Module: **Maths- Year - 11 - Logarithm**	No. of Questions: **3**
Total Marks: **90.0**	Marks Obtained: **90.0**
Student Name: **Mr Pratush Prasad**	Gender: **M**
Class: **XI**	Roll Number: **4**

1 A Level Mathematics for AQA Student Book 1

Marks obtained: 14/14

1 Find the gradient of each graph at the given value of y.

Marks obtained: 2/2

a. i) $y = e^{1.5x}$ when y = 17
   ii) $y = e^{4x}$ when y = 0.6
b. i) $y = e^{-0.6x}$ when y = 3.5
   ii) $y = e^{-x}$ when y = 0.5

2 Find the gradient of the graph of $y = e^{1.5x}$ when:

Marks obtained: 2/2

a) x = -2.1
b) y = 12

3 For the graph of $y = e^{-2.3x}$, find:

Marks obtained: 2/2

a) the gradient when y = 0.5
b) the value of x where the gradient is -2.5

4 The graph of $y = e^{kx}$ has gradient 26 at the point where y = 8

Marks obtained: 2/2

a) Find the value of K
b) Find the gradient of the graph when x = -1

5 The gradient of the graph of $y = e^{ax}$ at the point where y = 4.6 is -1.2. Find the value of x at the point of the gradient is -5.

Marks obtained: 2/2

6

Marks obtained: 2/2

a) Find the value of K so that $8x = e^{kx}$.
b) Hence find the gradient of the graph of $y = 8^x$ at the point where x = -0.5.

7

Marks obtained: 2/2

a) Find the value of p such that $0.3^x = e^{px}$.
b) Hence find the gradient of the curve $y = 0.3^x$ at the point where y = 0.065

2 Section B

Marks obtained: 40/40

8 **For each data set:**

Marks obtained: 4/4

i)I draw a histogram
ii)draw a cumulative frequency diagram
iii) estimate from your cumulative frequency diagram the median and interquartile range
iv) draw a box-and-whisker plot.

a)X is the time taken to complete a puzzle, in second (s)

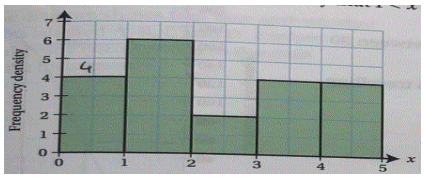
x (s)	Frequency
$0 < x \leq 15$	19
$15 < x \leq 30$	15
$30 < x \leq 45$	7
$45 < x \leq 60$	5
$60 < x \leq 90$	4

b)x is the weight of a plant, in grams

x (g)	Frequency
$0 < x \leq 15$	17
$15 < x \leq 30$	23
$30 < x \leq 45$	42
$45 < x \leq 60$	21
$60 < x \leq 90$	5

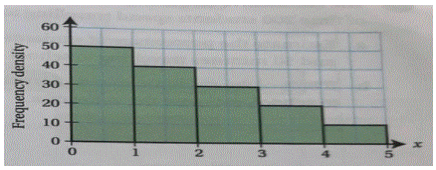
9 **For each histogram, find the probability that 1<x<2.**

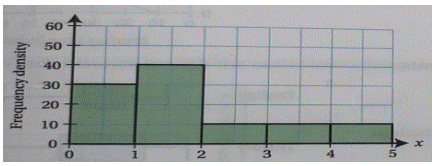
Marks obtained: 4/4

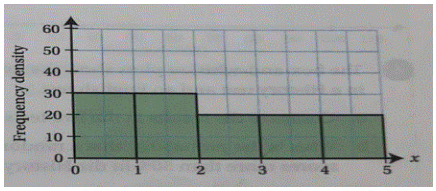


ii)

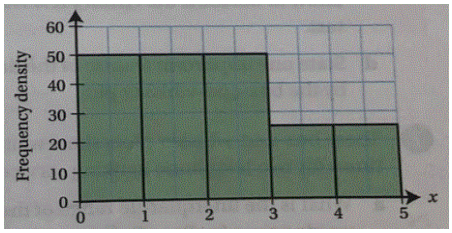
b.i)

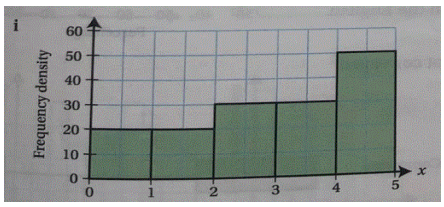






ii)



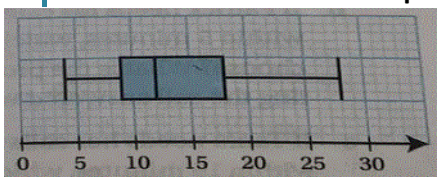


c.i)

ii)

10 **From this box-and-whisker plot, state the medium and interquartile range.**

Marks obtained: 4/4



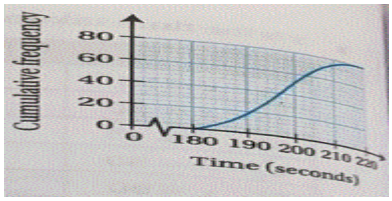
11 **80 students were asked to solve a simple word puzzle and their times, in seconds, were recorded. The results are shown on this cumulative frequency diagram.**

Marks obtained: 4/4

a. Estimate the median. The middle 50% of students took between c and d seconds to solve puzzle.

b. Write down the values of c and d.

c. Hence estimate the interquartile range.

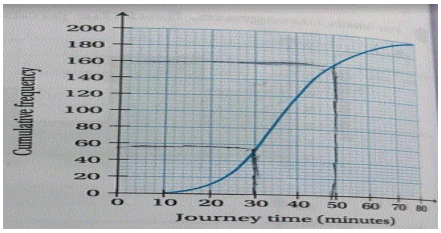


12 **The cumulative frequency curve indicates the amount of time 200 students spend travelling to school.**

Marks obtained: 4/4

a.) Estimate the percentage of students who spend between 30 and 50 minutes travelling to school.

b.) If 80% of the students spend more than x minutes travelling to school, estimate the value of x.



13 **The box-and-whisker plots show the results of students in a History test and an English test.**

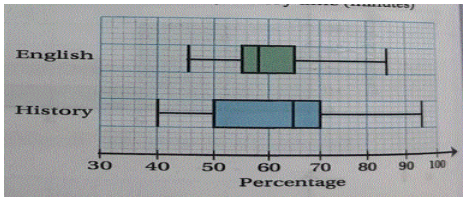
Marks obtained: 4/4

a.) Compare the results in the two tests.

b.) What is the probability that a randomly chosen student scores more than 50% in the History test?

c.) State one further piece of information you would need to know to decide if the History test was easier than the English test.

d.) State one important feature of the data that is not conveyed by the box-and-whisker plot.



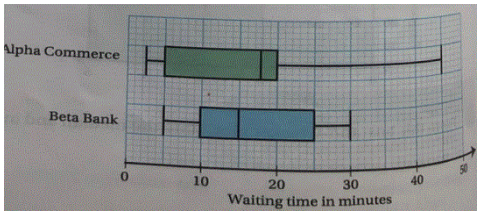
14 **These box-and-whisker plots show waiting times for two telephone banking services.**

Marks obtained: 4/4

a.) What is the interquartile range of the waiting time for Beta Bank?

b.) If Patrick needs his calls to be answered Beta Bank within 5 minutes, which bank should he choose? What is the probability of get-ting the call answered within 5 minutes?

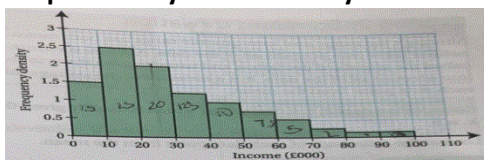
c.) If Tania needs her calls to be answered within 15 minutes, which bank should she choose? What is the probability of getting the call answered within 15 minutes?



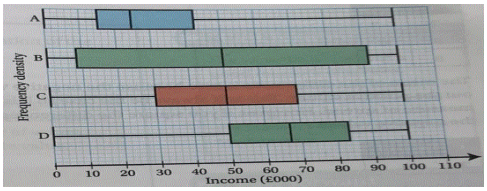
15 **This histogram shows the wages of employees in a company.**

Marks obtained: 4/4

a.) use the histogram to estimate the probability of a randomly chosen employee earning between £20 000 and £25 000.

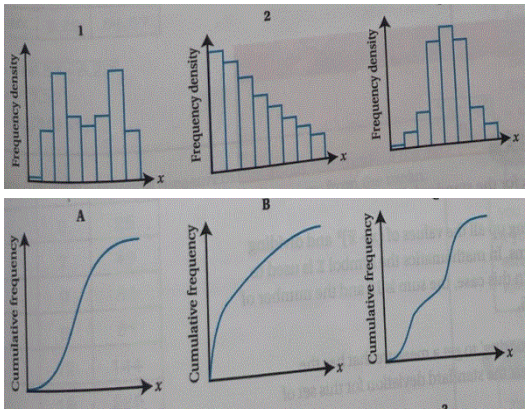


b.) The diagram shows four box-and-whisker plots labelled A, B, C and D. Explain which one corresponds to the data in the histogram.



16 **Match each histogram with the cumulative frequency diagram coming from the same data:**

Marks obtained: 4/4



17 **A histogram is drawn for this data.**

Marks obtained: 4/4

x	$0 < x \leq 2$	$2 < x \leq 5$
Frequency	a	ab

The height of the bar over the $0 < x \leq 2$ group is h. Find, in terms of b and h only, the height of the bar over the $2 < x \leq 5$ group.

3 Section C

Marks obtained: 36/36

18 For each set of data, calculate the standard deviation and interquartile range. Use the formula first then11st statistical functions on your calculator to check your answer.

Marks obtained: 4/4

a i) 19.0, 23.4, 36.2,18.7,15.7
ii) 0.4, —1.3, 7.9, 8.4, —9.4
b i) 28, 31,54, 28,17, 30
ii) 60,18, 42,113, 95, 23
c i) 1,2,1,3,5
ii) 3, —2, 4, —2, 5, 2

19 The interquartile range of the ordered set of data 5, 5, 7, 8, 9, x,13 is equal to 7.

Marks obtained: 4/4

a.) Find the value of x.
b.) Find the standard deviation of the data set.

20 Ten data items have a sum of 468 and the sum of the squares of the data is 27172.

Marks obtained: 4/4

a.) Find the mean of the data.
b.) Find the variance of the data.

21 The speed, x, in mph, of 10 serves by Tim, a professional tennis player, is summarised as:

Marks obtained: 4/4

$\sum x = 1245$, $\sum x^2 = 156\ 403$
a.) Find the mean speed of the serves.
b.) Find the standard deviation in the speed of the serves.
c.) Andy is another professional tennis player. The variance in the speed of Andy's serves is 89.6(mph)² Which player appears to be more consistent in their serving speed ?

22 The scores in a Physics test were: 81, 36, 73, 78, 74, 75.

Marks obtained: 4/4

a.) Find standard deviation of these scores.
b.) The standard deviation of the results of the same set of students in a Chemistry test was 5.91. Give two reasons why it would not be appropriate to use a comparison of these two standard deviation to determine whether students were more consistent in Physics or Chemistry.

23 Considered the five numbers: 2, 5, 9, x and y. The mean of the numbers is 5 and the variance is 6. OFind the value of xy,

Marks obtained: 4/4

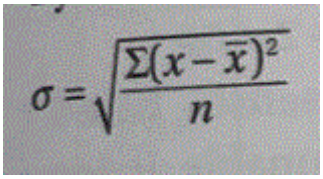
24 The mean of a set of 15 data items is 600 and the standard deviation is 12. Another piece of data is 0 discovered and the new mean is 600.25. Find the new standard deviation.

Marks obtained: 4/4

25 **The mean IQ of a class of 9 students is 121 and the variance is 226. A v Another student joins the class and the variance changes to 239.4. What are the possible values of the IQ of the new student?**

Marks obtained: 4/4

26 **a.) Explain why, for any piece of data, x— x is less than the range.**
b.) By considering the formula:



prove that the standard deviation is always strictly less than the range.

Marks obtained: 4/4