FULL MODEL ANSWERS

Q1. NON-CALCULATOR

range = biggest − smallest

Jake and Sarah each played a computer game six times.

Their scores for each game are shown below.

Jake	10	9	8	11	12	8
Sarah	2	10	7	14	4	10

(a) Who had the most consistent scores, Jake or Sarah? You must give a reason for your answer.

smaller range

Jake's range: 12 − 8 = 4

Sarah's range: 14 − 2 = 12

Jake had the more consistent scores, since his range was lower than Sarah's.

(1)

Jake played a different game 20 times.

The stem and leaf diagram shows information about his scores.

0	9
1	2 3 3 4 5
2	5 6 6 6 6 7
3	1 3 4 6 8
4	0 2 9

Key
1 | 2 represents 12 points

most common

Jake said his modal score was 6 points because 6 occurs most often in the diagram.

(b) Is Jake correct? You must explain your answer.

6 is the 'leaf' and according to the key is the 'ones' column. The actual modal score is 26

(1)

(Total for question = 2 marks)

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Q2. NON-CALCULATOR

The stem and leaf diagram shows information about the heights, in cm, of the boys in a class.

14	0	2	9			
15	1	1	3	5	7	
16	2	4	5	7	8	9
17	6	6	7	9		
18	0	0	1			

Key: 15 | 1 represents 151 cm

middle value

(a) Find the median height.

165 cm

(1)

The girls in the class have a median height of 162 cm. Their heights have a range of 45 cm.

(b) Compare the distribution of the heights of the boys with the distribution of the heights of the girls.

The boys' range is 181 - 140 = 41

The boys range was smaller, but the boys' median was greater. So they were taller, on average.

(2)

(Total for question = 3 marks)

Q3. NON-CALCULATOR

Here are the ages, in years, of 20 footballers.

17	32	25	41	23	26	29	29	32	30
21	17	40	35	34	28	32	19	27	31

Wayne drew this stem and leaf diagram to show this information.

1	7	7	9				
2	1	3	5	6	7	8	9
3	0	1	2	2	2	4	5
4	1	0					

Key: 1 | 7 represents 17 footballers

Write down two things that are wrong with the stem and leaf diagram.

1 The numbers 41 and 40 are not ordered

2 There are only 19 values represented, there should be 20.

(Total for question = 2 marks)

Q4. CALCULATOR ALLOWED

The stem and leaf diagram below gives information about the ages of people in a social club.

3	1	4	5			
4	0	2	2	5	6	
5	0	1	7	7	8	9
6	3	4	5	9		
7	0	4				

31

74

biggest − smallest

Key: 4|2 represents 42 years

Find the range of these ages.

74 − 31

43 ..... years

(Total for question = 2 marks)

Q5. CALCULATOR ALLOWED

Here are the marks 20 students got in a French test.

76	82	84	69	80	64	70	81	75	91
87	67	80	70	94	76	81	69	71	77

(a) Show this information in a stem and leaf diagram.

Ordered values:

64	67	69	69	70	70	71	75	76	76
77	80	80	81	81	82	84	87	91	94

6	4	7	9	9			
7	0	0	1	5	6	6	7
8	0	0	1	1	2	4	7
9	1	4					

Key: 6|4 represents 64 marks

(3)

One of these students is going to be chosen at random. The pass mark in the French test is 71

Omar writes, The probability that this student failed the French test is $\frac{1}{4}$

Omar is wrong.

(b) Explain why.

There are 6 pupils who got a mark less than 71.

$\frac{6}{20} \neq \frac{1}{4}$. The probability is $\frac{6}{20} = \frac{3}{10}$

(2)

(Total for question = 5 marks)

Q6. CALCULATOR ALLOWED

Here are the speeds, in kilometres per hour, of 15 cyclists.

16	22	34	18	24
22	33	28	19	41
23	25	31	40	23

Ordered values:

16, 18, 19, 22, 22, 23, 23, 24, 25, 28, 31, 33, 34, 40, 41

Show this information in a stem and leaf diagram.

1	6 8 9
2	2 2 3 3 4 5 8
3	1 3 4
4	0 1

Key: 1|6 represents 16 km/h

(Total for question = 3 marks)

Q7. CALCULATOR ALLOWED

Here are the heights, in centimetres, of 15 children.

123	147	135	150	147
129	148	149	125	137
133	138	133	130	151

(a) Show this information in a stem and leaf diagram.

Ordered values: 123, 125, 129, 130, 133, 133, 135, 137, 138, 147, 147, 148, 149, 150, 151

12	3 5 9
13	0 3 3 5 7 8
14	7 7 8 9
15	0 1

Key: 12|3 represents 123cm

(3)

One of the children is chosen at random.

(b) What is the probability that this child has a height greater than 140 cm?

$\frac{6}{15} \div 3$

$\frac{2}{5}$

.....

(2)

(Total for question is 5 marks)

Q8. CALCULATOR ALLOWED

The stem and leaf diagram gives information about the speeds of 27 cars.

3	8
4	1 3 4 6 7 8 8 9 9
5	2 2 4 6 7 7 8 8 9
6	1 1 2 2 2 2 3
7	0

Key:
3 | 8 means 38 miles per hour

middle value

(a) Find the median speed.

56 ..... miles per hour

(1)

biggest - smallest

(b) Work out the range.

70-38

32 ..... miles per hour

(1)

One of the cars is chosen at random.

Jack says,

"The probability that the speed of this car is more than 60 miles per hour is $\frac{1}{3}$"

(c) Jack is wrong.
Explain why.

There are 8 cars whose speed was more than 60mph $\frac{8}{27} \neq \frac{1}{3}$. The probability is $\frac{8}{27}$

(2)

(Total for question = 4 marks)

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Q9. CALCULATOR ALLOWED

The stem and leaf diagram shows information about the heights, in cm, of 23 sunflowers.

17	3	4	9				
18	6	8	8				
19	0	0	1	4	6	7	8
20	1	4	7	7	9	9	
21	4	8	8	9			

Key: 17|3 represents 173 cm

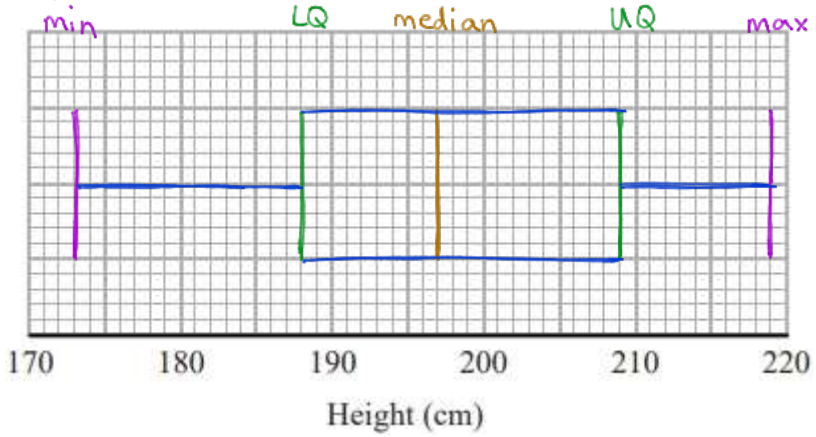
minimum, LQ, median, UQ, maximum

median: $\frac{n+1}{2} = \frac{24}{2} = 12^{th}$ value

LQ: $\frac{n+1}{4} = 6^{th}$ value

UQ: $\frac{3(n+1)}{4} = 18^{th}$ value

On the grid, draw a box plot for this information.



(Total for question = 3 marks)

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