Name ANSWERS	Class

MATHS TEACHER HUB

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Stem and leaf diagrams

(9 – 1) Topic booklet

Foundation

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

10 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

Range = 12 − 8 = 4
Range = 14 − 2 = 12

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

Jake had the more consistent scores as his range was smaller.

(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

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.

There are no 6's, the modal score is 26.

(1)

(Total for Question 10 is 2 marks)

10 The manager of a clothes shop recorded the size of each dress sold one morning.

10	10				
12	12				
14	14	14	14	14	14
16	16	16	16		
18	18	18			
20	20	20			

The sizes of dresses are always even numbers.
The mean size of the dresses sold that morning is 15.3

The manager says,

"The mean size of the dresses is **not** a very useful average."

(i) Explain why the manager is right.

Because you cannot order a decimal dress size.

(ii) Which is the more useful average for the manager to know, the median or the mode?
You must give a reason for your answer.

The mode would be more useful, as it will tell the manager the most common size.

(Total for Question 10 is 2 marks)

10 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

(a) Find the median speed.

56

..... miles per hour
(1)

(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.

8 cars are travelling at more than 60mph

$\frac{8}{27} = 0.\dot{2}9\dot{6}$

$\frac{1}{3} = 0.\dot{3}$

(2)

(Total for Question 10 is 4 marks)

13 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				

Key: 4|2 represents 42 years

Find the range of these ages.

74 - 31 = 43

43 ..... years

November 2019 – Paper 3F **(Total for Question 13 is 2 marks)**

13 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.

Key

149 = 14 | 9

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

(3)

One of the children is chosen at random.

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

$\frac{6}{15} = \frac{2}{5}$

(2)

(Total for Question 13 is 5 marks)

14 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.

6	4799
7	0015667
8	0011247
9	14

Key
69 = 6|9

(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.

6 students scored less than 71

$\frac{6}{20} = 0.3$ $\frac{1}{4} = 0.25$

(2)

(Total for Question 14 is 5 marks)

15 Tessa recorded the times that 15 adults took to complete a run.
She showed her results in a stem and leaf diagram.

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

Key:
4 | 5 represents 45 minutes

(a) Find the median.

64 minutes

(1)

(b) Find the range.

81 - 45 = 36

36 minutes

(2)

Tessa also recorded the times that 15 children took to complete the run.

For the children, the median was 75 minutes.

(c) Compare the times that the adults took with the times that the children took.

The median time was greater for the children

(1)

(Total for Question 15 is 4 marks)

15 Hetvi asked her friends how many stickers they each have in their collection.
Here are her results.

77	86	94	87	71	98
74	103	71	85	82	84
97	91	88	89	75	

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

7	1 1 4 5 7
8	2 4 5 6 7 8 9
9	1 4 7 8
10	3

Key:
86 = 8 | 6

(3)

(b) Find the median number of stickers.

86

(2)

(Total for Question 15 is 5 marks)

17 Here are the heights, in cm, of 16 sunflowers.

168	173	172	180	162	191	183	160
178	184	197	177	172	186	188	180

Show this information in a stem and leaf diagram.

16	028
17	22378
18	003468
19	17

Key:

162 = 16 | 2

(Total for Question 17 is 3 marks)

20 Here are the heights, in centimetres, of 15 plants.

15	20	25	33	17	22	25	18
22	19	32	35	24	28	19	

Draw a stem and leaf diagram for these heights.

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

Key: 35 = 3 | 5

(Total for Question 20 is 3 marks)

21 Here are the ages, in years, of 15 people.

19	28	29	33	27
27	37	25	27	37
17	45	47	25	26

Show this information in a stem and leaf diagram.

1	79
2	55677789
3	377
4	57

Key: 28 = 2 \| 8

(Total for Question 21 is 3 marks)

26 The table shows information about the heights, in cm, of a group of Year 9 girls.

least height	150 cm
median	165 cm
greatest height	170 cm

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 Year 9 boys.

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

Key: 15 | 8 represents 158 cm

Compare the distribution of the heights of the girls with the distribution of the heights of the boys.

Girs range = 170 - 150 = 20cm

Boys range = 182 - 158 = 24cm

The boys heights are more spread out.

Girls median = 165cm Boys median = 168cm

On average the boys are taller.

(Total for Question 26 is 3 marks)