Bishops Online Tutoring

Education Consultancy

Edexcel GCSE Mathematics

STEM & LEAF

Materials Required:

- Pen
- HB Pencil
- Ruler (in centimetres and millimetres)
- Protractor
- Compass

Instructions:

- Use a black ink pen to answer all questions
- Fill your name in the section below
- Answer the questions in the spaces provided
- Show your working out for all answers

Information:

- The marks allocated for each question are displayed within brackets – utilise this information to gauge the appropriate amount of time to dedicate to each question
- Questions marked with an asterisk (*) will assess your written communication; be careful of spelling, punctuation and grammar with these questions

Advice:

- Carefully read the question before attempting to answer it
- Be vary of time and try to answer every question
- If you have enough time in the end, go back and check your answers. A good way to check your answers is to retry the question with the hope of getting the same answer as before without looking at your working out from before

NO CALCULATOR ALLOWED

NAME:

1. Here are the ages, in years, of 15 students.

19   18   20   25   37

33   21   17   29   20

42   18   23   37   22

(handwritten working, top right)

```
1 | 9, 8, 7, 8,
2 | 0, 5, 1, 9, 0, 3, 2
3 | 7, 3, 7,
4 | 2,
```

Show this information in an ordered stem and leaf diagram.

```
1 | 7, 8, 8, 9
2 | 0, 0, 1, 2, 3, 5, 9
3 | 3, 7, 7
4 | 2
```

Key: 1|9 = 19

(3 marks)

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2. Jo measured the times in seconds it took 18 students to run 400 m.
Here are the times.

67   78   79   98   96   103

75   85   94   92   61   80

82   86   90   93   90   89

(handwritten working, right)

```
6  | 7, 1,
7  | 8, 9, 5,
8  | 5, 0, 2, 6, 9
9  | 8, 6, 4, 2, 0, 5, 0
10 | 3,
```

(a) Draw an ordered stem and leaf diagram to show this information.

```
6  | 1, 7
7  | 5, 8, 9
8  | 0, 2, 5, 6, 9
9  | 0, 0, 2, 4, 5, 6, 8
10 | 3
```

Key:
6|7 = 67

(3)

(b) Work out the median.

86 + 89 = 175

175 ÷ 2 = 87.5

.... **87.5** .... seconds

(2)

(5 marks)

3. Here are the speeds, in miles per hour, of 16 cars.

31 52 43 49 36 35 33 29

54 43 44 46 42 39 55 48

2 | 9,
3 | 1, 6, 5, 3, 9,
4 | 3, 9, 3, 4, 6, 2, 8
5 | 2, 4, 5

Draw an ordered stem and leaf diagram for these speeds.

2 | 9
3 | 1, 3, 5, 6, 9
4 | 2, 3, 3, 4, 6, 8, 9
5 | 2, 4, 5
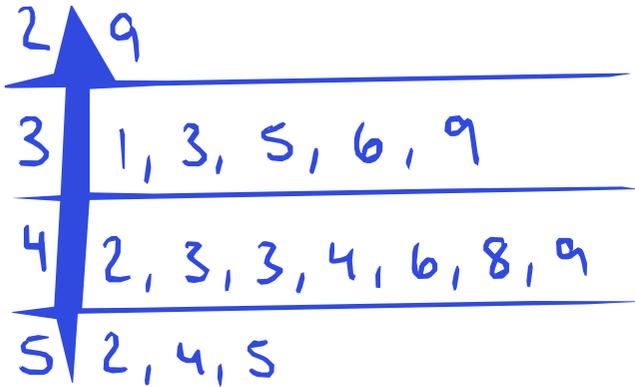
key:
3 | 1 = 31

(4 marks)

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4. Here are some people's ages in years.

62 27 33 44 47

30 22 63 67 54

69 56 63 50 25

31 63 42 48 51

2
3 | 2, 0, 1
4 | 2, 4, 7, 8,
5 | 6, 5, 0, 1
6 | 2, 3, 7, 9, 3, 3,
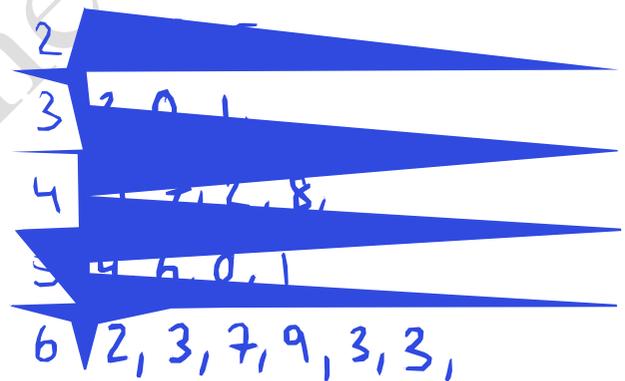
In the space below, draw an ordered stem and leaf diagram to show these ages.

2 | 2, 5, 7
3 | 0, 1, 3
4 | 2, 4, 7, 8
5 | 1, 4, 6
6 | 2, 3, 3, 3, 7, 9
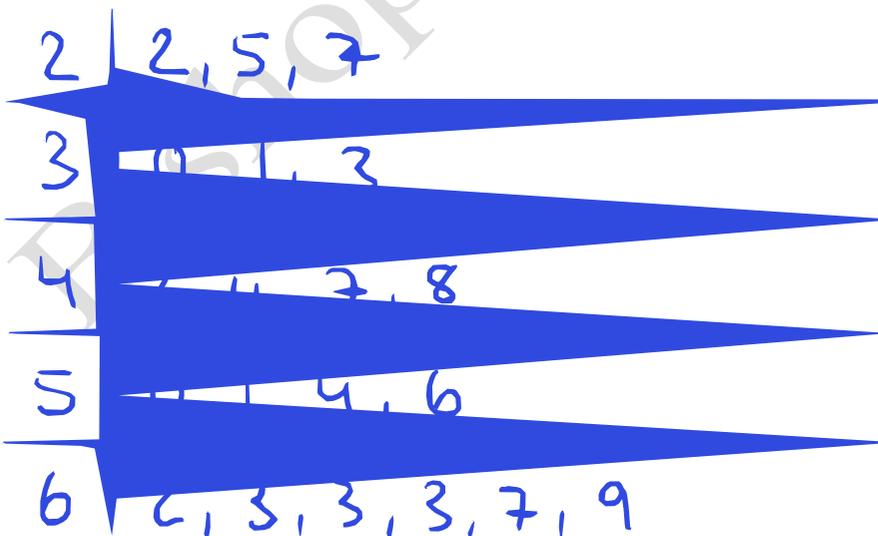
key
6 | 2 = 62

(4 marks)

5. Jim did a survey on the lengths of caterpillars he found on a field trip.
Information about the lengths is given in the stem and leaf diagram.

```
1 | 6 6 7 7
2 | 0 6 8 8 8 8
3 | 1 5 7 7 7 6 8 8
4 | 4 6
5 | 2
```
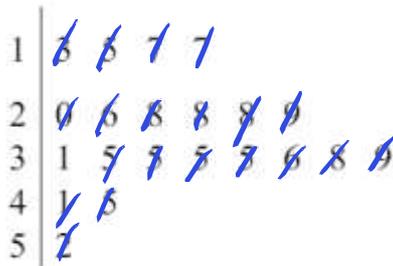
Key: 5|2 means 5.2 cm

Work out the median.

................**31**................ cm

(2 marks)

6. Here are the times, in minutes, taken to solve a puzzle.

5   10   15   12   8   7   20   35   24   15

20   33   15   24   10   8   10   20   16   10
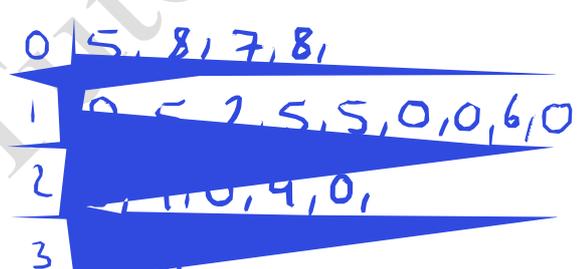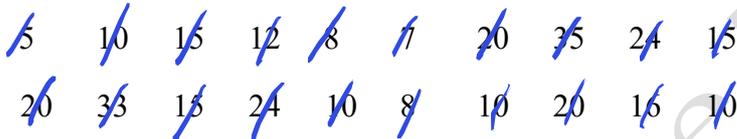
(a) In the space below, draw a stem and leaf diagram to show these times.

```
0 | 5, 8, 7, 8,
1 | 0 5 2,5,5,0,0,6,0
2 | 0,4,0,
3 |
```

```
0 | 5, 7, 8, 8
1 | 0,0,0,0,2,5,5,5,6
2 | 0,0,4,4
3 | 3,5
```
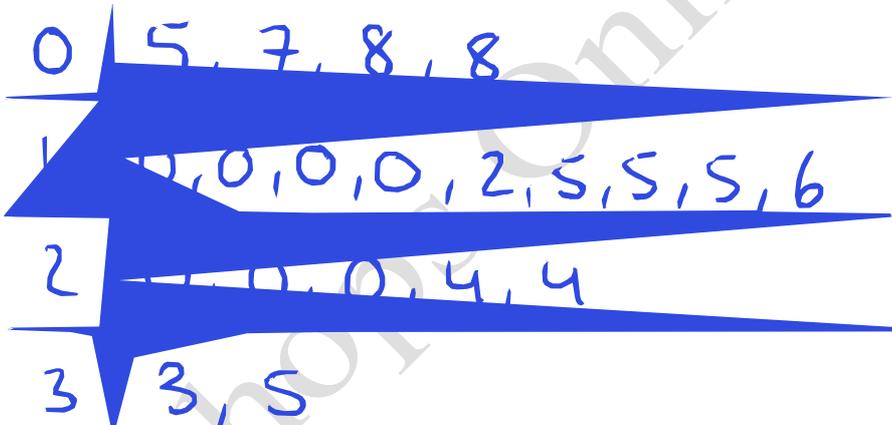
Key
1|0 = 10

(3)

(b) Find the median time to solve this puzzle.

15 + 15 = 30

30 ÷ 2 = 15

................**15**................ mins

(2)

(5marks)

7. Jan measures the heights, in millimetres, of 20 plants in her greenhouse. Here are her results.

178	189	147	147	166
167	153	171	164	158
189	166	165	155	152
147	158	148	151	172

Complete the stem and leaf diagram to show this information.

Stem	Leaf
14	7, 7, 7, 8
15	1, 2, 3, 5, 8, 8
16	4, 5, 6, 6, 7
17	1, 2, 8
18	9, 9

(handwritten working, top right:)
14 | 7, 7, 7, 8,
15 | 3, 8, 5, 2, 8, 1
16 | 6, 7, 4, 6, 5,
17 | 8, 1, 2
18 | 9, 9,

key
17|8 = 178

(4 marks)

8. Anil counted the number of letters in each of 30 sentences in a newspaper.

Anil showed his results in a stem and leaf diagram.

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

Key 4 |1   stands for 41 letters

(a) Write down the number of sentences with 36 letters.

2

(1)

(b) Work out the range.

45 − 8 = 37

37

(1)

**(c)** Work out the median.

27 + 27 = 54

54 ÷ 2 = 27

27

(2)

(4 marks)

9. Here are the weights, in kilograms, of 15 parcels.

1.1 1.7 2.0 1.0 1.1 0.5 3.3 2.0
1.5 2.6 3.5 2.1 0.7 1.2 0.6

Draw a stem and leaf diagram to show this information.

```
0 | 5, 7, 6
1 | 1, 7, 0, 1, 5, 2,
2 | 0, 0, 6, 1,
3 | 3, 5,
```

```
0 |    6, 7
1 |    1, 1, 2, 5, 7
2 |    0, 0, 1, 6
3 |    3, 5
```
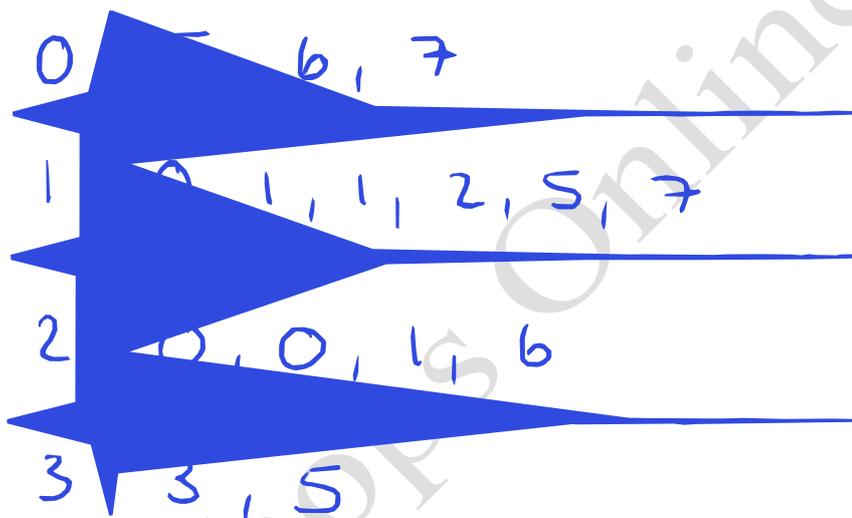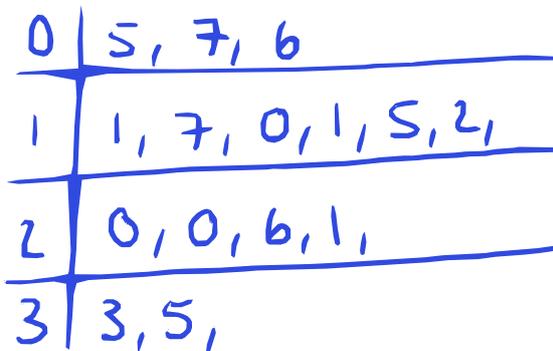
Key
1 | 1 = 1.1

(Total 3 marks)

10. Janine recorded the times, in seconds, for each of 15 people to do a puzzle.
Here are her results.

~~90~~ ~~81~~ ~~78~~ ~~83~~ ~~68~~

~~75~~ ~~79~~ ~~81~~ ~~69~~ ~~87~~

~~76~~ ~~91~~ ~~67~~ ~~73~~ 81

```
6 | 8, 9, 7,
7 | 8, 5, 9, 6, 3,
8 | 1, 3, 1, 7, 1
9 | 0, 1,
```

(a) Complete the ordered stem and leaf diagram and key to show these results.

```
6 | 7, 8, 9
7 | 3, 5, 6, 8, 9
8 | 1, 1, 1, 3, 7
9 | 0, 1
```

Key

6 | 7 = 67

(3)

Janine says "To find the median time, you add all the results and divide by 15"

Janine is **wrong**.

(b) (i) Explain how to find the median.

Put the numbers in order of smallest to largest, then find the middle number. If there are two numbers in the middle, add them together then divide by two

(ii) Find the median.

```
6 | 7, 8, 9
7 | 3, 5, 6, 8, (9)
8 | 1, 1, 1, 3, 7
9 | 0, 1
```

79

(2)

(Total 5 marks)

11. Here are the ages, in years, of 15 teachers.

36 52 42 27 36

28 31 41 50 34

44 28 46 45 53

2 | 7, 3, 8,

3 | 5, 6, 1, 4,

4 | 2, 1, 4, 5, 5,

5 | 2, 0, 3,

(a) Draw an ordered stem and leaf diagram to show this information.
You must include a key.

2 | 3, 7, 8

3 | 1, 4, 5, 6

4 | 1, 2, 4, 5, 5

5 | 0, 2, 3

Key:

3|5 = 35

(3)

One of these teachers is picked at random.

(b) Work out the probability that this teacher is more than 40 years old.

8/15
....

(2)
(Total 5 marks)