GCSE (1 – 9)

Stem and Leaf Diagrams

Instructions

• Use **black** ink or ball-point pen.
• 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.**

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

1 Here are the heights, in cm, of 15 plants.

35   41   47   32   45

46   52   33   55   41

29   38   42   48   38

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

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

Key: 2/9 = 29 cm

(Total for Question 1 is 3 marks)

2 Here are the times, in seconds, it took 20 people to run a race.

54   65   68   49   72   74   56   57   66   62

68   48   51   59   66   71   63   60   53   70

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

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

Key: 4/8 = 48 s

(Total for Question 2 is 3 marks)

3 Here is a stem and leaf diagram showing the mass, in grams, of some apples.

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

Key: 15 | 6 = 156 grams

Work out the median mass.

_____168_____ g

(Total for Question 3 is 2 marks)

4 Here are the heights, in cm, of 18 people.

190   168   186   186   158   190   165   184   185

183   154   189   153   183   159   167   177   162

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

15	4 3 4 8 9
16	2 5 7 8
17	7
18	3 3 4 5 6 6 9
19	0 0

Key: 15 | 3 = 153 cm

(Total for Question 4 is 3 marks)

5 Here are scores of 18 students in a test.

86 91 65 77 60 91

88 75 65 78 70 63

72 69 63 70 64 67

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

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

Key: $6|0 = 60$

(3)

A student is selected at random

(b) Work out the probability that this student scored more than 80.

$$\frac{4}{18} \quad \text{OR} \quad \frac{2}{9}$$

$\dfrac{4}{18}$

(2)

(Total for Question 5 is 5 marks)

6 Here is a stem and leaf diagram showing the ages of some footballers.

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

Key: $1|7 = 17$ years old

(a) Work out the range.

$$33 - 17 = 16$$

16

(1)

(b) Work out the median age.

$$\frac{25 + 27}{2} = 26$$

26

(2)

(Total for Question 6 is 3 marks)

7 Here are the masses, in kg, of 15 objects.

~~2.9~~ ~~3.5~~ ~~2.1~~ ~~3.8~~ ~~3.7~~

~~1.6~~ ~~3.1~~ ~~2.4~~ ~~2.9~~ ~~1.5~~

~~3.5~~ ~~4.4~~ ~~1.8~~ ~~1.8~~ ~~2.3~~

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

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

Key: 1 | 5 = 1.5 kg

(3)

(b) Work out the median mass.

2.9 _____ kg

(2)

(Total for Question 7 is 5 marks)

8 Here are the speeds, in mph, of 20 cars.

55 70 67 58 69 51 43 63 49 48
65 52 45 42 47 50 47 64 63 58

(a) Draw an ordered stem and leaf diagram to show this information.
You must include a key.   (3)

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

KEY
4|2 = 42 mph

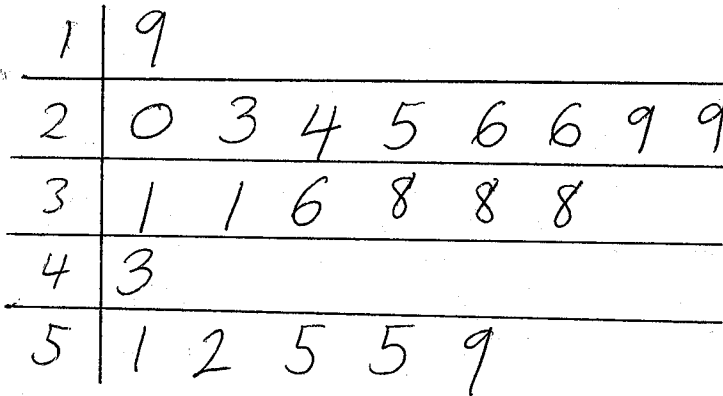(b) Work out the median speed.

$$\frac{52 + 55}{2} = \frac{107}{2}$$

53.5 .... mph
(2)

(Total for Question 8 is 5 marks)

9   Here are the ages of a company's employees.

31   24   43   52   19   59   29
55   51   38   20   38   36   26
31   38   23   29   25   55   26

(a)   Draw an ordered stem and leaf diagram to show this information.
You must include a key.   (3)

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

KEY
1/9 = 19 years old

One of the employees is selected at random
(b) Find the probability that they are younger than 30.

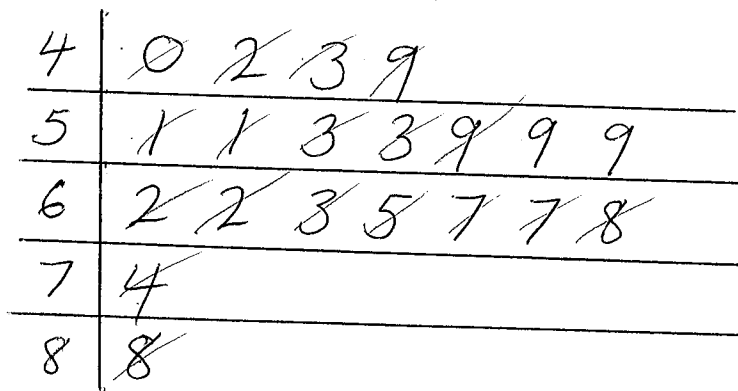$$\frac{9}{21} = \frac{3}{7}$$

$$\frac{9}{21}$$

....
                                          (2)

(Total for Question 9 is 5 marks)

10 Here are scores of some students in a test.

51 53 49 88 62
74 68 53 67 51
59 65 42 43 59
63 62 40 67 59

(a) Draw an ordered stem and leaf diagram to show this information.
You must include a key. (3)

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

KEY
4|0 = 40

(b) Work out the median score

59

(2)

Another student sits the test and scores 80.

Boris says: "This means the median will increase."

(c) Is Boris correct?
You must explain your answer.

No, the middle number will still be 59

(1)

(Total for Question 10 is 6 marks)