Statistical measures / Stem and leaf diagrams

1. For each data set below find

   (i) the range   (ii) the mode   (iii) the median

(a) 13 14 14 15 17 18 19 19 19 21 24   *i) 11 ii) 19 iii) 18*

(b) 134 135 137 140 142 145 146 146 146 148   *i) 14 ii) 146 iii) 143·5*

(c) 2.3 2.3 2.4 2.6 2.6 2.7 2.7 2.7 2.7 2.8 3 3.2   *i) 0.9 ii) 2.7 iii) 2.7*

2. The stem and leaf diagram gives the marks of 18 pupils in a test.

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

                                    1 | 2 represents 12
                                          n = 18
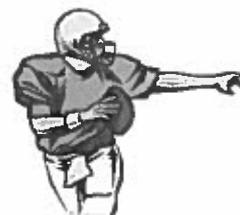
    (a) Write down the modal mark.   *a) 42*

    (b) Find the median mark.   *b) 39*

b)

```
17 | 7  9
18 | 6  6  6  7
19 | 0  0  0  5  6
20 | 0  1  5
```

3. The heights, in centimetres, of 14 American Football players are

    201 186 177 187 200 195 190

    179 196 186 190 205 190 186

    (a) Find the range of the heights. *a) 28 cm*

    (b) Show the heights in a stem and leaf diagram.

    (c) Find the median height. *c) 190 cm*

4. The scores of a basketball team over a season lasting 15 games were

    45 23 28 67 35 46 39 65 55 55 50 47 46 68 55

    (a) Find the range of the scores. *a) 45g*

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

    (c) What is the modal score? *55g*

    (d) Find the median score. *47g*

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

5. The waiting times, in minutes, of 15 people in a doctor's surgery are given below.

    13 24 5 8 35 23 27 42 40 6 24 14 17 13 13

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

    (b) What is the modal waiting time? *b) 13 minutes*

    (c) What is the median waiting time? *c) 17 minutes*

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

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

6. The weights of 15 dogs are recorded in kilograms. These weights are

6 14 12 23 29 34 45 40 12 33 30 45 45 9 13

(a) Show this information in a stem and leaf diagram.
(b) Write down the range of the weights. b) 39 kg
(c) What is the modal weight? c) 45 kg

7. The stem and leaf diagram below shows the lengths in minutes of 16 films.

```
10 | 3  5  8
11 | 2  4  5  9
12 | 0  1  3  5  8
13 | 1  4  4  4
```
10 | 3 represents 103

(a) Find the range of the times   a) 31 minutes
(b) Write down the modal time   b) 134 minutes
(c) Find the median time   c) 120.5 minutes

8. A random sample of 15 workers from different professions are asked how many hours they work in a week.
The stem and leaf diagram illustrates the results.

```
1 | 5  8
2 | 5  5  8
3 | 0  2  5  5  5
4 | 2  5  8
5 | 6  8
```
1 | 5 represents 15 hours   n = 15

(a) Write down the modal number of hours worked a) 35 hours
(b) Find the median number of hours worked.   b) 35 hours

9. Each pupil in a science class is growing a plant.
A few weeks later the height of each plant is measured.
The heights in centimetres are shown below.

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

6.3 5.4 5.8 7.0 6.2 7.6 8.3 8.4 5.3 8.8
8.5 5.6 6.8 6.5 6.1 6.7 7.4 7.6 5.3

(a) Display these results in an ordered stem and leaf diagram.
(b) Find the median height. b) 6.7 cm

10. Karen asked her class to note the number of songs they downloaded to their phones in the last month.
The answers are shown below.

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

14 16 15 26 11 32 12 14 42 51 44
27 21 14 17 31 46 33 44 15 17

(a) Display these answers in an ordered stem and leaf diagram.
(b) Find the modal number of songs downloaded. b) 14 songs
(c) Find the median number of songs.   c) 19 songs

11. Two classes, 4A and 4B, sit the same German examination.
Their marks are given in the back-to-back stem and leaf diagram below.

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

1 | 2 represents 12
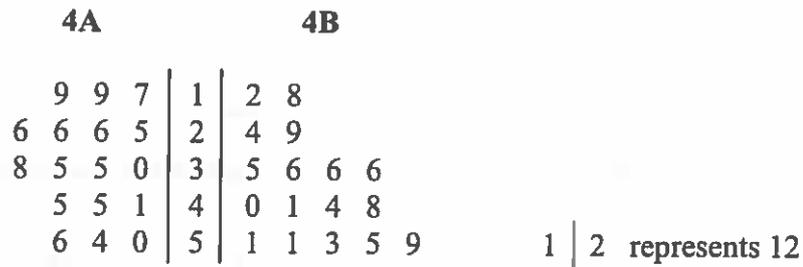
(a) Find the range of marks for class 4A. *a) 39 marks*
(b) What is the modal mark for class 4B. *b) 47 marks*
(c) Find the median mark for each class. *4A = 35 marks   4B = 40 marks*
(d) Overall, which class did better in the examination? *4B as they had a greater median than 4A.*

12. Debbie and Andrew work in the same office. Over a 3 week period they record how long, in minutes, it takes them to travel to work.
The results are shown below.

Debbie: 26 15 34 42 40 25 24 26 19 30 32 35 21 38 22

Andrew: 32 35 46 41 24 19 23 29 43 40 25 35 35 40 35

(a) Show this information in a back-to-back stem and leaf diagram. *See bottom of page*
(b) Find the modal travelling time for Andrew. *35 minutes*
(c) Find the median travelling time for each person.

D = 26 minutes   A = 35 minutes

13. The number of cars which pass through a junction each hour are recorded on two days – Friday and Saturday.
The results are shown in the table below.

Time	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
Friday	184	178	166	144	153	166	135	155	173	177	142	133	140	132
Saturday	135	150	177	163	143	158	177	162	155	133	140	133	130	140
Range	*49*	*28*	*11*	*19*	*10*	*8*	*42*	*7*	*18*	*44*	*2*	*0*	*10*	*8*

(a) Calculate the range of the number of cars for each day.
(b) Show this information in a back-to-back stem and leaf diagram. *see below*
(c) Find the median number of cars for each day.
(d) Overall, on which day is the junction busier? *Friday slightly*

12a)

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

13b)

F		S
5 3 2	13	0 3 3 5
4 2 0	14	0 0 3
5 3	15	0 5 8
6 6	16	2 3
8 7 3	17	7 7
4	18	