

A Stem and Leaf Diagrams

- 2 These are the masses, in kilograms, of 16 newborn babies.

~~2.5~~ ~~3.2~~ ~~3.8~~ ~~3.2~~ ~~1.9~~ ~~3.4~~ ~~1.1~~ ~~4.1~~
~~3.0~~ ~~2.8~~ ~~4.0~~ ~~2.1~~ ~~3.9~~ ~~2.1~~ ~~4.1~~ ~~3.1~~

Complete the ordered stem-and-leaf diagram for the masses.

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

Key: 3 | 2 = 3.2

[2]

- 1 These are the test results for 14 students.

~~21~~ ~~19~~ ~~22~~ ~~25~~ ~~18~~ ~~23~~ ~~24~~
~~17~~ ~~16~~ ~~25~~ ~~17~~ ~~21~~ ~~23~~ ~~26~~

- (a) Construct an ordered stem-and-leaf diagram to show this information, including a key.

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

Key: 1 | 6 = 16 [3]

- (b) Find the median.

$\frac{14+1}{2} = 7.5^{\text{th}}$ piece of data
 (between 7th and 8th) : $\frac{23+23}{2} = 23$ [1]

- 2 The number of people swimming in a pool is recorded each day for 12 days.

~~24~~ ~~28~~ ~~13~~ ~~28~~ ~~15~~ ~~26~~
~~45~~ ~~21~~ ~~48~~ ~~36~~ ~~18~~ ~~38~~

- (a) Complete the stem-and-leaf diagram.

1	3 5 8
2	1 4 6 8
3	6 8 8
4	5 8

Key: 1|3 represents 13 swimmers

[2]

- (b) Find the median number of swimmers.

$$\frac{12+1}{2} = 6.5^{\text{th}} \text{ piece of data}$$

(between 6th and 7th)

$$\frac{26+28}{2} = 27$$

[1]

(b) ~~71~~ ~~33~~ ~~20~~ ~~25~~ ~~71~~ ~~34~~ ~~22~~ ~~71~~ ~~20~~ ~~30~~ ~~18~~

The list shows Ed's scores in 11 tests.

(i) Complete the stem-and-leaf diagram to show this information.

1	8
2	0 0 1 1 1 2 5
3	0 3 4

Q_3

Key: 2|5 represents 25

[2]

(ii) Find the median.

$$\frac{11+1}{2} = 6^{\text{th}} \text{ piece of data} = 21$$

..... 21 [1]

(iii) Find the interquartile range.

$$Q_1 = 20$$

$$IQR = 30 - 20 = 10$$

$$Q_3 = 30$$

..... 10 [2]

- 2 (a) Anna records the number of text messages she receives for 14 days.

17 15 31 38 21 22 13
18 21 21 28 21 31 29

- (i) Complete the stem-and-leaf diagram.

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

Key: 1|3 means 13 text messages

[3]

- (ii) Find the median.

$$\frac{14+1}{2} = 7.5^{\text{th}}$$

(between 7th and 8th)

$$\frac{22+27}{2} = 24.5$$

24.5

[1]

- (iii) Find the mode.

31

[1]

- (iv) Find the range.

$$38 - 13 = 25$$

25

[1]

- 3 Emma has 15 mathematics questions to complete.
The stem-and-leaf diagram shows the time, in minutes, it takes her to complete each question.

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

Key: 2 | 0 = 20 minutes

Complete the table.

$$\frac{15+1}{2} = 8^{\text{th}} \rightarrow$$

$$20 - 3 = 17 \rightarrow$$

Mode	 16 min
Median	 11 min
Range	 17 min

[3]

- 3 The stem-and-leaf diagram shows the heights, in centimetres, of some plants.

10	4	8		
11	1	3	4	6
12	2	3	6	9
13	2	6	9	

Key: 10 | 4 represents 10.4 cm

- (a) Find the median height.

$$\frac{13+1}{2} = 7^{\text{th}} = 12.2 \text{ cm}$$

..... 12.2 cm [1]

- (b) Work out the mean height.

$$\begin{aligned} \text{Mean} &= \frac{10.4 + 10.8 + 11.1 + 11.3 + \dots}{13} \\ &= \frac{157.3}{13} \\ &= 12.1 \end{aligned}$$

..... 12.1 cm [2]

- 3 The stem-and-leaf diagram shows the number of hours that each of 16 students studied last week.

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

Key: 1|2 represents 12 hours

Find

(a) the median, $\frac{16+1}{2} = 8.5^{th}$, $\frac{27+29}{2} = 28$ h [1]

(b) the mode, h [1]

(c) the range. $47-12 = 35$ h [1]

- 2 The stem-and-leaf diagram shows the time, in minutes, it takes each of 15 people to complete a race.

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

Key: 1|6 represents 16 minutes

Find

- (a) the mode

27 min [1]

- (b) the range

$$31 - 16 = 15$$

15 min [1]

- (c) the median.

$$\frac{15+1}{2} = 8^{\text{th}}$$

25 min [1]

- 2 The stem-and-leaf diagram shows the age, in years, of each of 15 women.

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

Key: 3|1 represents 31 years

Complete these statements.

The modal age is 41

The median age is 43

The percentage of women that are older than 51 years is 20 %.

$$\frac{15+1}{2} = 8^{\text{th}}$$

$$\frac{3}{15} = \frac{1}{5} \xrightarrow{\times 20} \frac{20}{100}$$

[3]

16 The stem-and-leaf diagram shows the mass of each of 13 packets.

		Q_1			
3	1 2	(8)			
4	(0) 1 2	(3)	3	8	
5	(1 2)	3	4		
		Q_3			

Key: 3 | 1 represents 31 g

(a) Work out the interquartile range.

$$Q_1 = \frac{38 + 40}{2} = 39$$

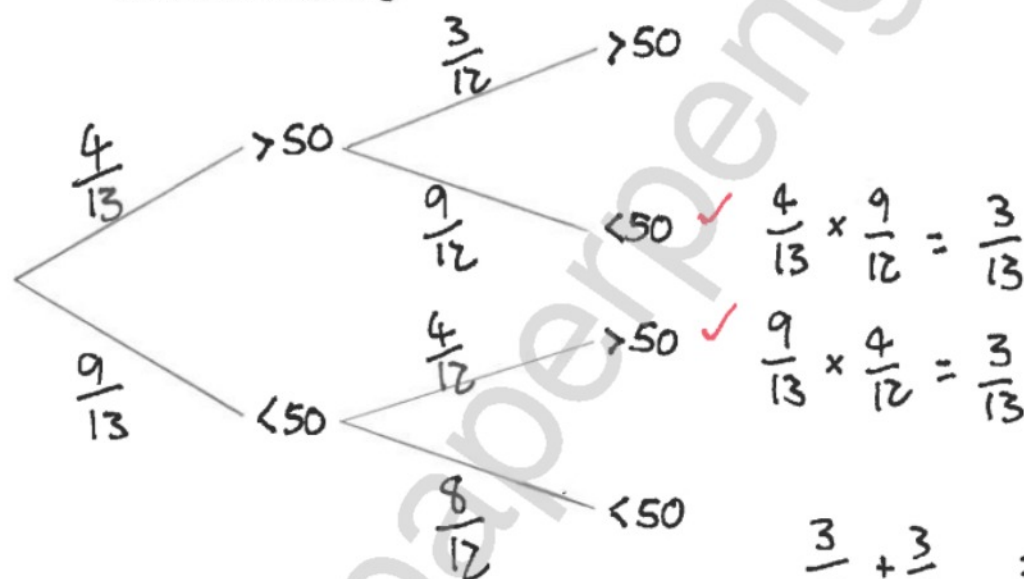
$$IQR = 51.5 - 39$$

$$Q_3 = \frac{51 + 52}{2} = 51.5$$

$$= 12.5 \text{ g [3]}$$

(b) Two of these packets are chosen at random. (Requires Probability)

Find the probability that the one packet has a mass of more than 50 g and the other packet has a mass of less than 50 g.



$$\frac{4}{13} \times \frac{9}{12} = \frac{3}{13}$$

$$\frac{9}{13} \times \frac{4}{12} = \frac{3}{13}$$

$$\frac{3}{13} + \frac{3}{13} = \frac{6}{13} \text{ [3]}$$

- 6 There are 15 giraffes in a group.
The table gives information about the heights of the 15 giraffes.

One giraffe has a height of 2.6 m
No giraffe is shorter than 2.5 m
The range of heights for the 15 giraffes is 2.3 m
More than 3 giraffes have the same height
The modal height for the giraffes is 3.9 m

The stem-and-leaf diagram shows information about the height of 9 of these giraffes.

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

Key: 4|1 represents a giraffe height of 4.1 m

Use the information in the table to complete the stem-and-leaf diagram for the group of 15 giraffes. (6 missing)

Range: largest - smallest = 2.3

$$\begin{array}{rcl} \text{largest} - 2.5 & = & 2.3 \\ + 2.5 & & + 2.5 \\ \hline \text{largest} & = & 4.8 \end{array}$$

[3]

Mode: Mode is 3.9, so need at least three 3.9s

More than 3 giraffes have the same height:
Must be at least four 3.9s

One giraffe is 2.6m

→ 2.6, 3.9, 3.9, 3.9, 3.9, 4.8