1. The following frequency distribution of marks has mean 4.5.

Mark	1	2	3	4	5	6	7
Frequency	2	4	6	9	x	9	4

(a) Find the value of x.

(4)

(b) Write down the standard deviation.

(2)
(Total 6 marks)

2. The following table gives the examination grades for 120 students.

Grade	Number of students	Cumulative frequency
1	9	9
2	25	34
3	35	p
4	q	109
5	11	120

(a) Find the value of

(i) p;

(ii) q.

(4)

(b) Find the mean grade.

(2)

(c) Write down the standard deviation.

(1)
(Total 7 marks)

3. A standard die is rolled 36 times. The results are shown in the following table.

Score	1	2	3	4	5	6
Frequency	3	5	4	6	10	8

(a) Write down the standard deviation.

(2)

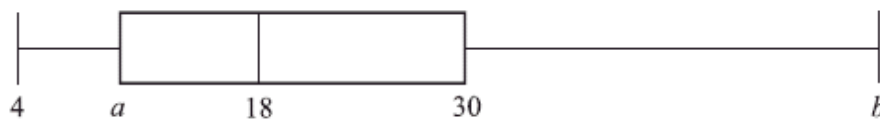(b) Write down the median score.

(1)

(c) Find the interquartile range.

(3)
(Total 6 marks)

4. The following diagram is a box and whisker plot for a set of data.

The interquartile range is 20 and the range is 40.

(a) Write down the median value.

(1)

(b) Find the value of

    (i) a;

    (ii) b.

(4)
(Total 5 marks)

5. A box contains 100 cards. Each card has a number between one and six written on it.
The following table shows the frequencies for each number.

Number	1	2	3	4	5	6
Frequency	26	10	20	k	29	11

(a) Calculate the value of k.

(2)

(b) Find

    (i) the median;

    (ii) the interquartile range.

(5)
(Total 7 marks)

6. In a school with 125 girls, each student is tested to see how many sit-up exercises (sit-ups) she can do in one minute. The results are given in the table below.

Number of sit-ups	Number of students	Cumulative number of students
15	11	11
16	21	32
17	33	p
18	q	99
19	18	117
20	8	125

(a) (i) Write down the value of p.

    (ii) Find the value of q.

(3)

(b) Find the median number of sit-ups.

(2)

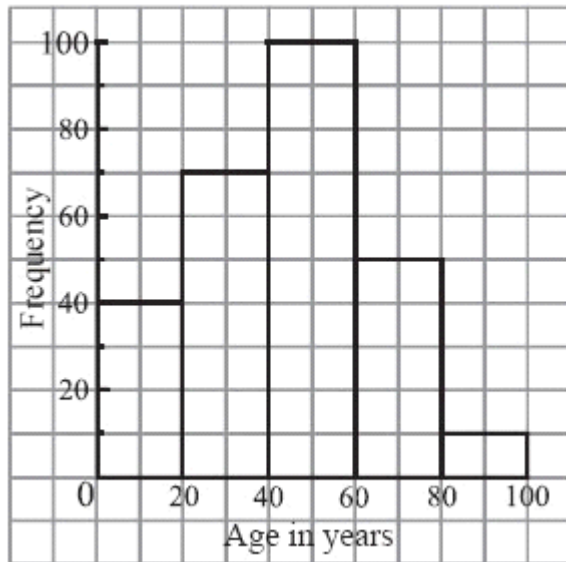(c) Find the mean number of sit-ups.

(2)
(Total 7 marks)

7. Consider the four numbers a, b, c, d with $a \leq b \leq c \leq d$, where $a, b, c, d \in \mathbb{Z}$.
The mean of the four numbers is 4.
The mode is 3.
The median is 3.
The range is 6.

Find the value of a, of b, of c and of d.

(Total 6 marks)

8. The histogram below represents the ages of 270 people in a village.
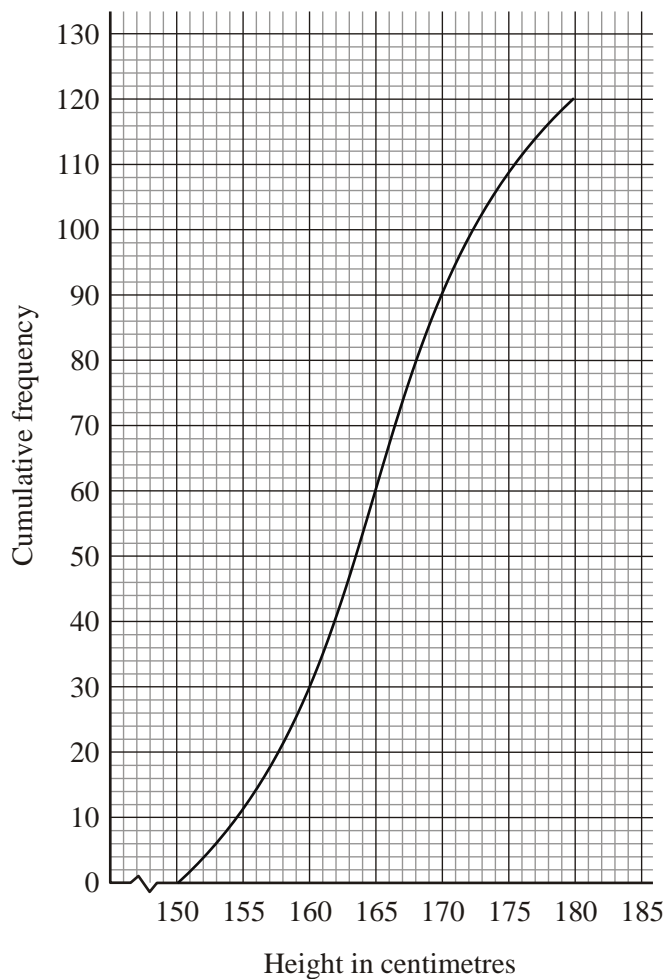

(a) Use the histogram to complete the table below.

Age range	Frequency	Mid-interval value
$0 \leq$ age < 20	40	10
$20 \leq$ age < 40		
$40 \leq$ age < 60		
$60 \leq$ age < 80		
$80 \leq$ age ≤ 100		

(2)

(b) Hence, calculate an estimate of the mean age.

(4)
(Total 6 marks)

9. The cumulative frequency graph below shows the heights of 120 girls in a school.

Height in centimetres

(a) Using the graph

    (i) write down the median;

    (ii) find the interquartile range.

(b) Given that 60% of the girls are taller than a cm, find the value of a.

(Total 6 marks)

10. The 45 students in a class each recorded the number of whole minutes, x, spent doing experiments on Monday. The results are $\sum x = 2230$.

(a) Find the mean number of minutes the students spent doing experiments on Monday.

Two new students joined the class and reported that they spent 37 minutes and 30 minutes respectively.

(b) Calculate the new mean including these two students.

(Total 6 marks)