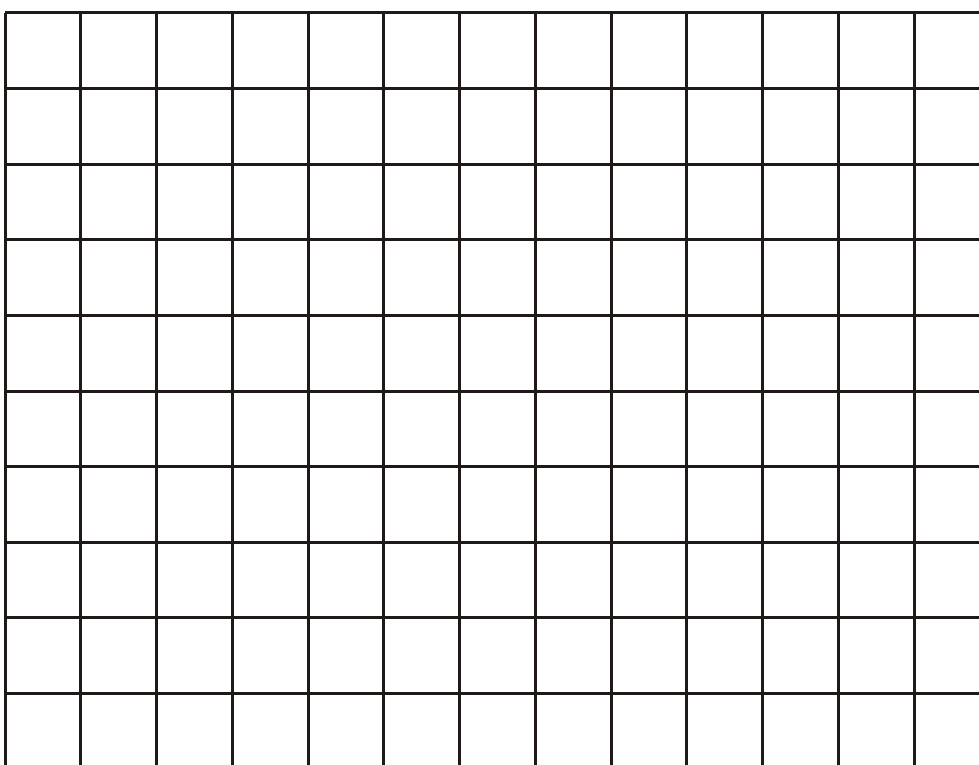


1. The following table shows the age distribution of teachers who smoke at *Laughlin High School*.

Ages	Number of smokers
$20 \leq x < 30$	5
$30 \leq x < 40$	4
$40 \leq x < 50$	3
$50 \leq x < 60$	2
$60 \leq x < 70$	3

- (a) Calculate an estimate of the mean smoking age.
- (b) On the following grid, construct a histogram to represent this data.



Working:

Answers:

(a)

(Total 4 marks)

2. David looked at a passage from a book. He recorded the number of words in each sentence as shown in the following frequency table.

Class interval (number of words)	Frequency f
1–5	16
6–10	28
11–15	26
16–20	14
21–25	10
26–30	3
31–35	1
36–40	0
41–45	2

- (a) Find the class interval in which the median lies.
- (b) Estimate, **correct to the nearest whole number**, the mean number of words in a sentence.

Working:

Answers:

(a)

(b)

(Total 4 marks)

3. The following table shows the times, to the nearest minute, taken by 100 students to complete a mathematics task.

Time (t) minutes	11–15	16–20	21–25	26–30	31–35	36–40
Number of students	7	13	25	28	20	7

- (a) Construct a cumulative frequency table. (Use upper class boundaries 15.5, 20.5 and so on.) (2)
- (b) On graph paper, draw a cumulative frequency graph, using a scale of 2 cm to represent 5 minutes on the horizontal axis and 1 cm to represent 10 students on the vertical axis. (3)
- (c) Use your graph to estimate
- (i) the number of students that completed the task in less than 17.5 minutes;
- (ii) the time it will take for $\frac{3}{4}$ of the students to complete the task.

(2)
(Total 7 marks)

4. The table below shows the percentage, to the nearest whole number, scored by candidates in an examination.

Marks (%)	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90–100
Frequency	2	7	8	13	24	30	6	5	3	2

The following is the cumulative frequency table for the marks.

Marks (%)	Cumulative frequency
< 9.5	2
< 19.5	9
< 29.5	s
< 39.5	30
< 49.5	54
< 59.5	84
< 69.5	t
< 79.5	95
< 89.5	98
< 100	100

- (a) Calculate the values of s and of t . (2)
- (b) Using a scale of 1 cm to represent 10 marks on the horizontal axis, and 1 cm to represent 10 candidates on the vertical axis, draw a cumulative frequency graph. (3)
- (c) Use your graph to estimate
- (i) the median mark;
 - (ii) the lower quartile;
 - (iii) the pass mark, if 40% of the candidates passed.

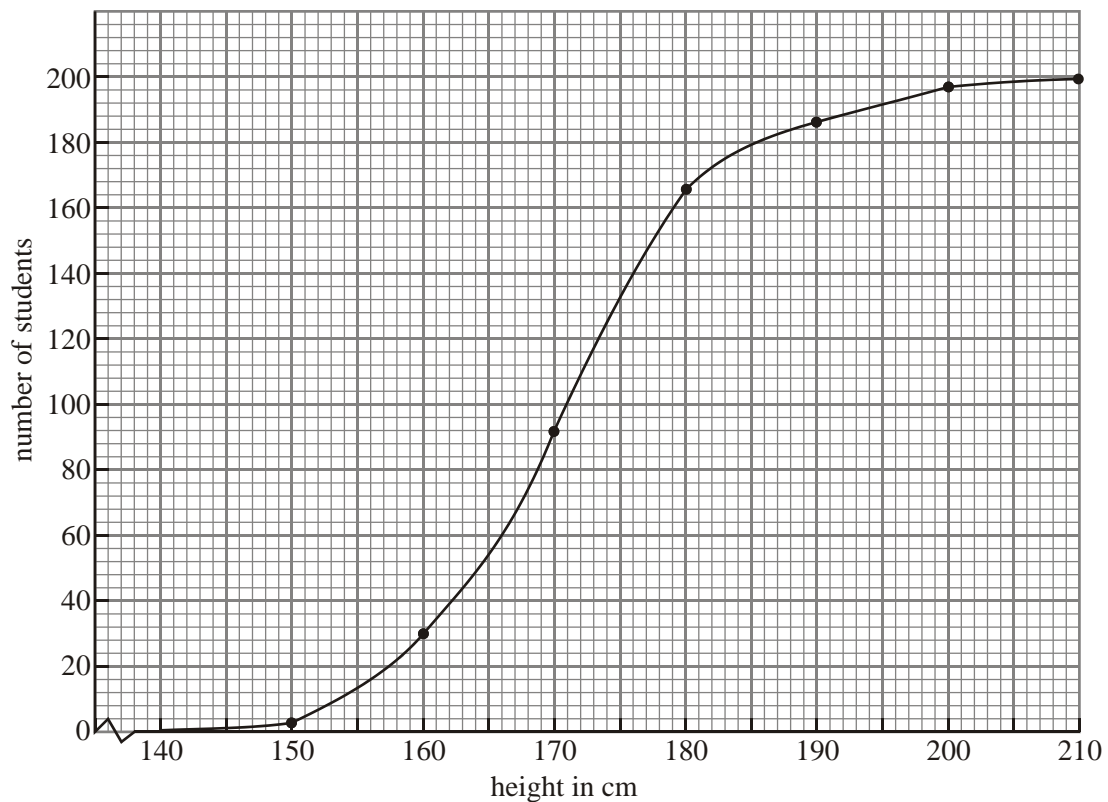
(4)
(Total 9 marks)

5. The heights of 200 students are recorded in the following table.

Height (h) in cm	Frequency
$140 \leq h < 150$	2
$150 \leq h < 160$	28
$160 \leq h < 170$	63
$170 \leq h < 180$	74
$180 \leq h < 190$	20
$190 \leq h < 200$	11
$200 \leq h < 210$	2

- (a) Write down the modal group. (1)
- (b) Calculate an estimate of the mean and standard deviation of the heights. (4)

The cumulative frequency curve for this data is drawn below.



- (c) Write down the median height. (1)
- (d) The upper quartile is 177.3 cm. Calculate the interquartile range. (2)
- (e) Find the percentage of students with heights less than 165 cm. (2)
- (Total 10 marks)**

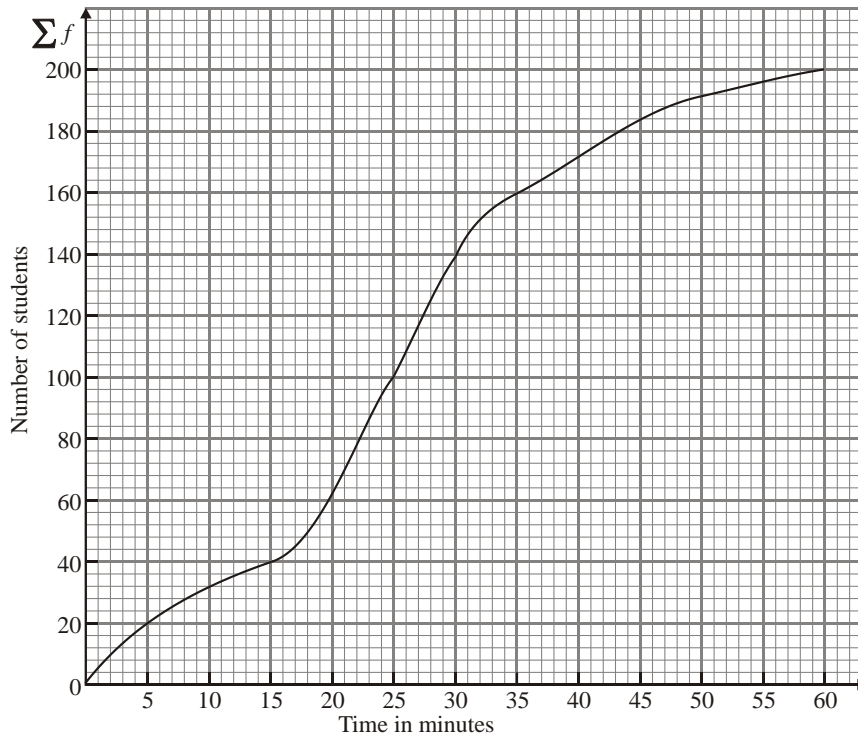
6. The table below shows the number and weight (w) of fish delivered to a local fish market one morning.

weight (kg)	frequency	cumulative frequency
$0.50 \leq w < 0.70$	16	16
$0.70 \leq w < 0.90$	37	53
$0.90 \leq w < 1.10$	44	c
$1.10 \leq w < 1.30$	23	120
$1.30 \leq w < 1.50$	10	130

- (a) (i) Write down the value of c . (1)
- (ii) On graph paper, draw the *cumulative frequency curve* for this data. Use a scale of 1 cm to represent 0.1 kg on the horizontal axis and 1 cm to represent 10 units on the vertical axis. Label the axes clearly. (4)
- (iii) Use the graph to show that the median weight of the fish is 0.95 kg. (1)
- (b) (i) The zoo buys all fish whose weights are above the 90th percentile. How many fish does the zoo buy? (2)
- (ii) A pet food company buys all the fish in the lowest quartile. What is the maximum weight of a fish bought by the company? (3)
- (c) A restaurant buys all fish whose weights are within 10% of the median weight.
- (i) Calculate the minimum and maximum weights for the fish bought by the restaurant. (2)
- (ii) Use your graph to determine how many fish will be bought by the restaurant. (3)

(Total 16 marks)

7. The cumulative frequency graph has been drawn from a frequency table showing the time it takes a number of students to complete a computer game.



(a) From the graph find

- (i) the median time;
- (ii) the interquartile range.

(5)

The graph has been drawn from the data given in the table below.

Time in minutes	Number of students
$0 < x \leq 5$	20
$5 < x \leq 15$	20
$15 < x \leq 20$	p
$20 < x \leq 25$	40
$25 < x \leq 35$	60
$35 < x \leq 50$	q
$50 < x \leq 60$	10

(b) Using the graph, find the values of p and q .

(2)

(c) Calculate an estimate of the mean time taken to finish the computer game.

(4)

(Total 11 marks)

