Name:

Section:

Statistics Worksheet

1 **(a)** Marco grows two types of tomato plants, type A and type B.
He counts the number of tomatoes growing on each tomato plant.

The results for type A plants are shown in the table.

Number of tomatoes on plant	17	18	19	20	21	22
Frequency	5	2	7	3	2	1

(i) Calculate the mean number of tomatoes per plant.

..... [2]

(ii) Calculate the range.

..... [1]

(iii) The mean number of tomatoes per plant for type B plants is 17.1 and the range is 8.

Make two comments comparing the number of tomatoes growing on type A and type B plants.

1 .....

.....

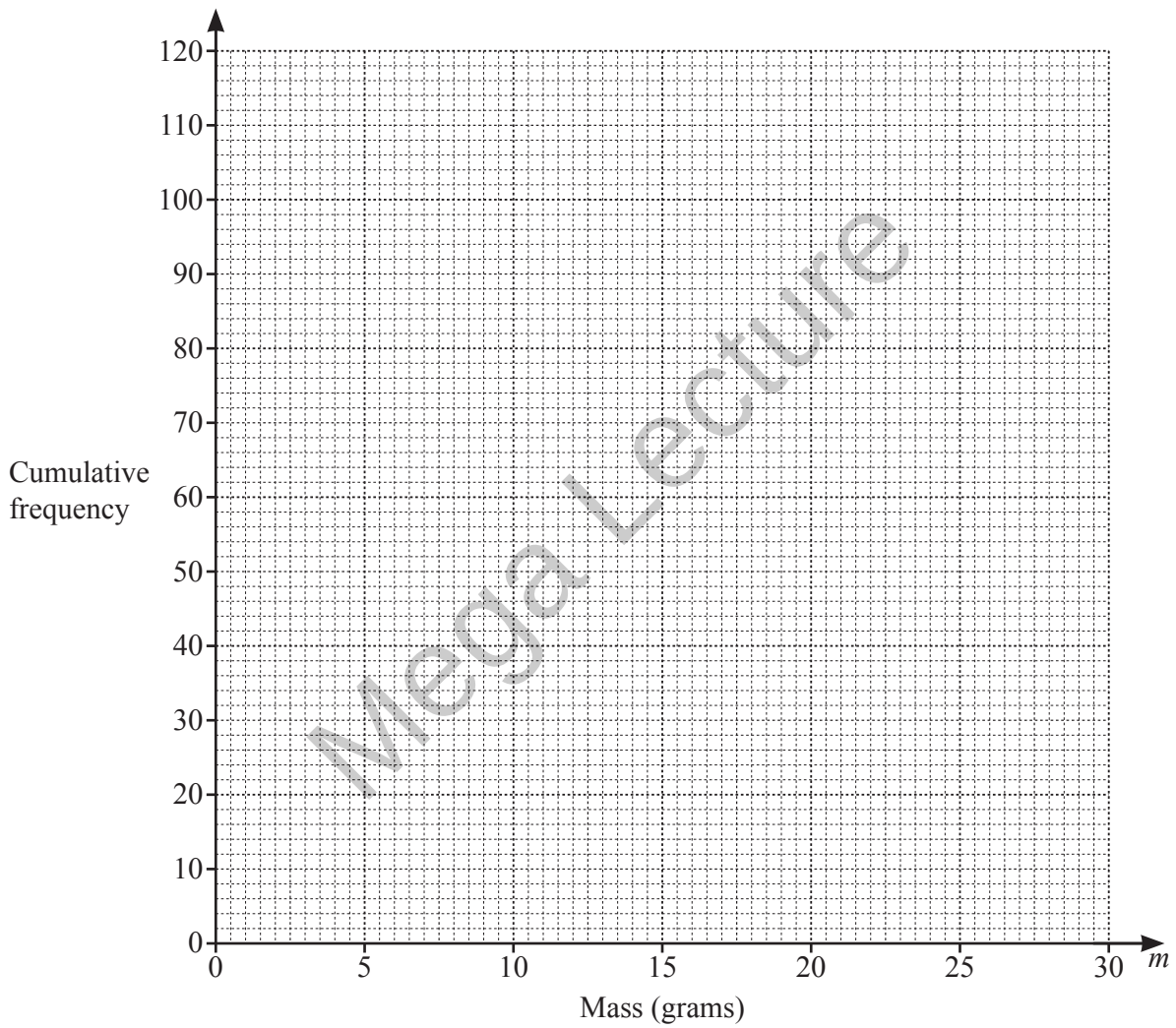
2 .....

..... [2]

(b) Marco also grows strawberries.
He records the masses, m grams, of 120 of his strawberries.
The frequency table shows the results.

Mass (m grams)	$5 < m \leqslant 10$	$10 < m \leqslant 15$	$15 < m \leqslant 20$	$20 < m \leqslant 25$	$25 < m \leqslant 30$
Frequency	15	38	45	17	5

(i) Draw a cumulative frequency diagram to represent these results.



[3]

(ii) Marco uses strawberries with a mass greater than 21 grams to make jam.

Use your diagram to find an estimate for the percentage of strawberries he uses to make jam.

..... % [3]

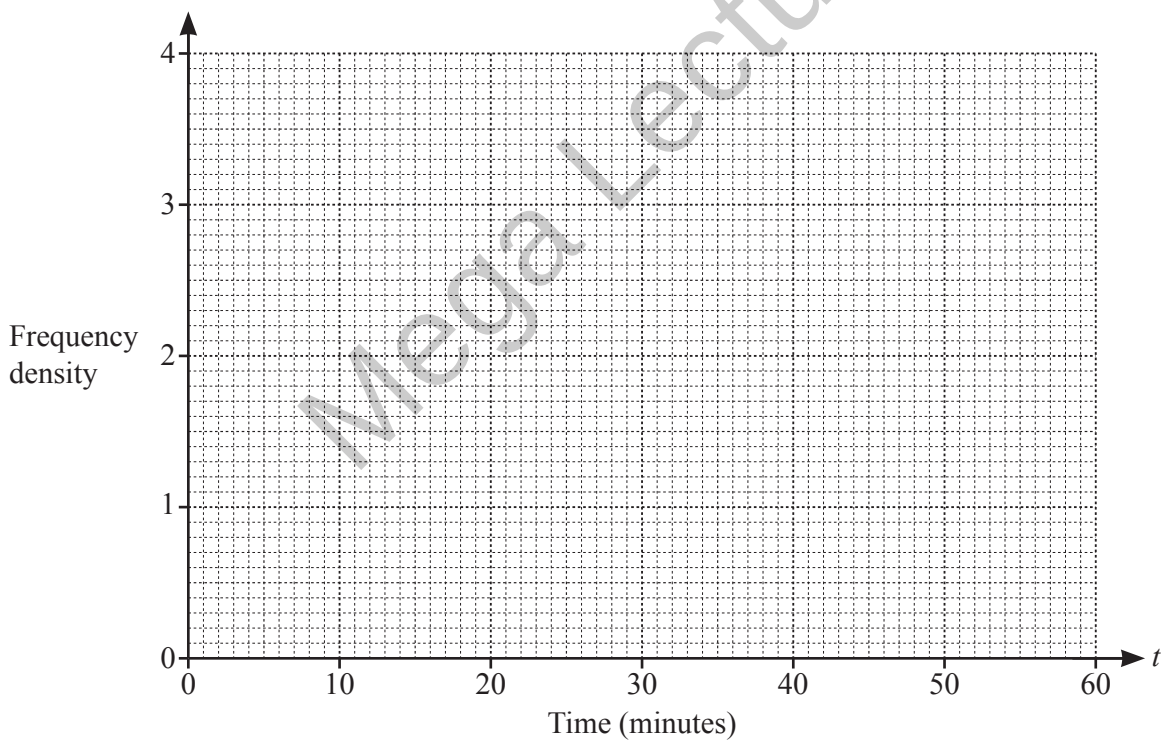
2 The table shows some information about the times each of 100 children spent reading in one day.

Time (t mins)	$x < t \leqslant 30$	$30 < t \leqslant 40$	$40 < t \leqslant 45$	$45 < t \leqslant 60$
Frequency	32	23	15	30
Frequency density	1.6	2.3		

(a) Find the value of x in the interval $x < t \leqslant 30$.

$x =$ ..... [1]

(b) On the grid, draw a histogram to represent the data for the 100 children.



[3]

3 **(a)** A group of students each complete a puzzle.
The table shows the time, t seconds, each student took to complete the puzzle.

Time (t seconds)	$80 < t \leqslant 120$	$120 < t \leqslant 140$	$140 < t \leqslant 150$	$150 < t \leqslant 240$
Frequency	13	26	27	24

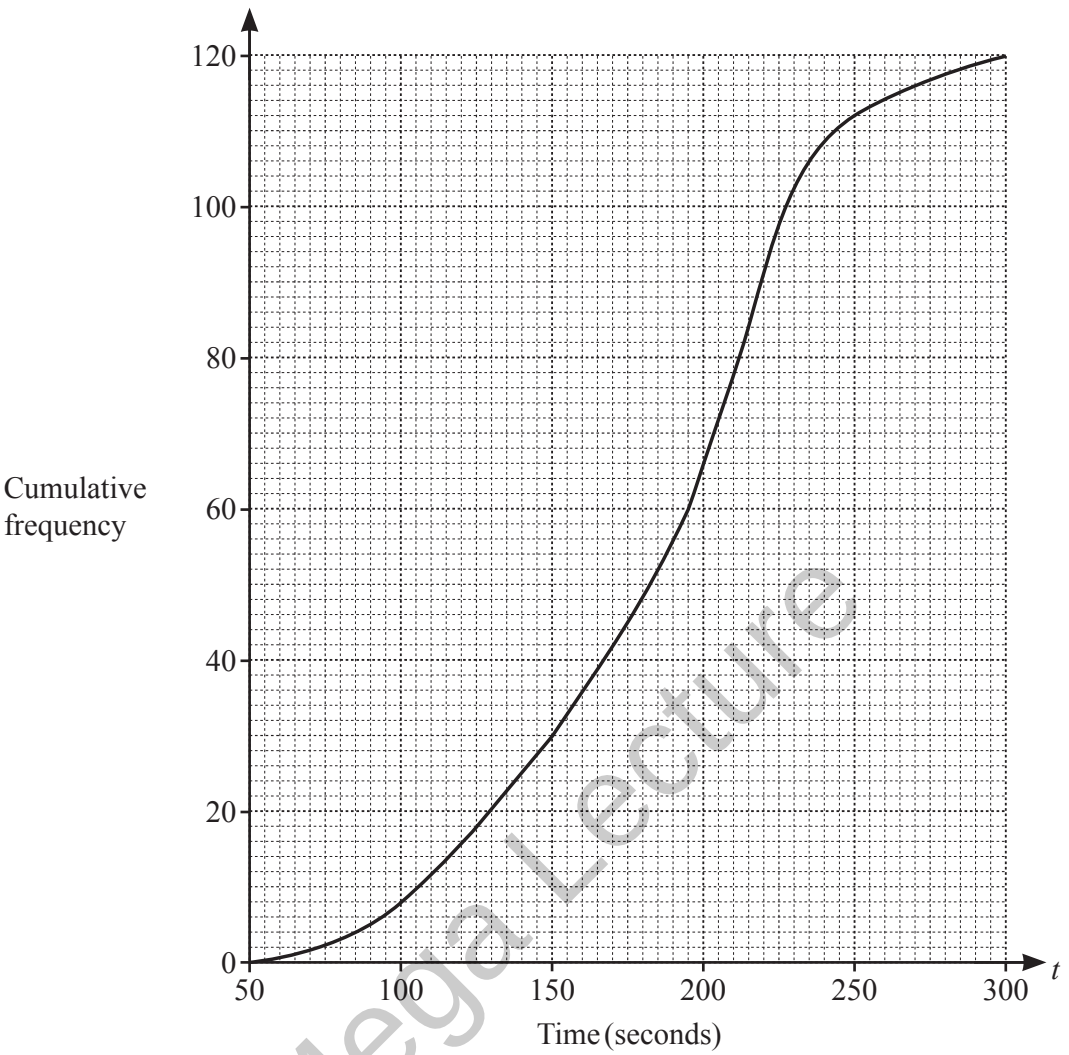
(i) Find the number of students who took 2 minutes 20 seconds or less to complete the puzzle.

..... [1]

(ii) Calculate an estimate of the mean time taken, in seconds, to complete the puzzle.

..... s [3]

(b) A group of adults also completed this puzzle.
A cumulative frequency diagram for their times is shown.



(i) Use the cumulative frequency diagram to complete the frequency table.

Time (t seconds)	$50 < t \leqslant 100$	$100 < t \leqslant 150$	$150 < t \leqslant 200$	$200 < t \leqslant 250$	$250 < t \leqslant 300$
Frequency	8				

[2]

(ii) Use the cumulative frequency diagram to find an estimate of the median.

..... s [1]

(iii) 55% of the adults took between 125 seconds and k seconds to complete the puzzle.

Use the cumulative frequency diagram to find the value of k.

$k =$ ..... [3]

4 Asha asks a group of students about their favourite fruit.
The table and pictogram show some of the results.

Fruit	Apple	Banana	Orange	Melon
Frequency	8		5	

Apple	
Banana	
Orange	
Melon	

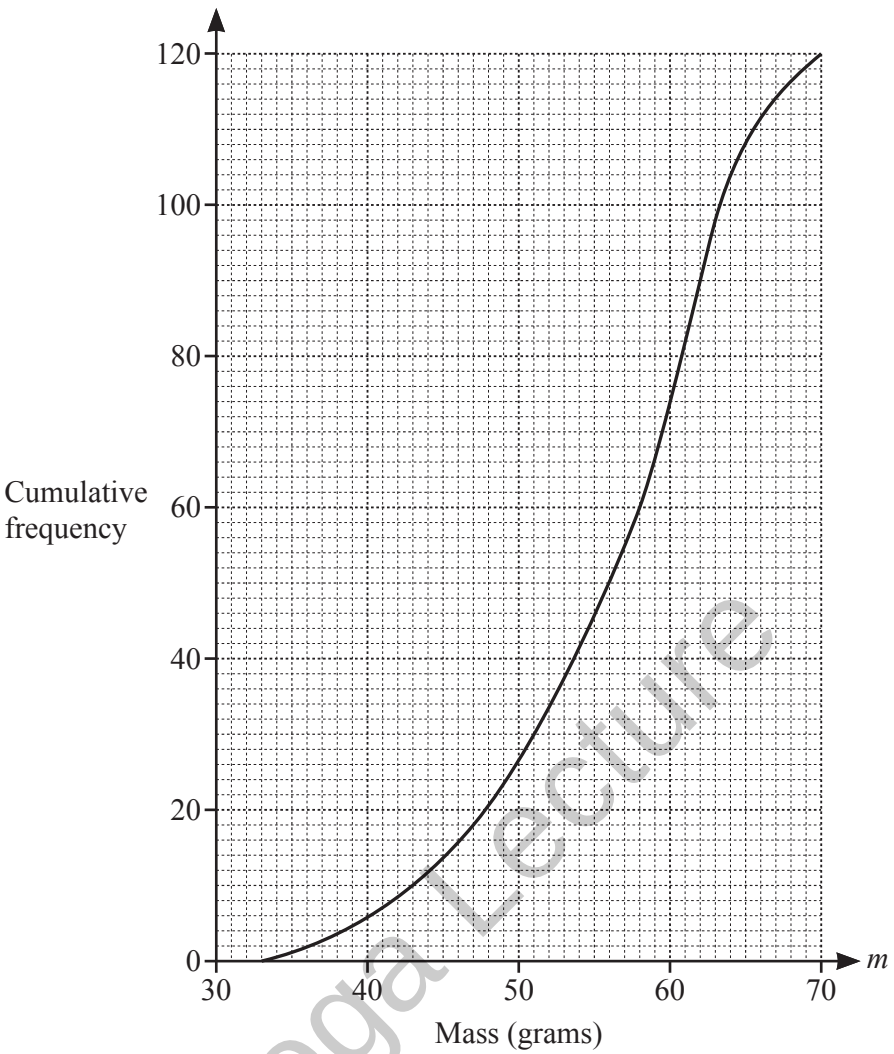
Key:  represents 4 people

(a) Complete the table and pictogram. [3]

(b) Write down the mode.

..... [1]

5 The cumulative frequency diagram shows the masses, m grams, of 120 eggs.



(a) Use the diagram to estimate

(i) the median,

..... g [1]

(ii) the interquartile range.

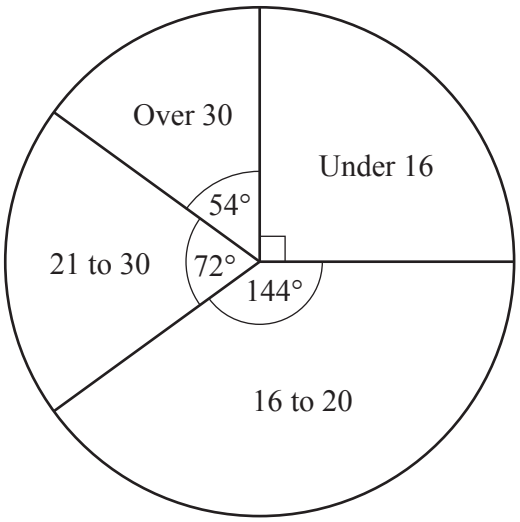
..... g [2]

(b) Eggs are described as 'large' if their mass is 63 g or more.

How many of these eggs are large?

..... [2]

6 **(a)** The pie chart summarises the ages of people at a science fair.



(i) Write down the modal class.

..... [1]

(ii) There were 90 people aged over 30 at the science fair.

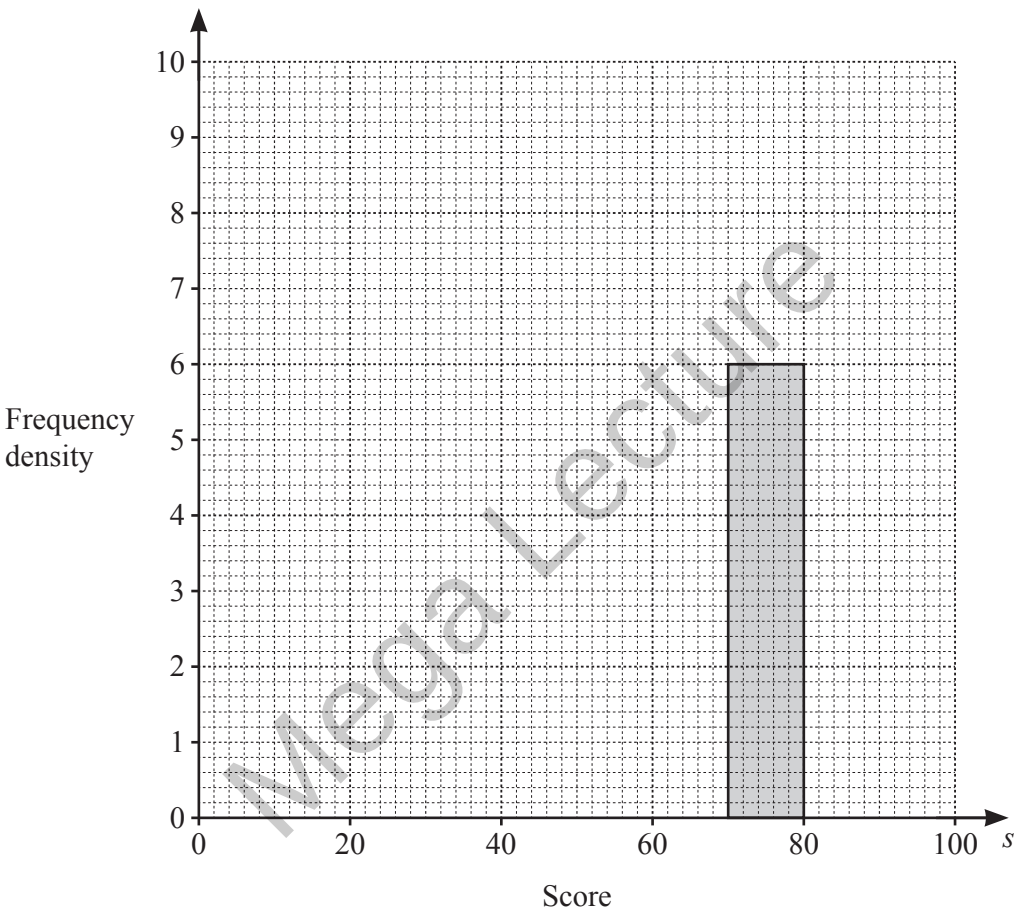
Calculate the number of people aged 16 to 20.

..... [2]

(b) 250 students entered a science competition.
The table summarises their scores.

Score (s)	$0 < s \leqslant 40$	$40 < s \leqslant 60$	$60 < s \leqslant 70$	$70 < s \leqslant 80$	$80 < s \leqslant 100$
Frequency	36	48	64	60	42

(i) Complete the histogram to represent this data.



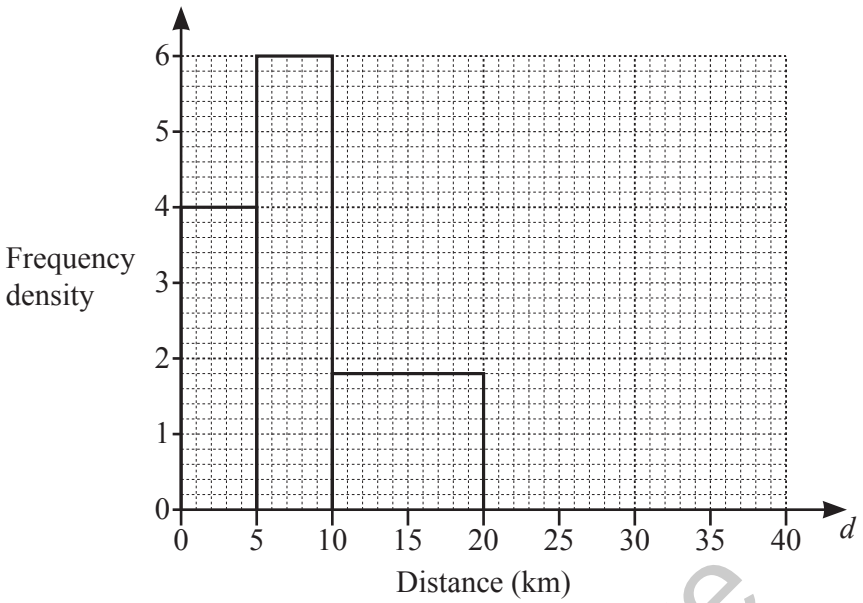
[3]

(ii) Students who scored 75 or more are awarded a distinction.

Find an estimate for the percentage of the 250 students who were awarded a distinction.

.....% [2]

7 A group of office workers are each asked to record the distance, d kilometres, they travel to work. The results for some of their journeys are shown in the histogram.



There were 20 workers in the $0 < d \leqslant 5$ group.

(a) There were 12 workers in the $20 < d \leqslant 40$ group.

Complete the histogram. [1]

(b) Calculate the percentage of workers who travelled more than 20 km to work.

..... % [3]

8 100 adults in a town were surveyed about the number of emails they each received one day. The table shows the results.

Number of emails	1	2	3	4	5	6	7	8
Number of adults	8	10	22	28	15	9	5	3

(a) Find the mode.

..... [1]

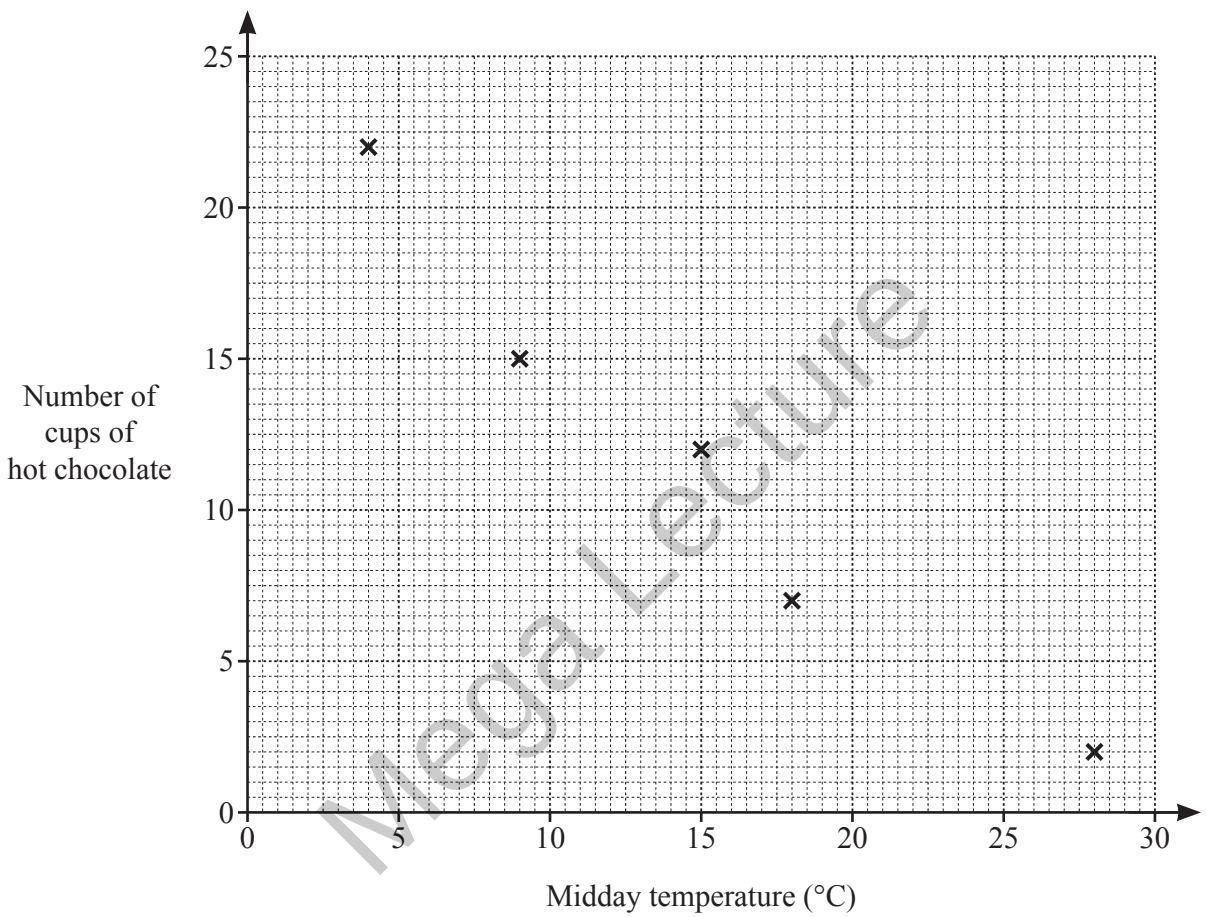
(b) Calculate the mean.

..... [2]

9 The table shows the midday temperature and the number of cups of hot chocolate Natcha sells on each of ten days.

Midday temperature (°C)	18	9	4	28	15	21	6	5	12	23
Number of cups of hot chocolate	7	15	22	2	12	8	17	21	16	6

(a) Complete the scatter diagram.
The first 5 points have been plotted for you.



[2]

(b) Describe the relationship between the midday temperature and the number of cups of hot chocolate Natcha sells.

.....

..... [1]

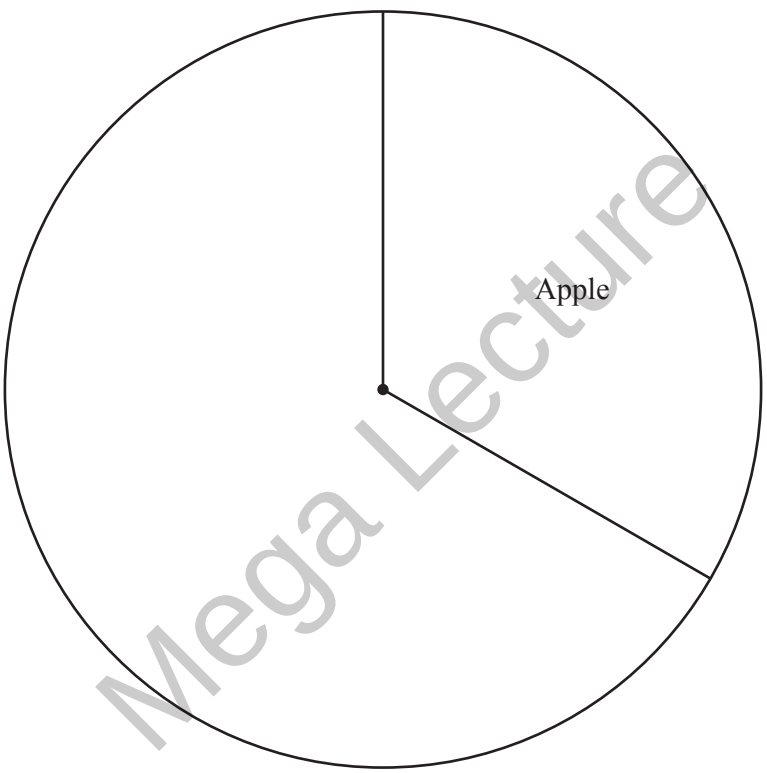
(c) By drawing a line of best fit, estimate the number of cups of hot chocolate sold when the midday temperature is 17 °C.

..... [2]

10 A group of 60 students were each asked their favourite fruit.
The results are shown in the table.

Fruit	Frequency
Apple	20
Banana	25
Orange	15

Complete the pie chart to show the results.



[2]

11 Answer the whole of this question on a sheet of graph paper.

80 electric light bulbs of brand A were tested to find how long each bulb lasted.
The results are summarised in the table below.

Time (t hours)	$t \leqslant 50$	$50 < t \leqslant 100$	$100 < t \leqslant 150$	$150 < t \leqslant 200$	$200 < t \leqslant 250$	$250 < t \leqslant 300$	$300 < t \leqslant 350$	$350 < t \leqslant 400$
Number of bulbs	1	2	6	34	26	8	2	1

(a) Copy and complete the following cumulative frequency table.

Time (t hours)	$t \leqslant 50$	$t \leqslant 100$	$t \leqslant 150$	$t \leqslant 200$	$t \leqslant 250$	$t \leqslant 300$	$t \leqslant 350$	$t \leqslant 400$
Number of bulbs	1	3						80

[1]

(b) Using a horizontal scale of 1 cm to represent 50 hours and a vertical scale of 1 cm to represent 10 bulbs, draw a smooth cumulative frequency curve for these brand A bulbs. [3]

(c) Use your graph to estimate

(i) the median, [1]

(ii) the 10th percentile. [1]

(d) 80 brand B bulbs were also tested and a report on the test gave the following information.

3 bulbs lasted 50 hours or less.
No bulbs lasted more than 350 hours.
The median time was 250 hours.
The upper quartile was 275 hours.
The interquartile range was 75 hours.

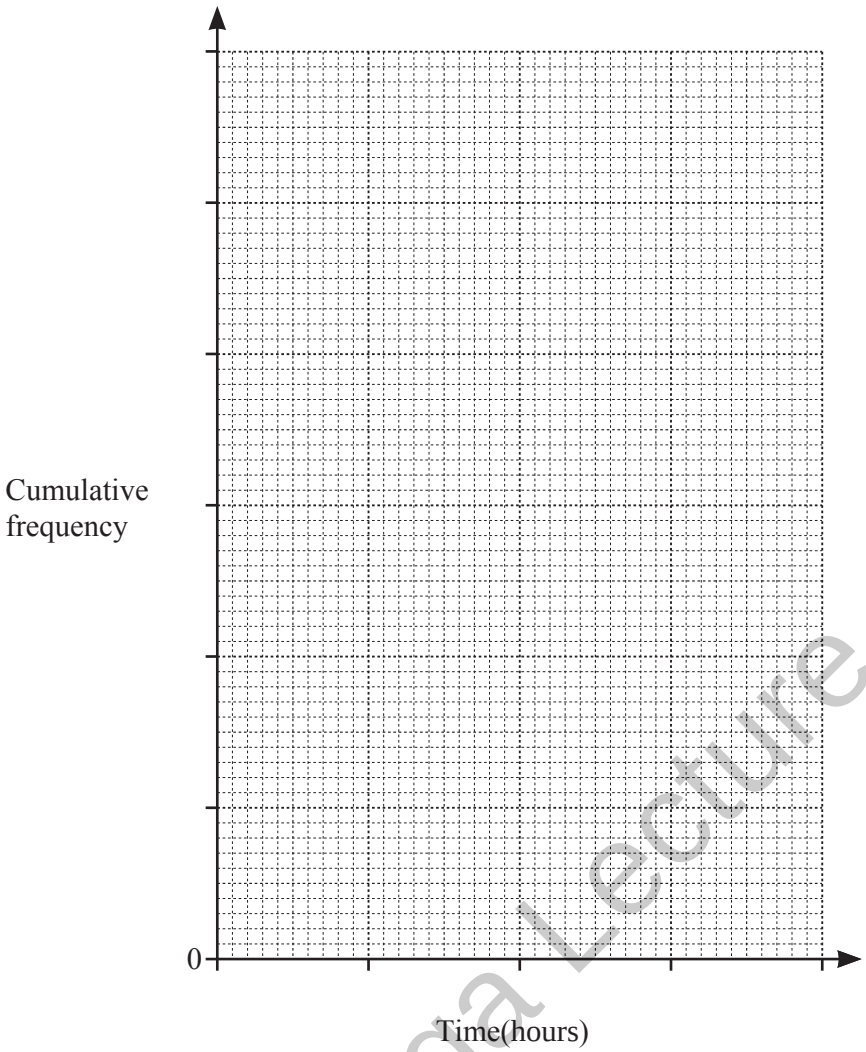
On the same axes, draw a smooth cumulative frequency curve for the brand B bulbs. [3]

(e) Use your graphs to estimate the number of bulbs that lasted 260 hours or less

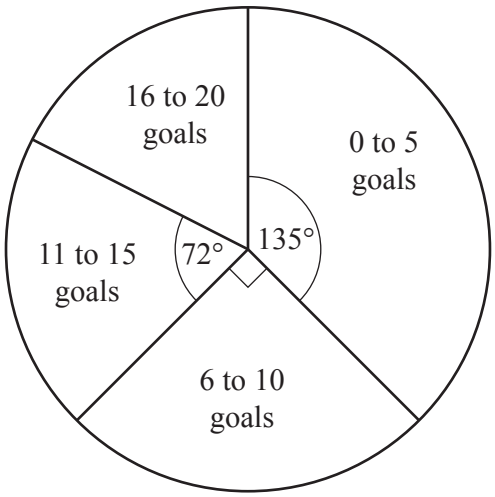
(i) for brand A, [1]

(ii) for brand B. [1]

(f) Which brand of bulb is more likely to last longer than 250 hours?
Justify your answer. [1]



12



The pie chart shows information about the number of goals scored by each player in a football club.

(a) Write down the modal class.

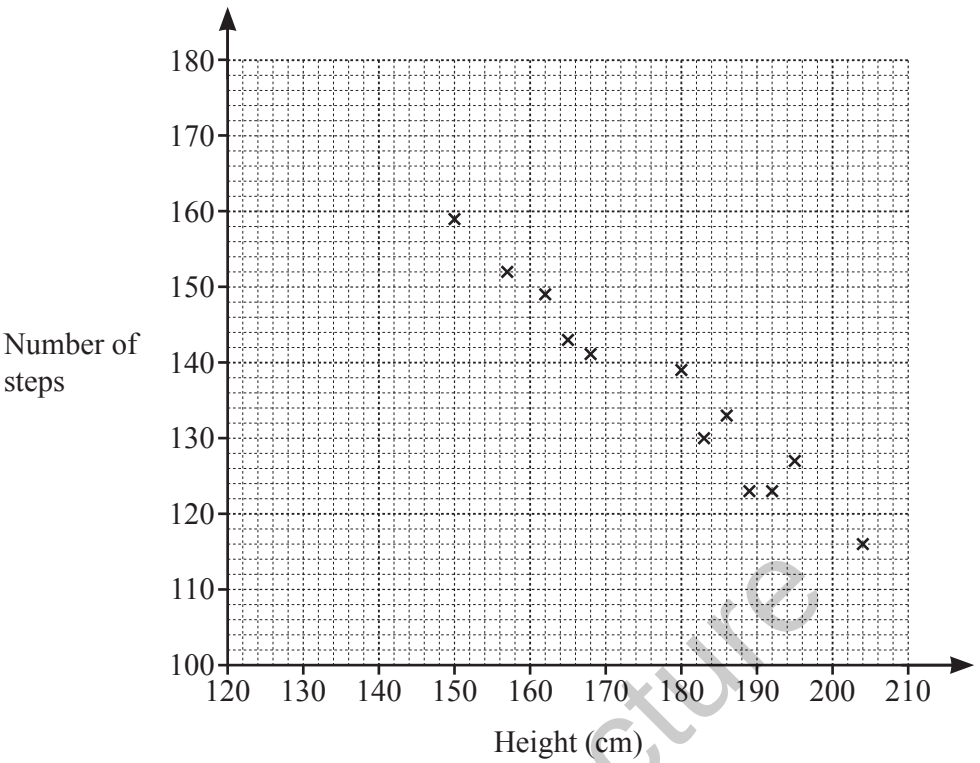
..... [1]

(b) 8 of the players each scored 11 to 15 goals.

Work out the total number of players in the club.

..... [2]

13 The number of steps taken by 12 people to walk 100 m was recorded.
The scatter diagram shows the heights of these people and the number of steps they took.



(a) What type of correlation is shown in the scatter diagram?

..... [1]

(b) Draw a line of best fit. [1]

(c) The height of another person is 175 cm.

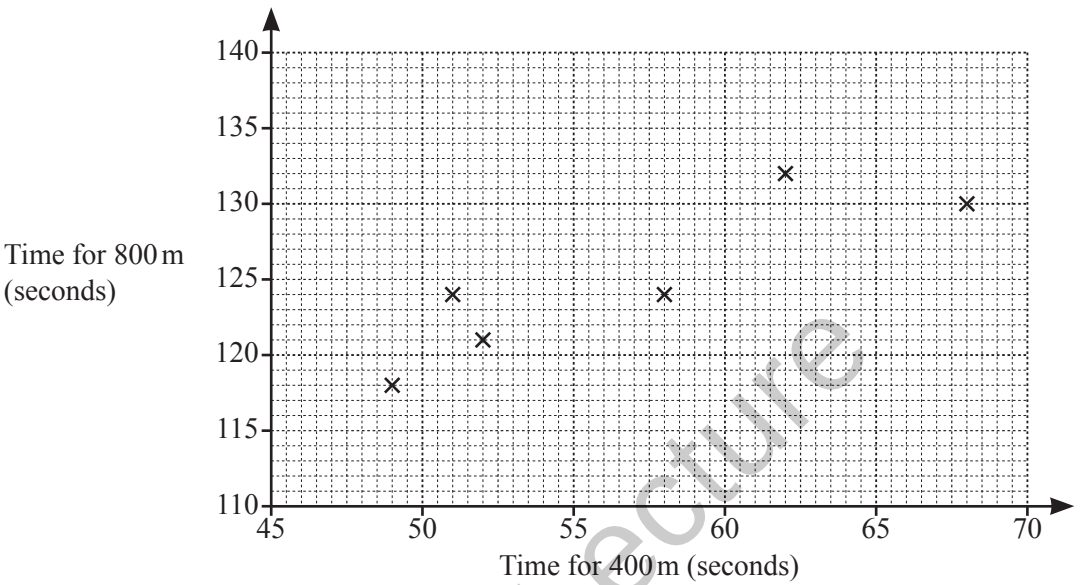
Use your line of best fit to estimate the number of steps they would take to walk 100 m.

..... [1]

14 **(a)** The table shows the times, in seconds, taken for each of 12 members of an athletics club to run 400 metres and 800 metres.

Time for 400 m (seconds)	49	62	58	52	51	68	56	63	50	61	53	55
Time for 800 m (seconds)	118	132	124	121	124	130	129	138	126	131	119	127

(i) On the grid, complete the scatter diagram.
The first six points have been plotted for you.



[2]

(ii) Runners who took less than 55 seconds to run 400 metres **and** less than 125 seconds to run 800 metres are selected to enter an athletics competition.

How many of these runners are selected for the competition?

..... [1]

(iii) What type of correlation does the scatter diagram show?

..... [1]

(iv) Draw a line of best fit on the scatter diagram. [1]

(v) Another runner took 65 seconds to run 400 metres.

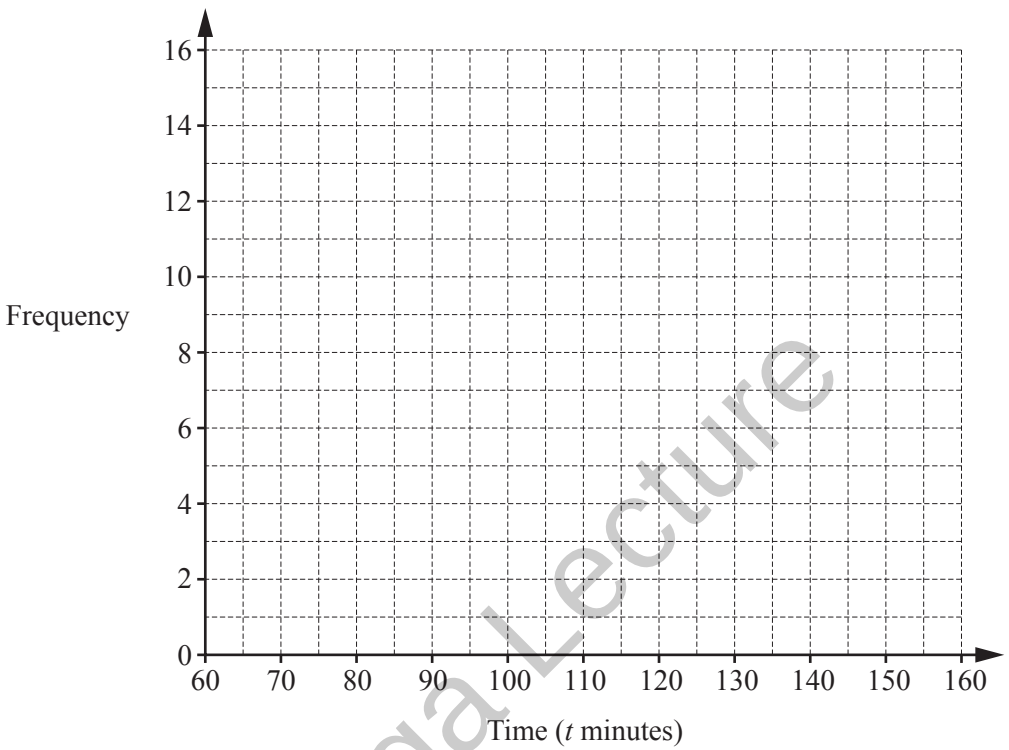
Use your line of best fit to estimate how long they would take to run 800 metres.

..... s [1]

15 **(a)** Jenny recorded the time, in minutes, of 40 movies.
The table summarises her results.

Time (t minutes)	$60 < t \leqslant 80$	$80 < t \leqslant 100$	$100 < t \leqslant 120$	$120 < t \leqslant 140$	$140 < t \leqslant 160$
Frequency	2	7	15	11	5

On the grid, draw a frequency polygon to represent this information.

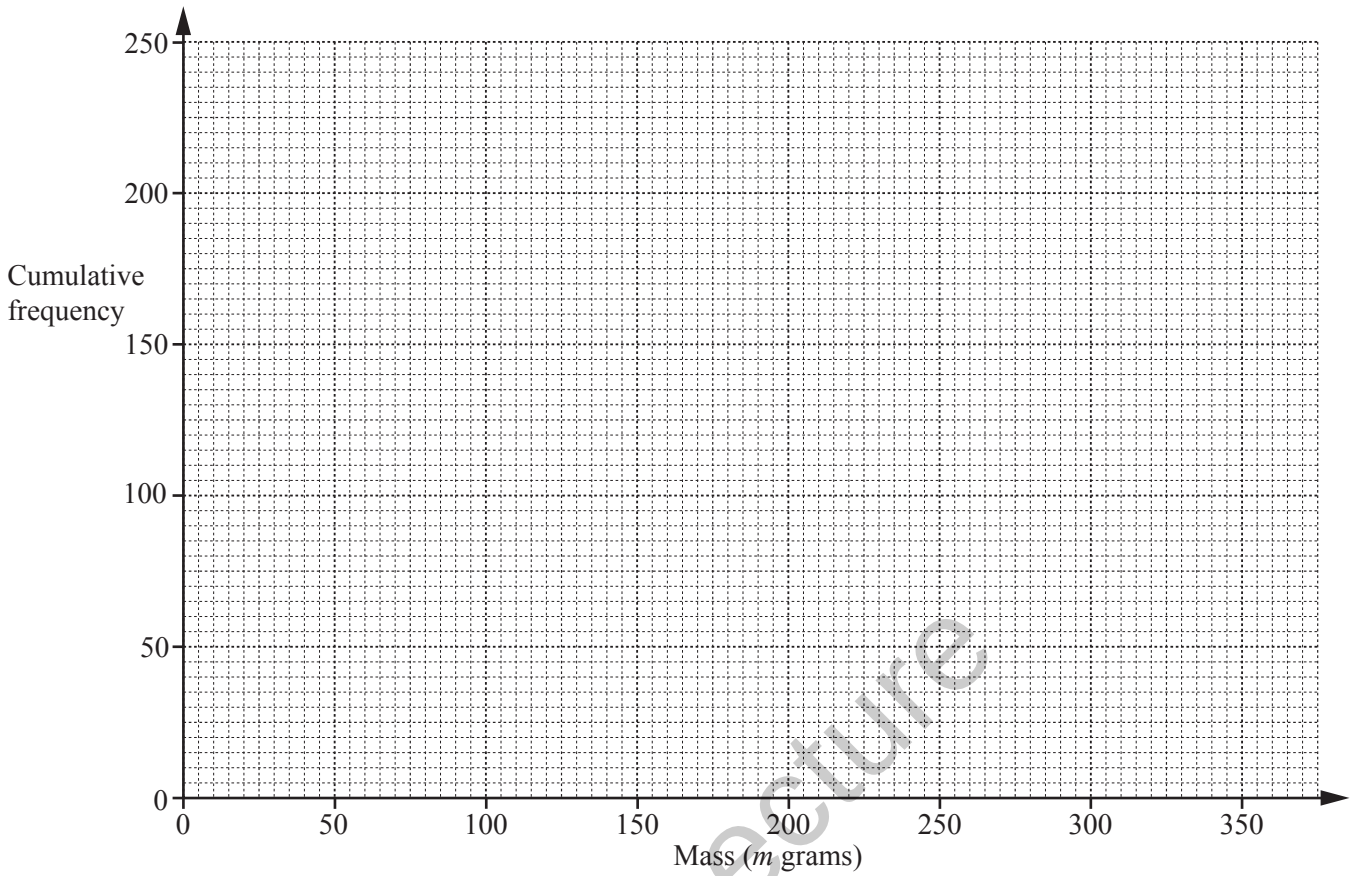


[2]

16 The masses, in grams, of 240 potatoes were found.
The **cumulative** frequency table for these results is shown below.

Mass (m grams)	$m \leqslant 50$	$m \leqslant 100$	$m \leqslant 150$	$m \leqslant 200$	$m \leqslant 250$	$m \leqslant 300$	$m \leqslant 350$
Cumulative frequency	0	4	54	132	204	236	240

(i) Draw a smooth cumulative frequency curve to illustrate this information.



[2]

(ii) **(a)** Find the median.

Answer ..... [1]

(b) Find the inter-quartile range.

Answer ..... [2]

(iii) Complete the frequency table below.

Mass (m grams)	$50 < m \leqslant 100$	$100 < m \leqslant 150$	$150 < m \leqslant 200$	$200 < m \leqslant 250$	$250 < m \leqslant 300$	$300 < m \leqslant 350$
Frequency	4					

[1]

(iv) A potato with a mass greater than 250 grams is classed as extra large.

(a) How many of these potatoes are extra large?

Answer ..... [1]

(b) Which percentile of the distribution can be used to find this number?

Answer ..... [2]