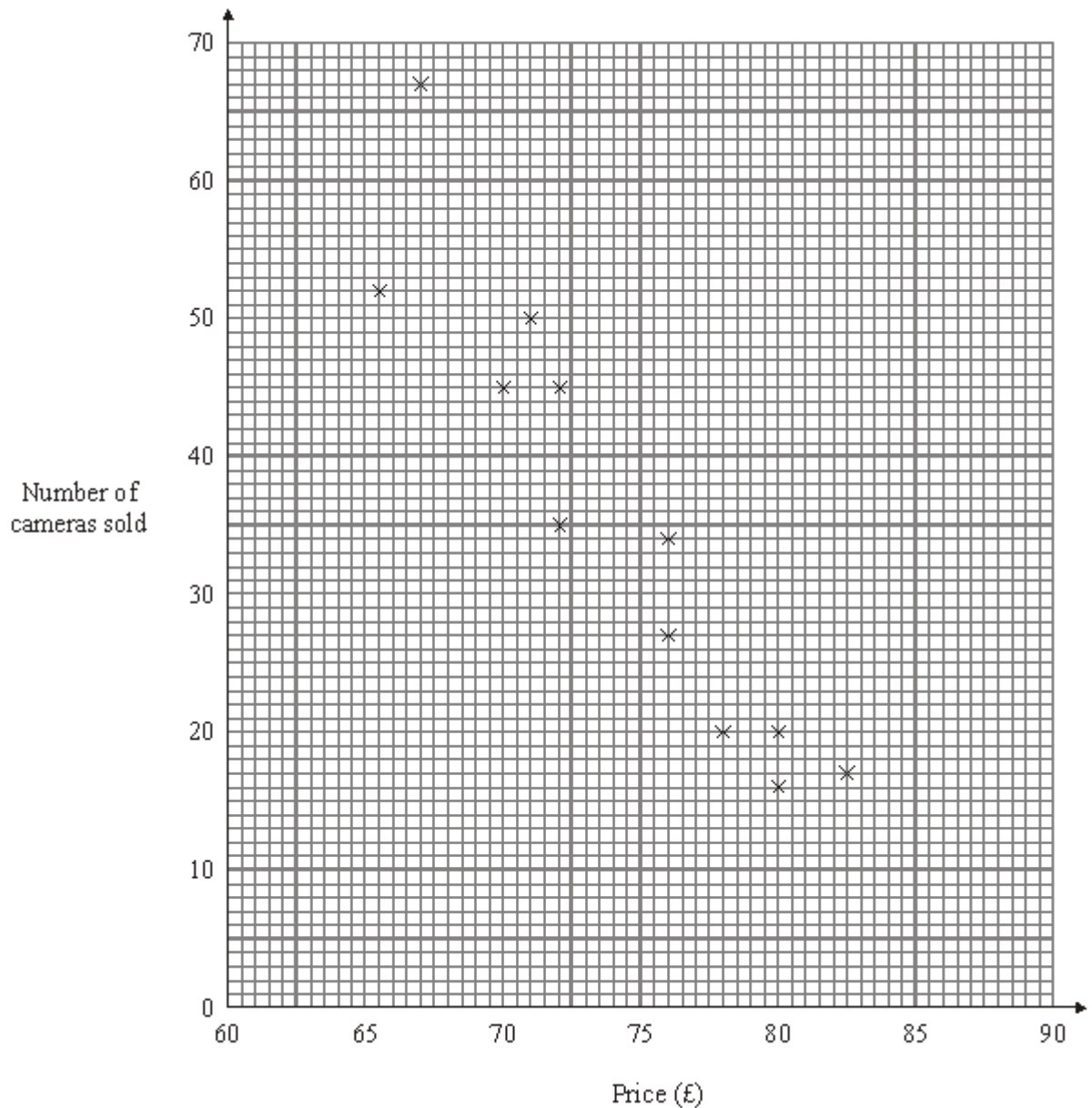


- Q1.** A superstore sells the Clicapic digital camera.
The price of the camera changes each week.
Each week the manager records the price of the camera and the number of cameras sold that week.

The scatter graph shows this information.



The table shows the prices and the numbers of Clicapic cameras sold during another 4 weeks.

Price (£)	67	70	75	80

Number of cameras sold	50	50	40	25
-------------------------------	----	----	----	----

(a) On the scatter graph, plot the information from the table. (2)

(b) Describe the relationship between the price of the camera and the number of cameras sold.

.....

(1)

(c) Draw a line of best fit on the scatter graph. (1)

(d) Use your line of best fit to estimate how many cameras are sold in a week when the price is £74.

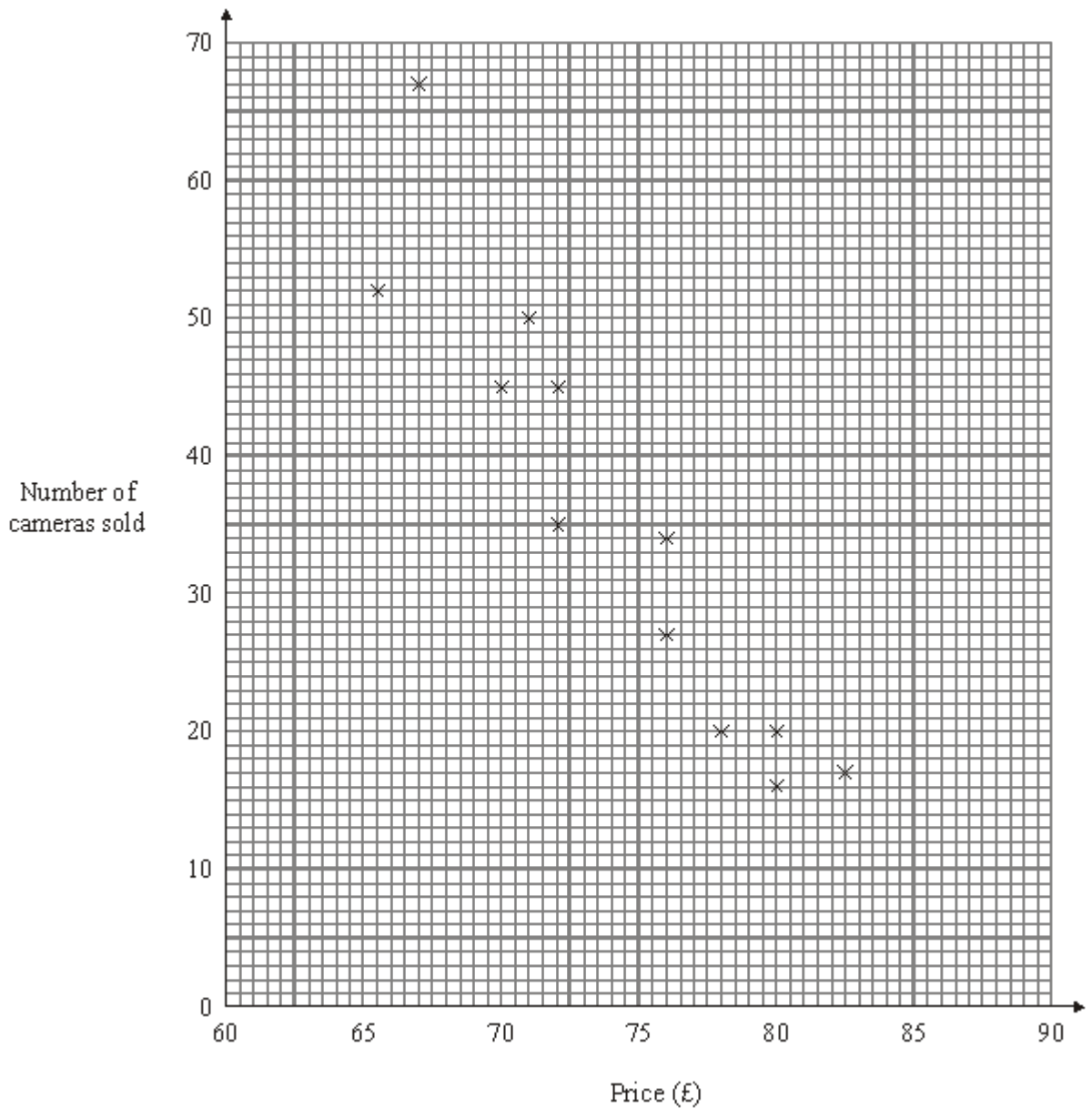
.....

(1)

(Total 5 marks)

Q2. A superstore sells the Clicapic digital camera.
 The price of the camera changes each week.
 Each week the manager records the price of the camera and the number of cameras sold that week.

The scatter graph shows this information.



- (a) Describe the relationship between the price of the camera and the number of cameras sold.

.....

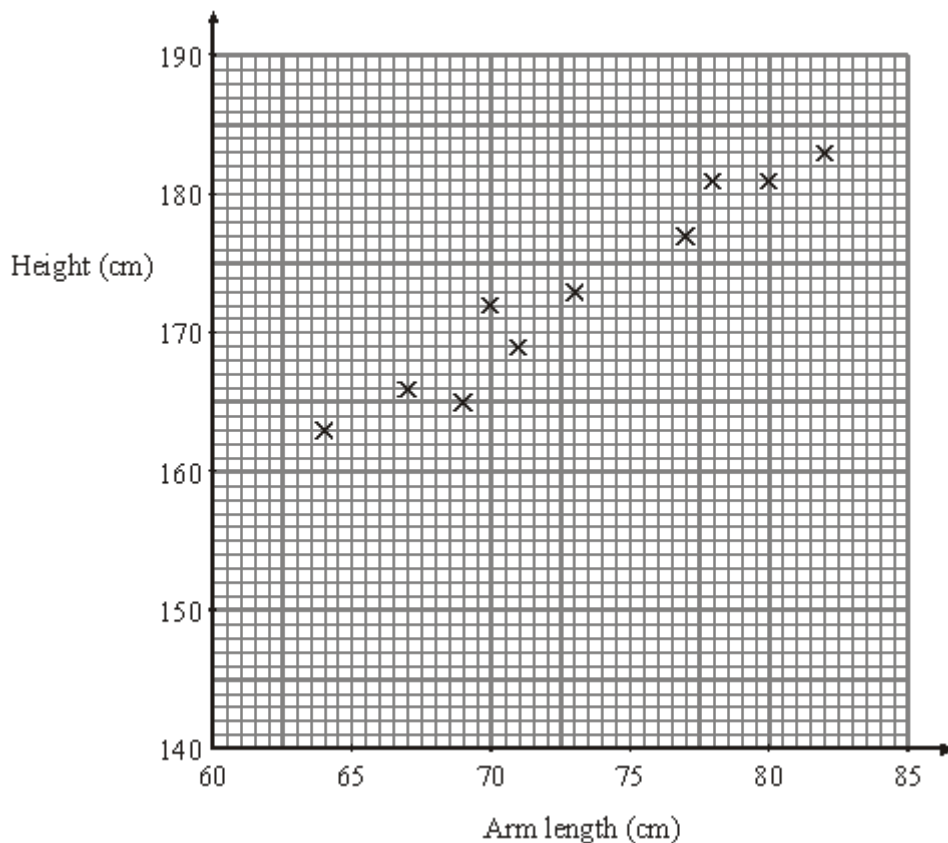
(1)

- (b) Draw a line of best fit on the scatter graph.

(1)

(Total 2 marks)

Q3. The scatter graph shows some information about 10 students. It shows the arm length and the height of each student.



(a) What type of correlation does this scatter graph show?

.....

(1)

(b) Draw a line of best fit on the scatter graph.

(1)

Another student has an arm length of 75 cm.

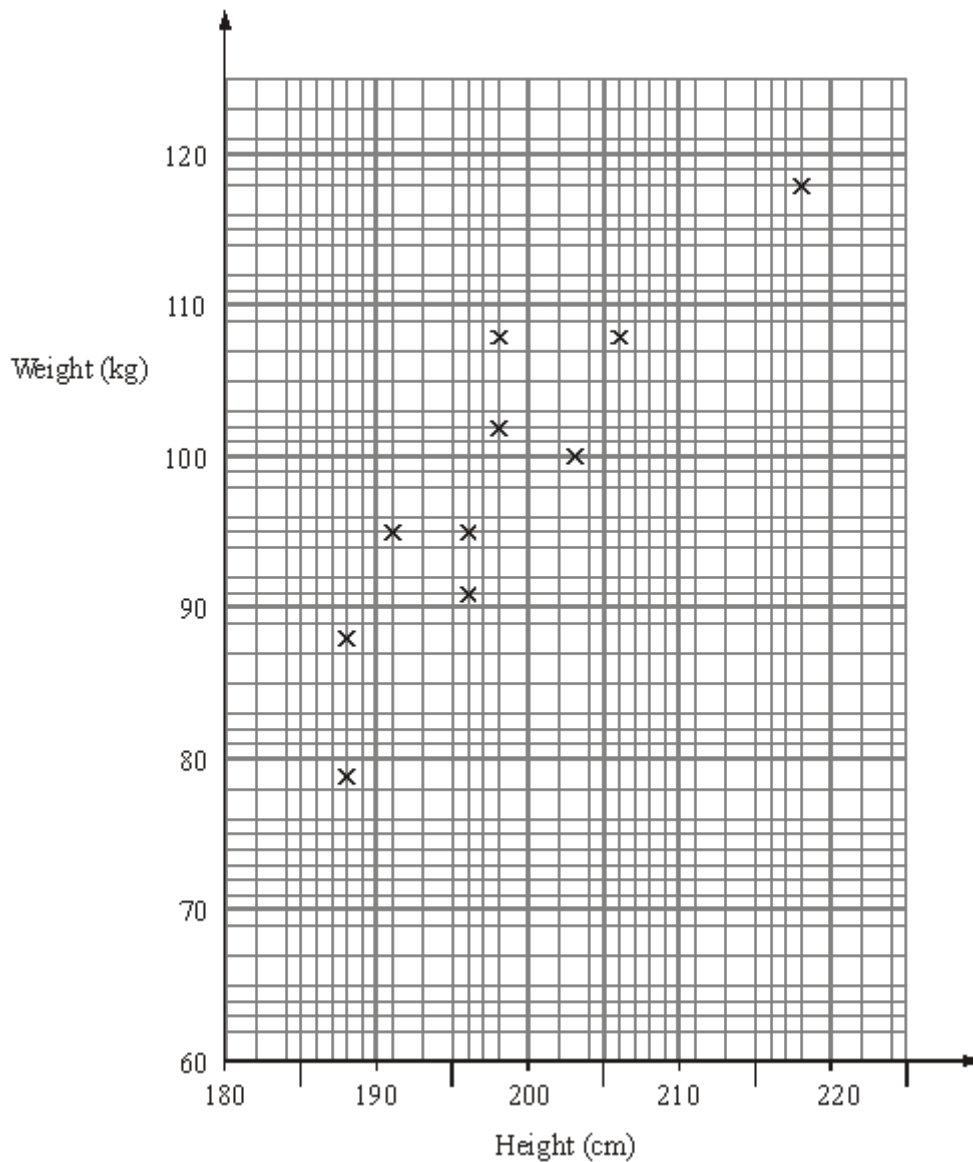
(c) Use your line of best fit to estimate the height of this student.

..... cm

(1)
(Total 3 marks)

Q4. The scatter graph shows some information about a random sample of ten male players at a basketball club.

For each player it shows his height and his weight.



(a) (i) On the scatter graph, draw a line of best fit.

(1)

(ii) Work out the gradient of your line of best fit.

.....

(2)

(iii) Write down a practical interpretation of this gradient.

.....
.....

(2)

Some of the male players at the basketball club have a weight greater than 99 kg.

(b) Estimate the proportion of these players who have a height less than 200 cm.

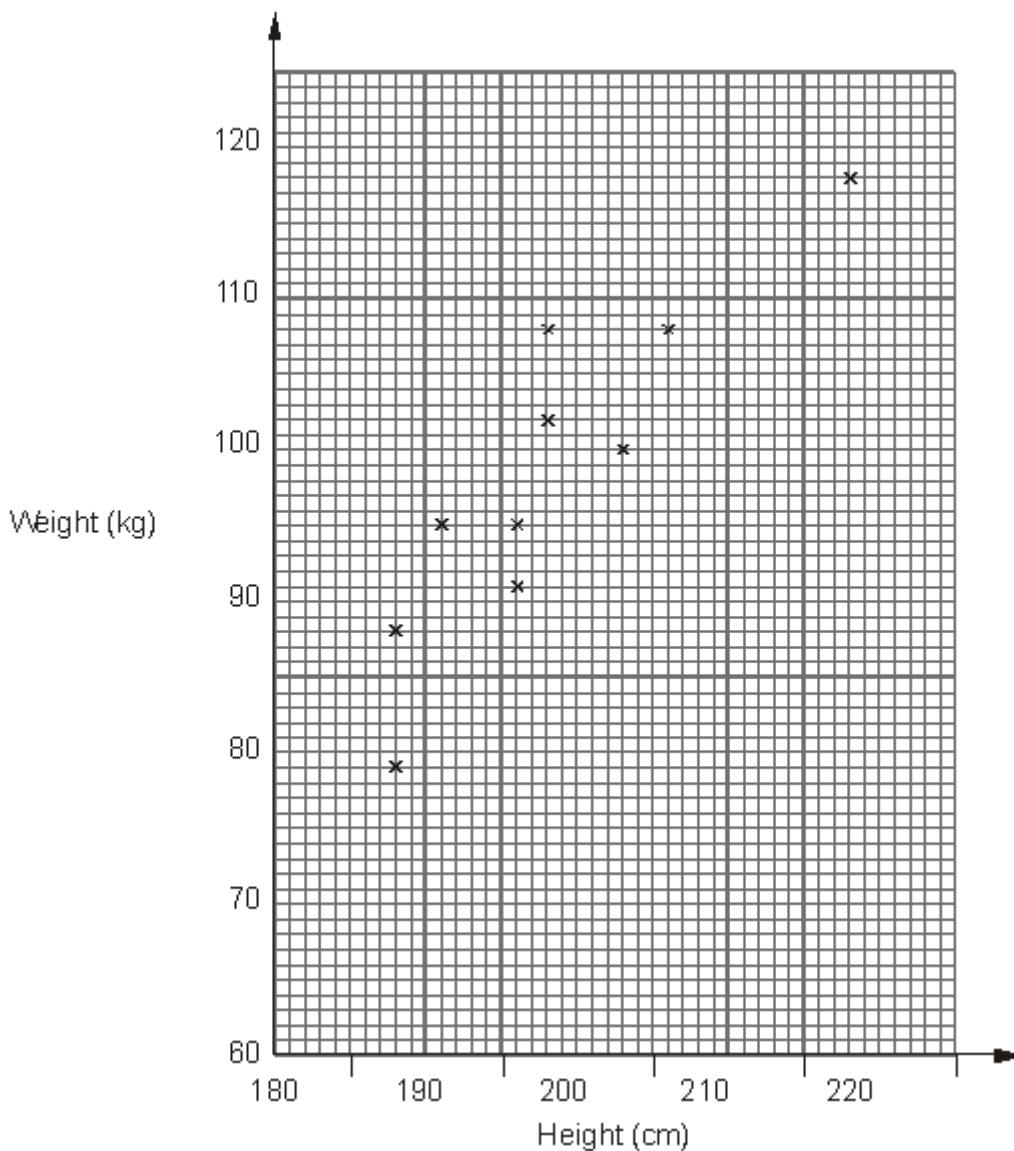
.....

(2)

(Total 7 marks)

Q5. The scatter graph shows some information about a random sample of ten male players at a basketball club.

For each player it shows his height and his weight.



- (a) (i) On the scatter graph, draw a line of best fit.
 (ii) Work out the gradient of your line of best fit.

.....

(3)

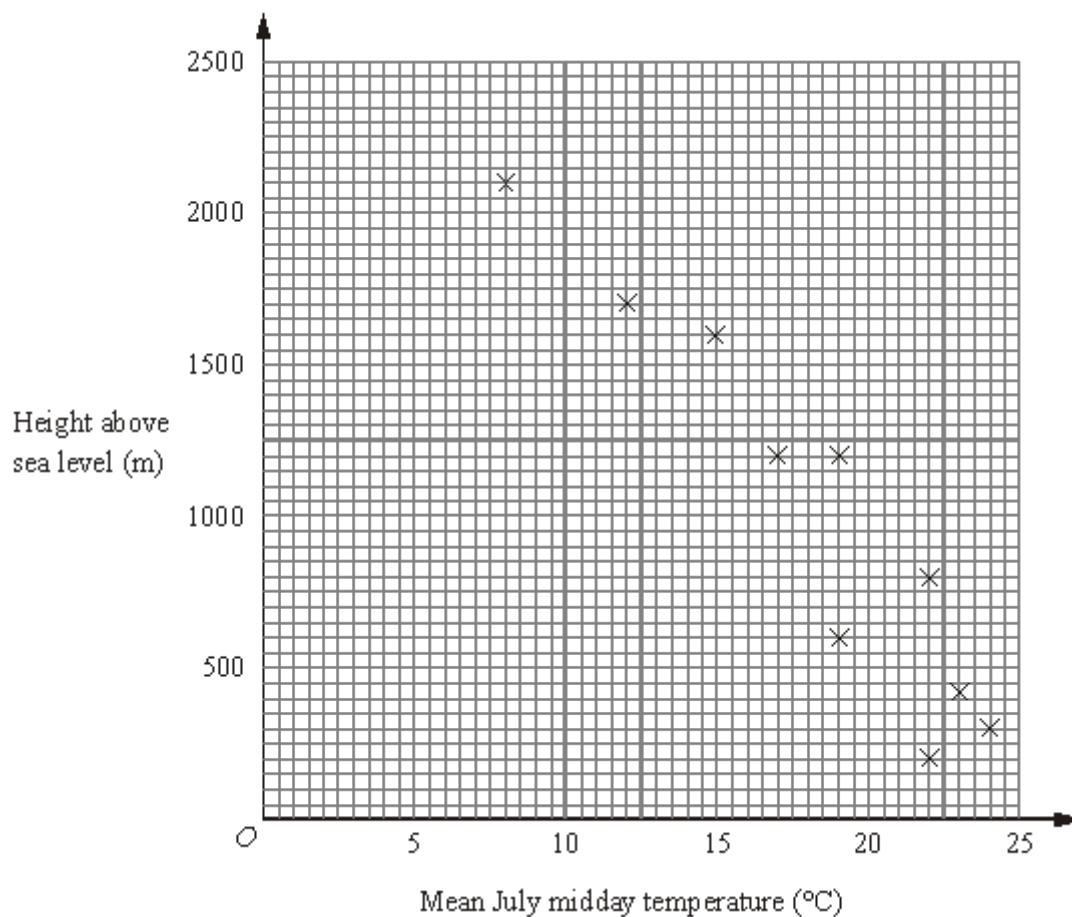
- (b) Estimate the proportion of male players in the club whose weight is greater than 99 kg and whose height is less than 200 cm.

.....

(2)

(Total 5 marks)

- Q6.** The scatter graph shows information for some weather stations. It shows the height of each weather station above sea level (m) and the mean July midday temperature ($^{\circ}\text{C}$) for that weather station.



The table shows this information for two more weather stations.

Height of weather station above sea level (m)	1000	500
Mean July midday temperature ($^{\circ}\text{C}$)	20	22

- (a) Plot this information on the scatter graph.

(1)

(b) What type of correlation does this scatter graph show?

.....

(1)

(c) Draw a line of best fit on the scatter graph.

(1)

A weather station is 1800 metres above sea level.

(d) Estimate the mean July midday temperature for this weather station.

..... °C

(1)

At another weather station the mean July midday temperature is 18°C.

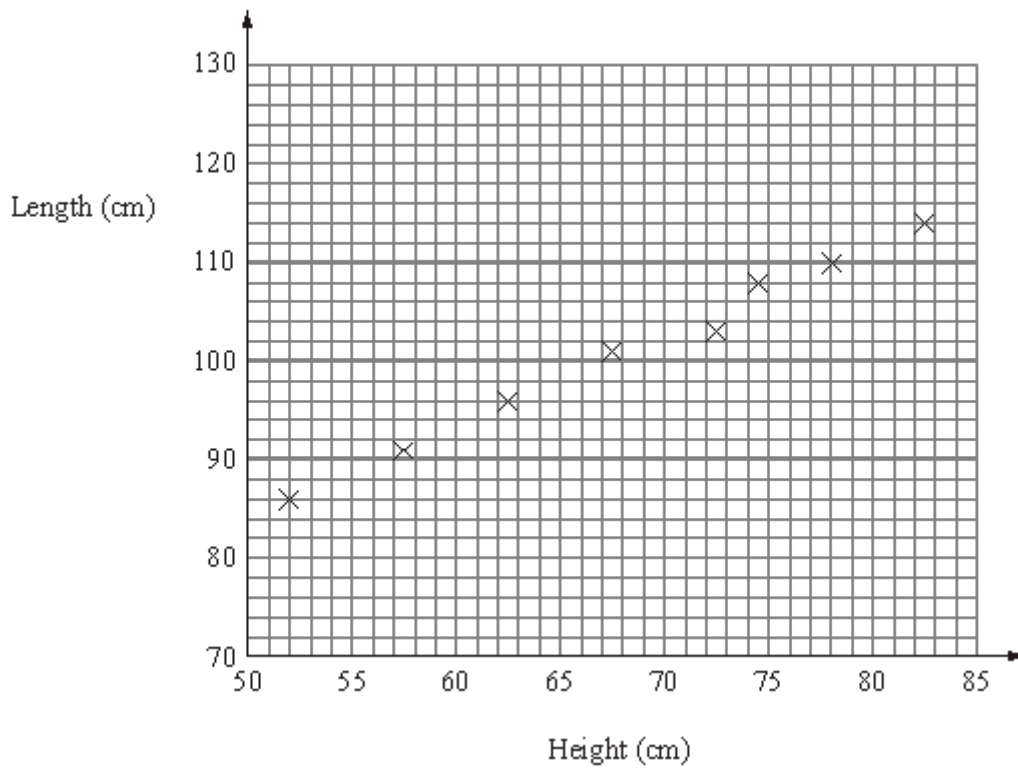
(e) Estimate the height above sea level of this weather station.

..... m

(1)

(Total 5 marks)

Q7. The scatter graph shows information about eight sheep. It shows the height and the length of each sheep.



The table gives the height and the length of two more sheep.

Height (cm)	65	80
Length (cm)	100	110

(a) On the scatter graph, plot the information from the table. (1)

(b) Describe the relationship between the height and the length of these sheep.
 (1)

The height of a sheep is 76 cm.

(c) Estimate the length of this sheep.
cm

(2)
 (Total 4 marks)

M1.

	Answer	Mark	Additional Guidance
(a)	(67, 50), (70, 50), (75, 40), (80, 25)	2	B2 for 4 points plotted correctly (allow ± 2 mm tolerance) (B1 for 2 or 3 points plotted correctly)
(b)	As the price increases the number of cameras sold decreases	1	B1 for decrease in number sold with price. (accept negative correlation)
(c)	line of best fit	1	B1 for line within given limits passing between (70, 40) & (70, 55) and between (80, 15) & (80, 30)
(d)	35 – 39	1	B1 for 35 – 39 or ft their line of best fit from 74 (allow ± 2 mm tolerance)
Total for Question: 5 marks			

M2.

	Answer	Mark	Additional Guidance
(a)	As the price increases the number of cameras sold decreases.	1	B1 for decrease in number sold with increase in price (accept negative correlation)
(b)	Line of best fit	1	B1 for line within given limits passing between (70, 40) & (70, 55) and between (80, 15) & (80, 30)
Total for Question: 2 marks			

M3.

	Answer	Mark	Additional Guidance
(a)	Positive	1	B1 cao (Accept +ve)
(b)	Line of best fit	1	B1 for a straight line passing between (65, 160) and (65, 166) and between (80, 178) and (80, 184)
(c)	173 – 176	1	B1 for 173 – 176 or ft from a single line segment with positive gradient ± 1 full (2mm) square
Total for Question: 3 marks			

M4.

	Working	Answer	Mark	Additional Guidance
(a)(i)		Line of best fit	5	B1 for line drawn between (190, 80), (190, 95) and (210, 105), (210, 120)
(ii)		1.25		M1 for diff. $y / \text{diff. } x$ A1 for 0.5 — 2 or ft their line of best fit
(iii)		practical interpretation		B2 for increase in kg per cm increase in height oe (B1 for a correct interpretation with only one or no units)
(b)		40%	2	M1 for a horizontal line at 99 and a vertical line at 200 or 2 seen A1 for 40% or 2/5 or 0.4 oe
Total for Question: 7 marks				

M5.

	Working	Answer	Mark	Additional Guidance
(a)		Line of best fit 1.25	3	B1 for line drawn between (190, 80), (190, 95) and (210, 105), (210, 120) M1 for diff. $y / \text{diff. } x$ A1 for 0.5 — 2 or ft their line of best fit
(b)		20%	2	M1 for a horizontal line at 99 and a vertical line at 200 or 2 seen A1 for 20% or 2/10 or 0.2 oe
				Total for Question: 5 marks

M6.

	Working	Answer	Mark	Additional Guidance
(a)	Points plotted		1	B1 points plotted ± 1 full smallest square tolerance.
(b)		Negative	1	B1
(c)		lobf	1	B1 lobf that goes between (8,2000) and (8,2400) and between (24,0) and (24,500)
(d)		11-13	1	B1 11-13 or ft (tol ± 1 square) from single straight line segment with a negative gradient
(e)		850-1150	1	B1 850-1150 or ft (tol ± 1 square)) from single straight line segment with a negative gradient
				Total for Question: 5 marks

M7.

	Answer	Mark	Additional Guidance
(a)	(65, 100), (80, 110) plotted	1	B1 for plotting both points (65, 100), (80, 110) correctly (tolerance one square); ignore any additional plots given.
(b)	positive (correlation)	1	B1 for positive (correlation) or length increases with height oe
(c)	105 – 110	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 76 A1 for given answer in the range 105 – 110
Total for Question: 4 marks			

- E1.** This question was answered well by the majority of candidates, but a significant number of candidates had difficulty in interpreting the horizontal scale.

A common error in part (a) was to plot the point (67, 50) at (66, 50) or at (68, 50).

In part (b), many candidates were able to write down an acceptable description of the relationship between the price and the number of cameras sold. A common error here was to just comment on the extreme values, e.g. 'the expensive cameras didn't sell very well', or to describe the correlation as simply "negative". In part (c), most candidates were able to draw a suitable line of best fit within the required limits. In part (d), a common error was to read the graph at £72 or at £74.50, rather than at £74.

- E2.** In part (a), many candidates were able to write down an acceptable description of the relationship between the price and the number of cameras sold. A common error here was to just comment on the extreme values, e.g. 'the expensive cameras didn't sell very well', or to describe the correlation as simply "negative". In part (b), many candidates were able to draw a suitable line of best fit within the required limits, but it was clear that a significant number of candidates were not equipped with a ruler. Candidates should be advised to bring the appropriate equipment to this examination.

A common error here was to join the points with line segments, or to draw a line with positive gradient (usually through the origin).

E3. Foundation

It was pleasing to see that over 36% scored all 3 marks on the last question on this section with a further 31% scoring 2 marks. Many did not realise that the word 'positive' was required in (a) but this did not put them off answering the rest of the question. Some unusual descriptions were seen but to describe the correlation as a "line of misfit" was perhaps taking things a little too far.

The most common error was in part (b) where many candidates felt the line of best fit had to go through the origin (60, 140) although they could still pick up the mark in (c) for an accurate reading from their line of best fit. It is also important that the line of best fit should be of sufficient length to cover the range of the given points; in some cases it was short of this length by a considerable amount. Merely joining up the points with a series of zigzag

lines was never going to satisfy the requirement of a line of best fit.

Higher

This question was also well done by the candidates on the Higher Tier with nearly 95% of the candidates scoring 2 or 3 marks. The most common error was in part (b) where many candidates felt the line of best fit had to go through the origin (60, 140) although they could still pick up the mark in (c) for an accurate reading from their line of best fit.

- E6.** There was a lot of careless plotting where the point at $x = 22$ was plotted wrongly at $x = 21$. Most candidates knew this was negative correlation although a few tried to give a description. The line of best fit was generally well drawn although in some cases it was too short. Most candidates knew and could apply the technique of reading off values from the diagram.
- E7.** Most candidates gained marks in this question. Plotting was done in part (a) with relative ease, but the descriptions in part (b) sometimes lost marks because they were not general enough: commenting on a single point will not earn the mark. In part (c) candidates were expected to make a reasonable estimate which in many cases gained marks, with or without a line of best fit. In some cases it was clear the candidate was failing to see their answer within the context of the problem, for example giving an answer less than 70.