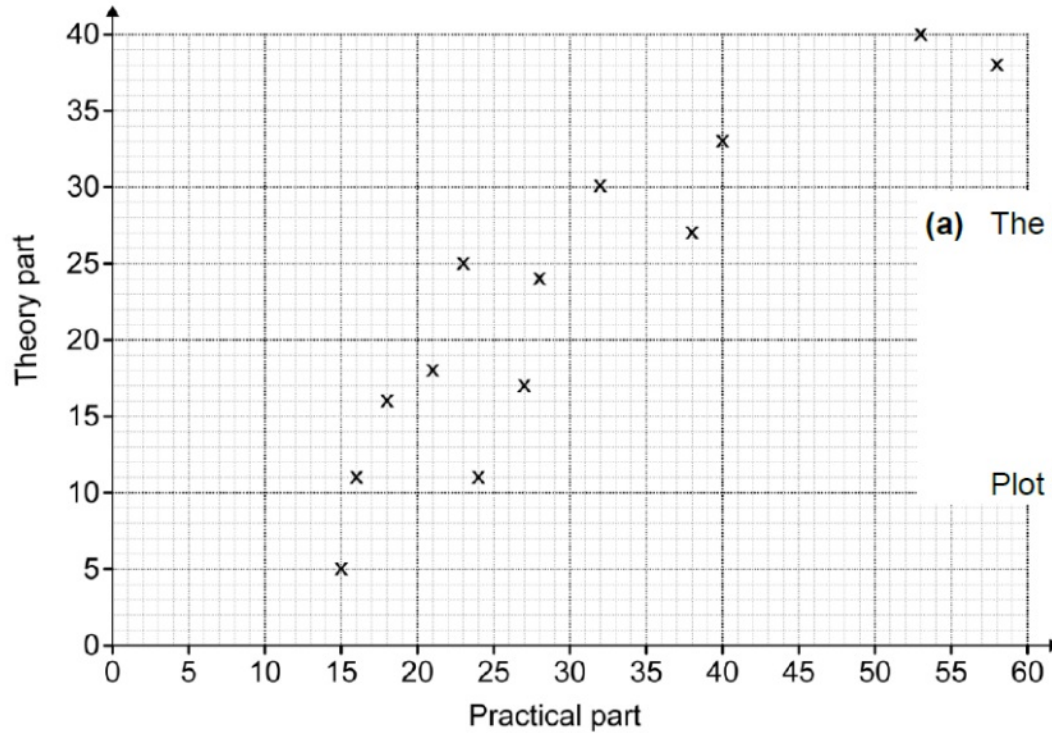


P12/P13- Scattergraphs

OCR

18 The scatter diagram shows the results for 13 students in the practical part and the theory part of a test.

Created by W Neill

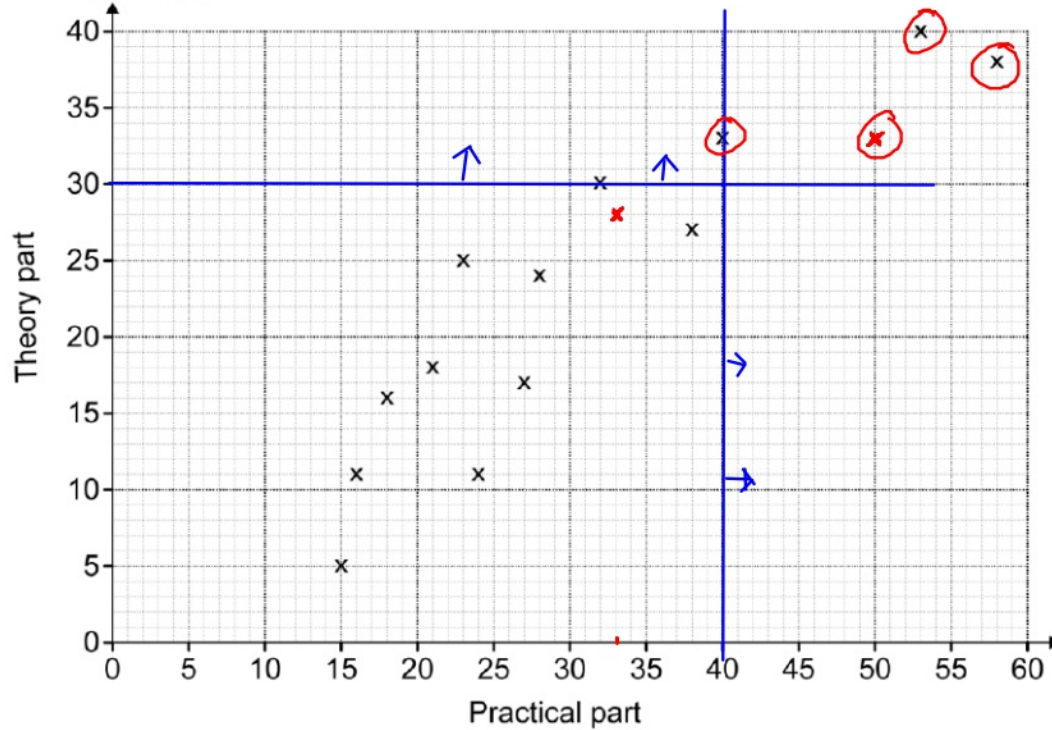


(a) The table below shows the results for two more students.

Practical part	50	33
Theory part	34	28

Plot these two results on the scatter diagram.

18 The scatter diagram shows the results for 13 students in the practical part and the theory part of a test.



$$\frac{4}{15} = 0.26$$

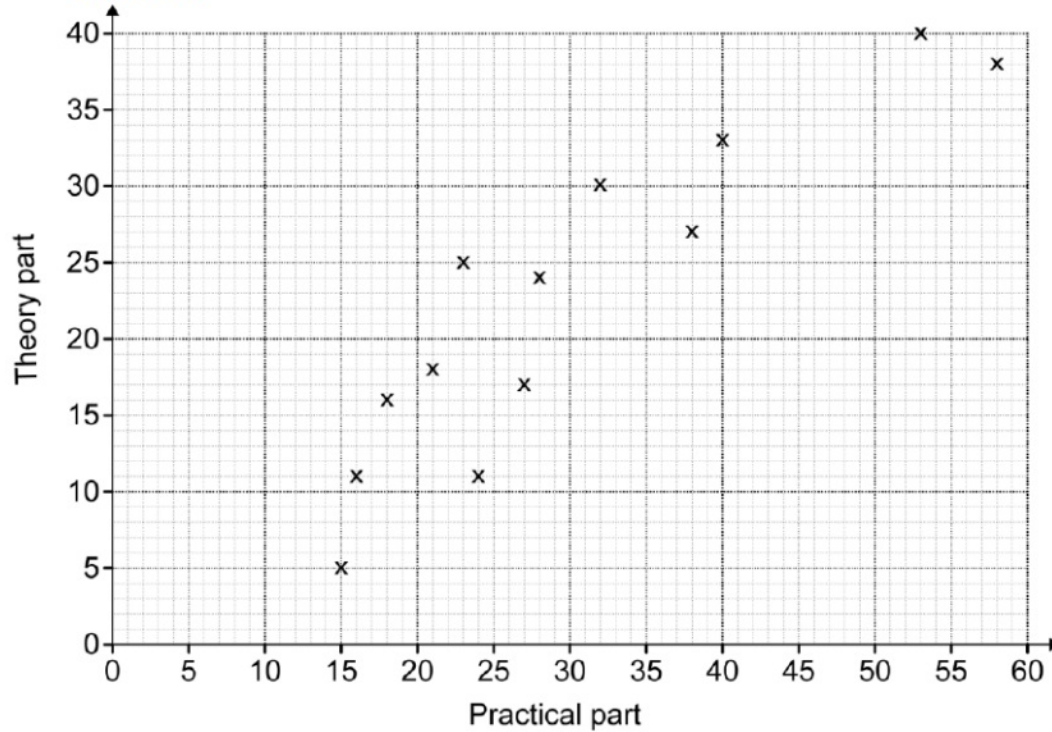
$$26.6\%$$

(b) The pass marks for the test are 40 in the practical part and 30 in the theory part.

What percentage of the 15 students passed both parts?
Write your answer correct to the nearest whole number.

(b).....% [4]

18 The scatter diagram shows the results for 13 students in the practical part and the theory part of a test.

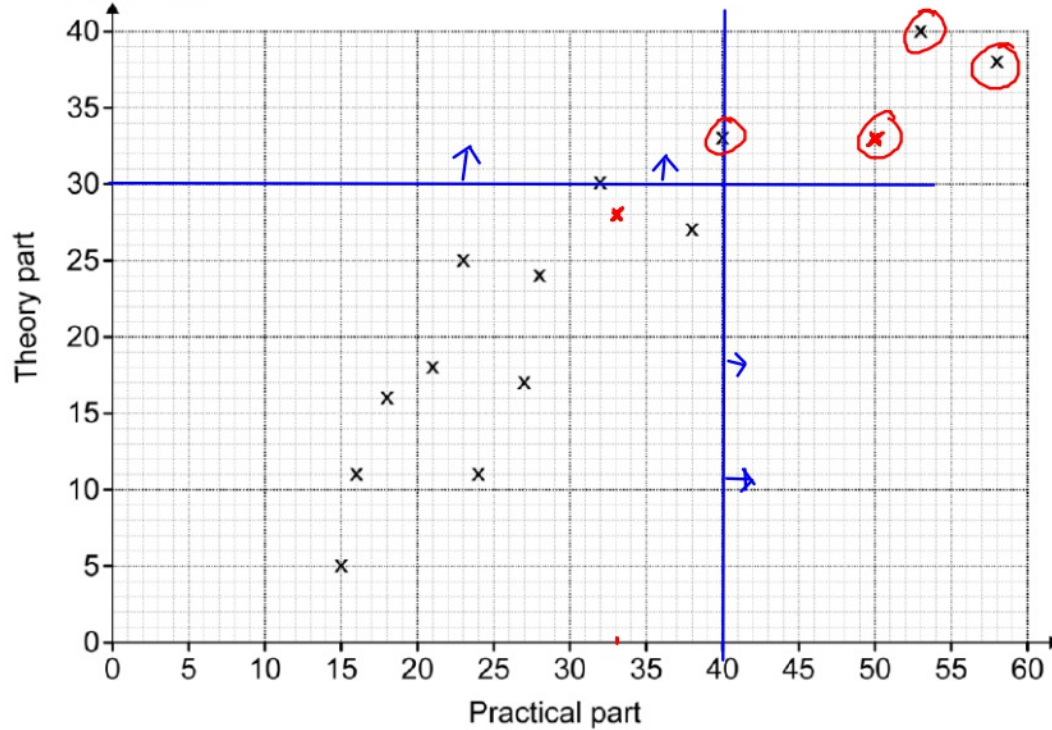


(b) The pass marks for the test are 40 in the practical part and 30 in the theory part.

What percentage of the 15 students passed both parts?
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(b).....% [4]

18 The scatter diagram shows the results for 13 students in the practical part and the theory part of a test.



$$\frac{4}{15} = 0.26$$

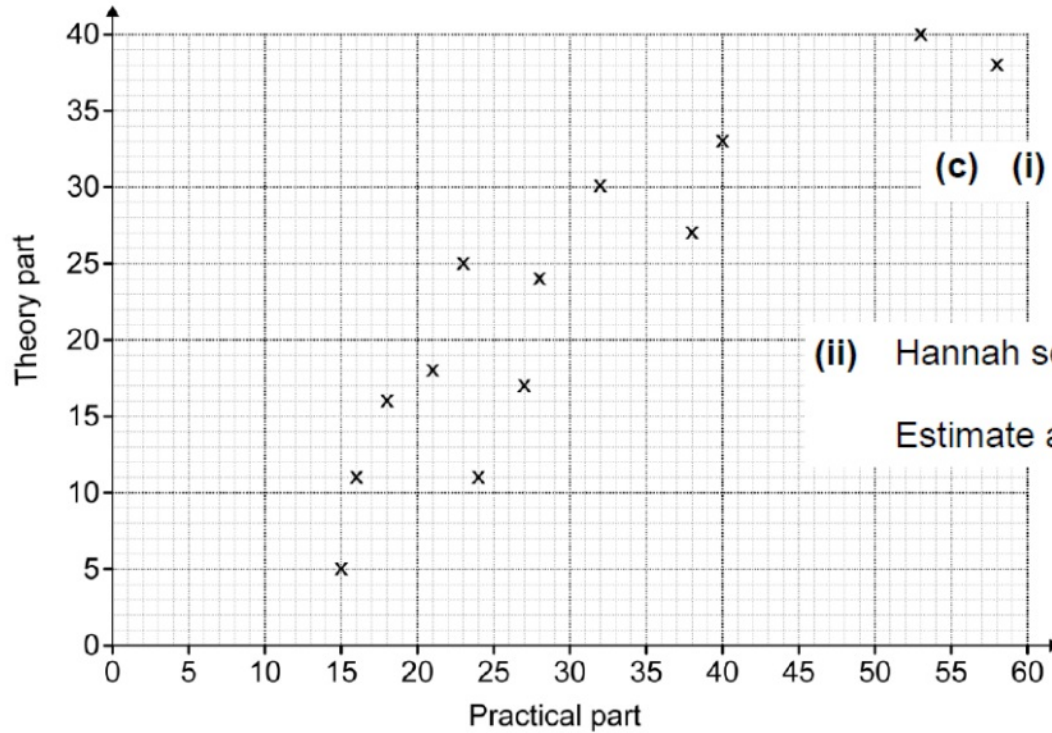
$$26.6\%$$

(b) The pass marks for the test are 40 in the practical part and 30 in the theory part.

What percentage of the 15 students passed both parts?
Write your answer correct to the nearest whole number.

(b).....% [4]

18 The scatter diagram shows the results for 13 students in the practical part and the theory part Created by W Neill of a test.



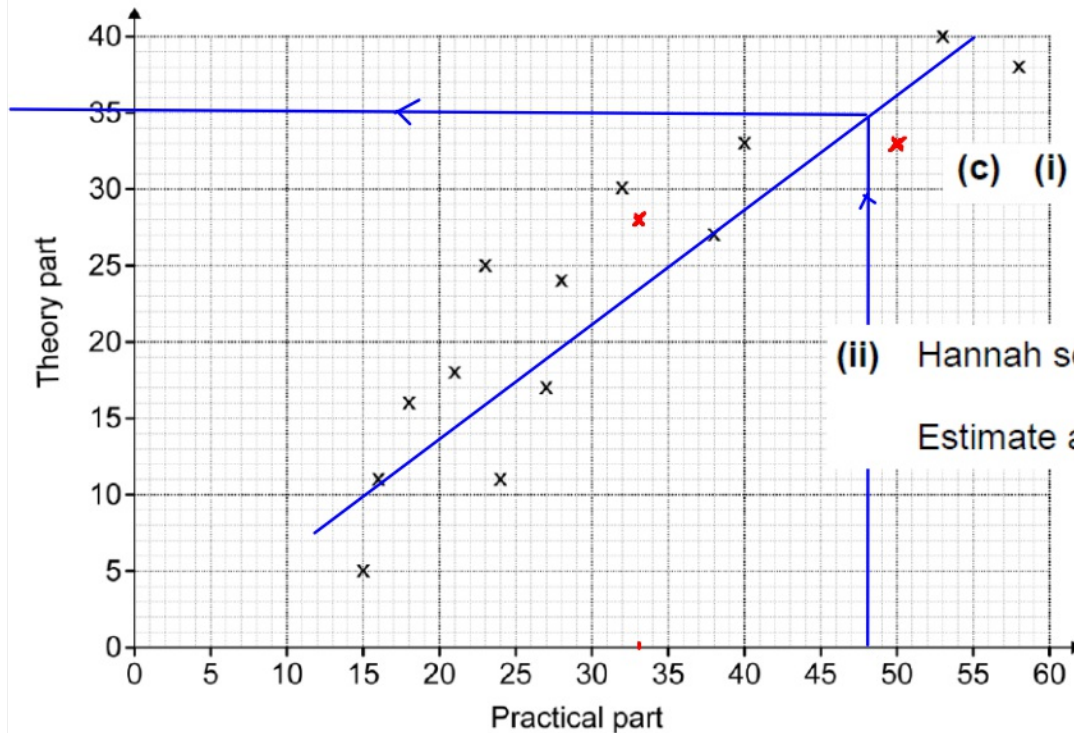
(c) (i) Draw a line of best fit on the scatter diagram.

(ii) Hannah scored 48 in the practical part, but missed the theory part.

Estimate a score for Hannah in the theory part.

(iii) Explain why your answer to part **(ii)** may not be correct.

18 The scatter diagram shows the results for 13 students in the practical part and the theory part of a test. Created by W Neill



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

(ii) Hannah scored 48 in the practical part, but missed the theory part.

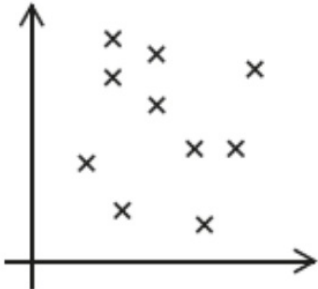
Estimate a score for Hannah in the theory part.

35 ✓
32 → 36 ✓

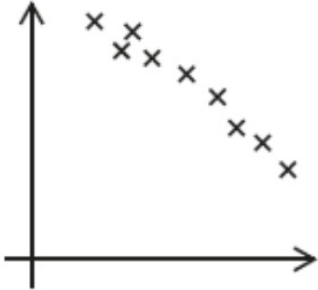
(iii) Explain why your answer to part (ii) may not be correct.

My line of best fit may be slightly off.

15 Describe the correlation shown in each of these scatter graphs.
Where there is correlation, state the strength.

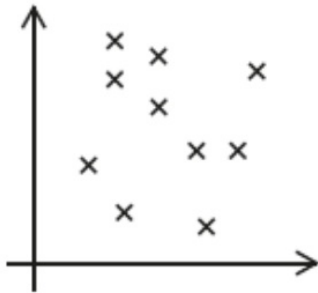


.....
.....

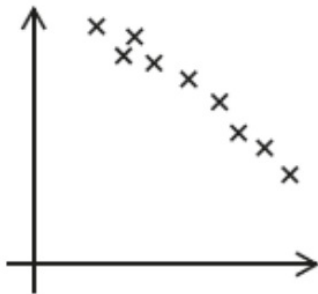


.....
..... [3]

- 15 Describe the correlation shown in each of these scatter graphs.
Where there is correlation, state the strength.



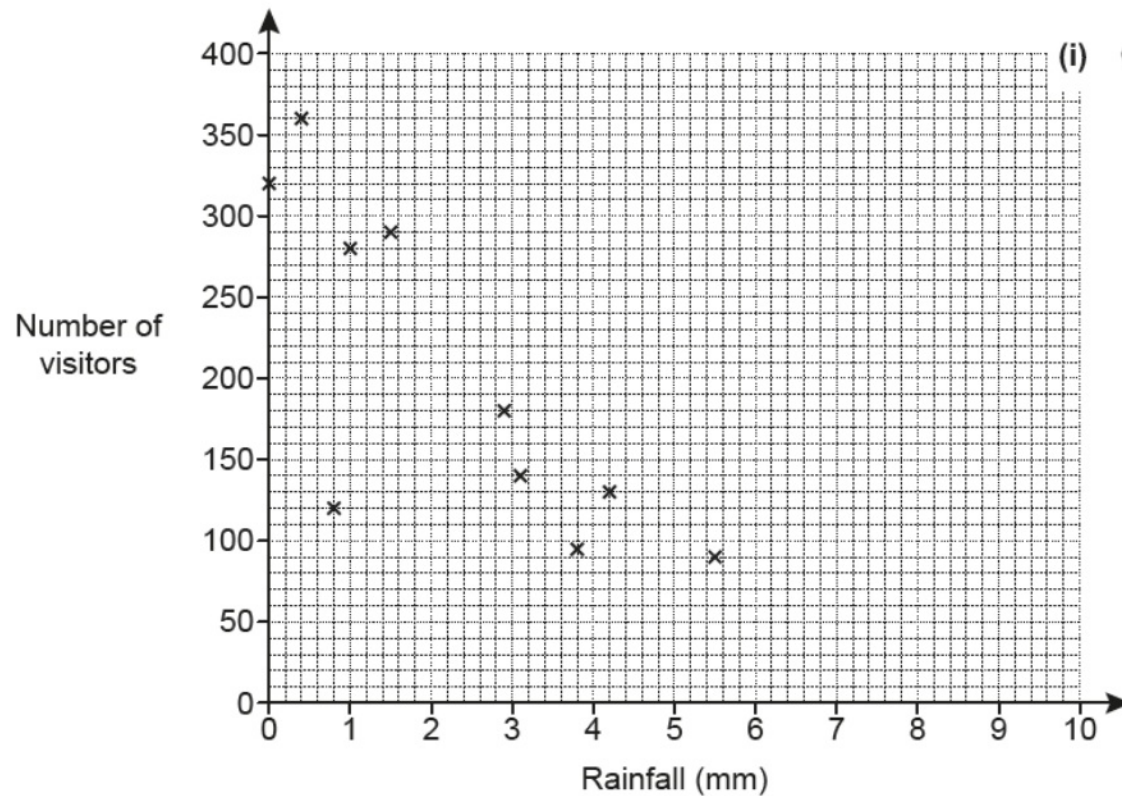
No correlation



Strong negative
Correlation

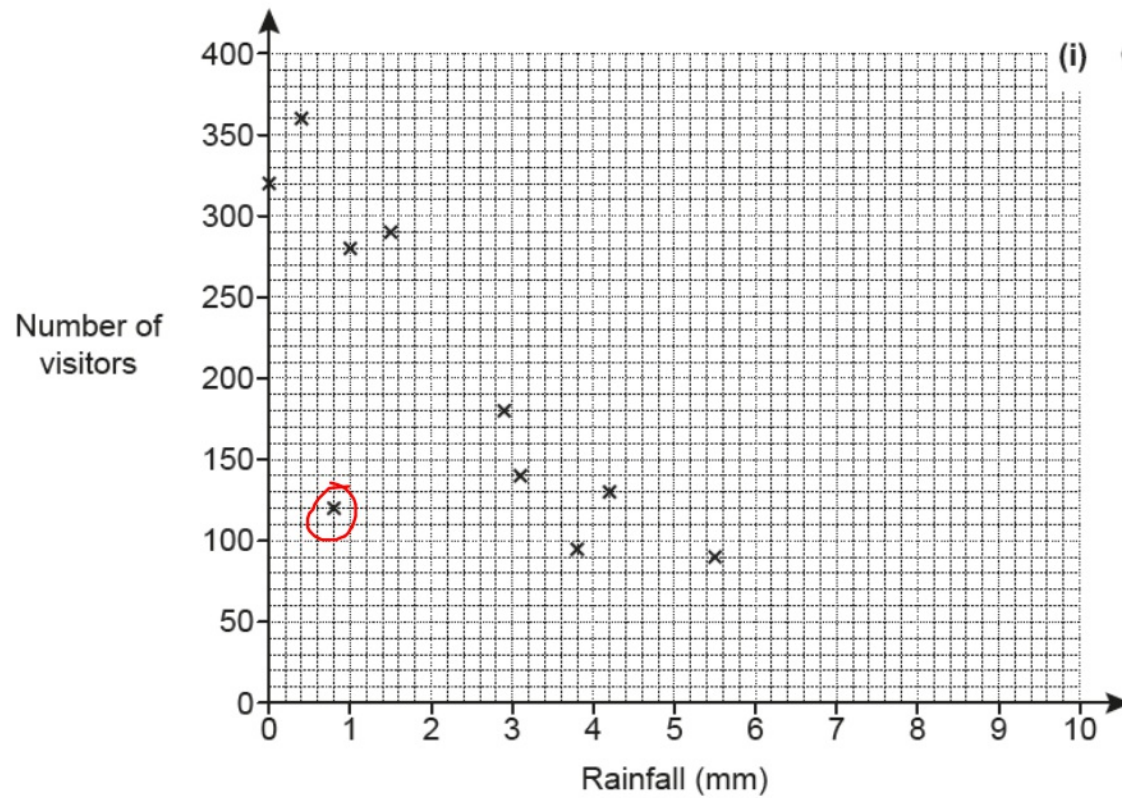
[3]

- 16 (a) The owner of a tourist attraction records the amount of rainfall, in millimetres, and the number of visitors each day. The results for 10 days are shown in the scatter diagram.

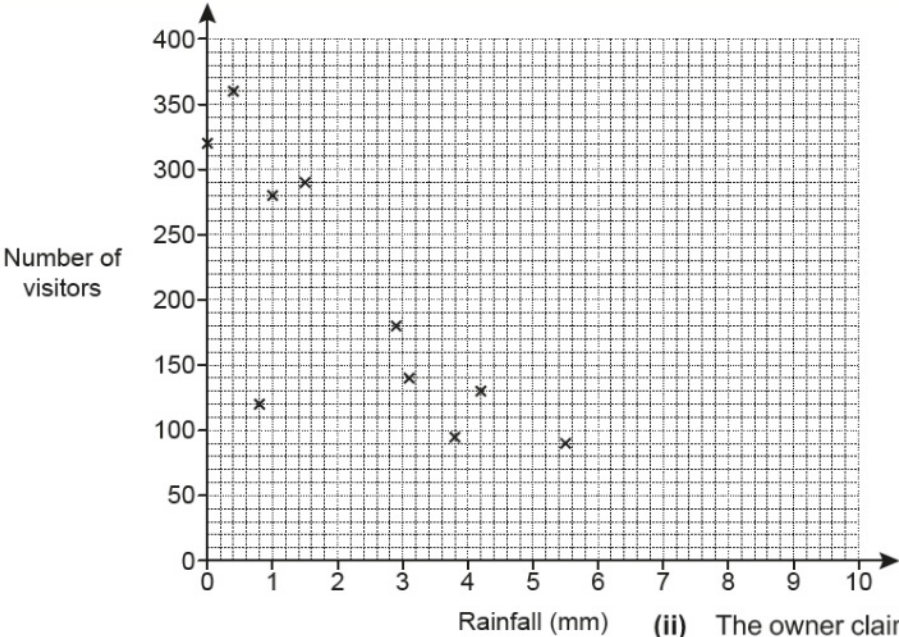


(i) Circle the outlier on the scatter diagram.

- 16 (a) The owner of a tourist attraction records the amount of rainfall, in millimetres, and the number of visitors each day. The results for 10 days are shown in the scatter diagram.



(i) Circle the outlier on the scatter diagram.



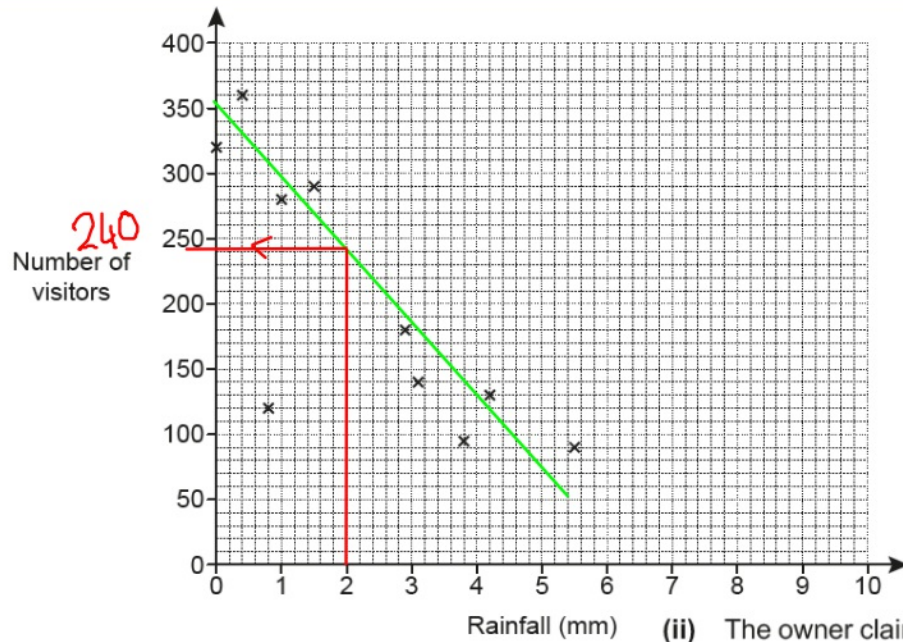
(ii) The owner claims that he would expect around 320 visitors on a day with 2 mm of rainfall.

Does the scatter diagram support his statement?
Explain how you made your decision.

.....
..... [2]

(iii) Explain why the scatter diagram should not be used to estimate the number of visitors on a day with 9 mm of rainfall.

.....
..... [1]



(ii) The owner claims that he would expect around 320 visitors on a day with 2 mm of rainfall.

Does the scatter diagram support his statement?
Explain how you made your decision.

NO, 2mm gave 240 visitors using LOBF

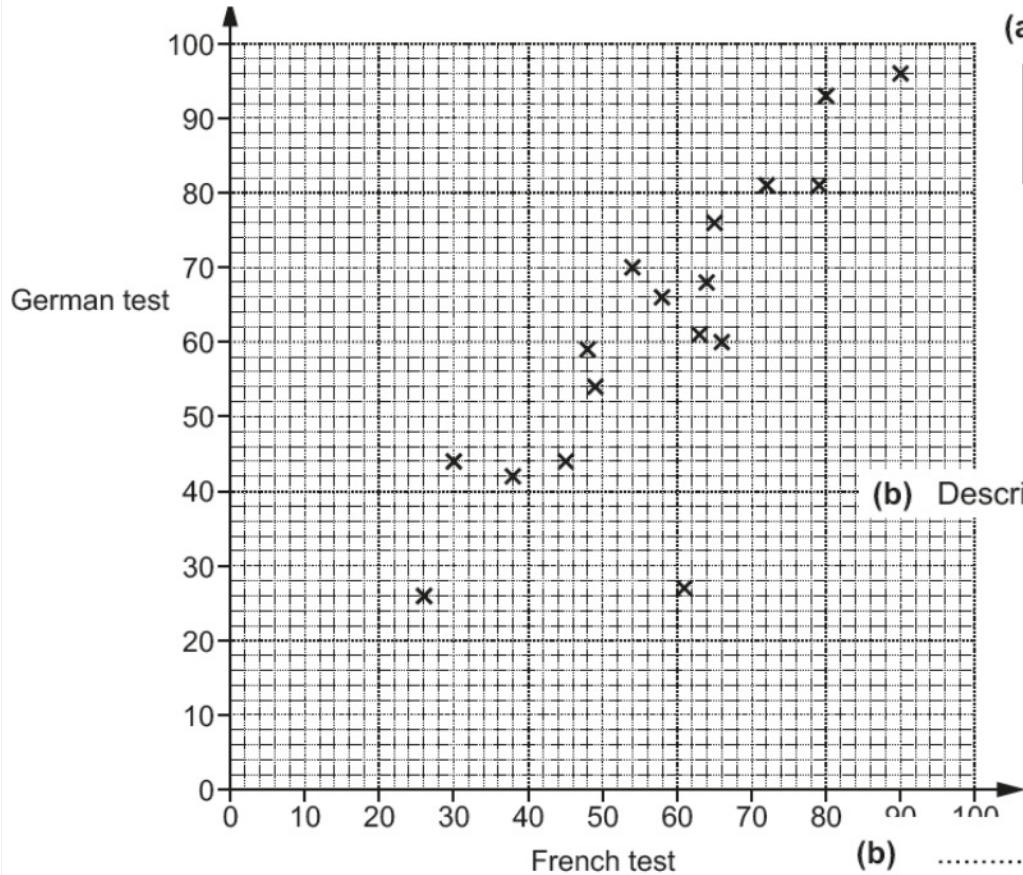
[2]

(iii) Explain why the scatter diagram should not be used to estimate the number of visitors on a day with 9 mm of rainfall.

9mm is outside the range of data collected.

[1]

17 The scatter diagram shows the results of 17 students in their French test and their German test. Created by W Neill
Both tests are out of 100.



(a) Here are the results of another 4 students.

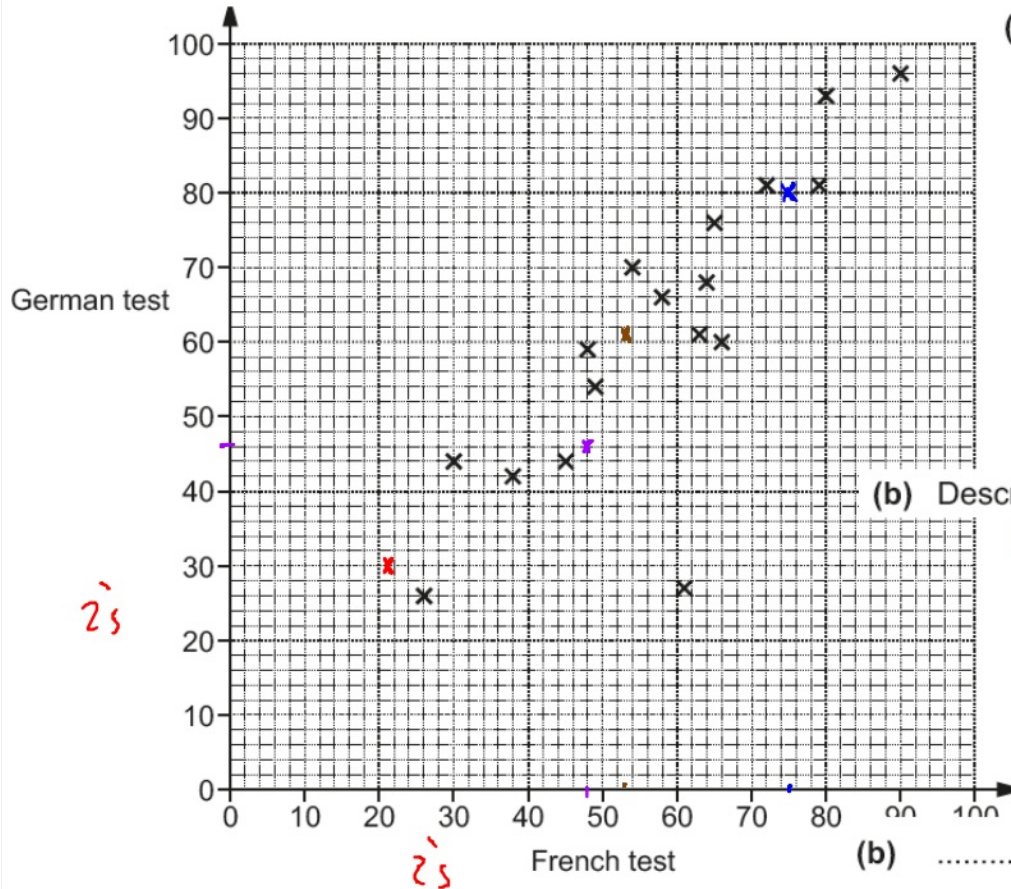
French	21	75	48	53
German	30	78	46	61

Plot these results on the scatter diagram.

(b) Describe the type and strength of the correlation shown in this diagram.

(b) [2]

17 The scatter diagram shows the results of 17 students in their French test and their German test. Created by W Neill
Both tests are out of 100.



(a) Here are the results of another 4 students.

French	21	75	48	53
German	30	78	46	61

Plot these results on the scatter diagram.

(b) Describe the type and strength of the correlation shown in this diagram.

Strong
good ✓ positive correlation
weak

(b) [2]

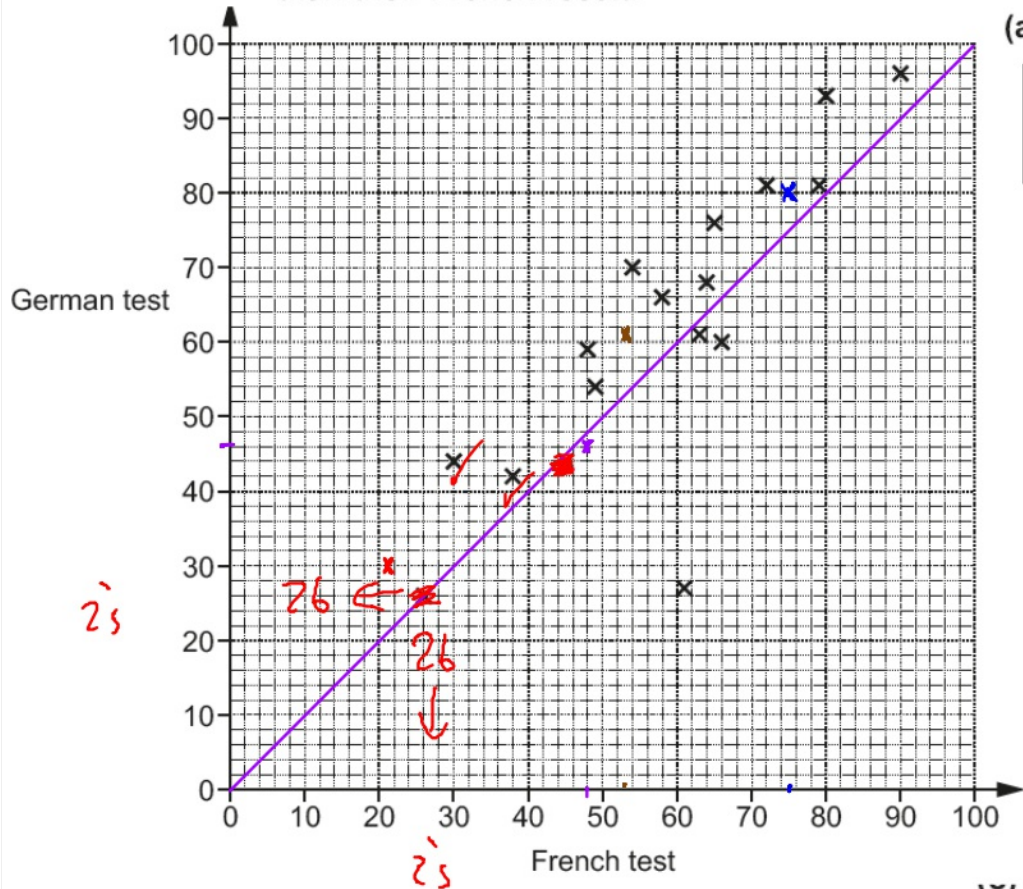
Created by W Neill

(c) Work out the percentage of the students whose German result was **higher** than their French result.

(c) % **[4]**

Created by W Neill

(c) Work out the percentage of the students whose German result was **higher** than their French result.



(a) Here are the results of another 4 students.

French	21	75	48	53
German	30 ✓	78 ✓	46	61 ✓

Plot these results on the scatter diagram.

$$\frac{15}{21} = 0.71428$$
$$= 71.428$$

$$71.4 \dots \dots \dots \% \text{ [4]}$$

- 15** Lee wishes to find out if there is a relationship between a person's age and the time it takes them to complete a puzzle.

Lee decides to conduct an experiment.

She asks 12 people to complete the puzzle.

She records each person's age and the time taken to complete the puzzle.

- (a)** Make one criticism of Lee's method.

.....

..... **[1]**

15 Lee wishes to find out if there is a relationship between a person's age and the time it takes them to complete a puzzle.

Lee decides to conduct an experiment.

She asks 12 people to complete the puzzle.

She records each person's age and the time taken to complete the puzzle.

(a) Make one criticism of Lee's method.

P12/13

.....
Sample size of 12 is too small ✓
.....

..... [1]

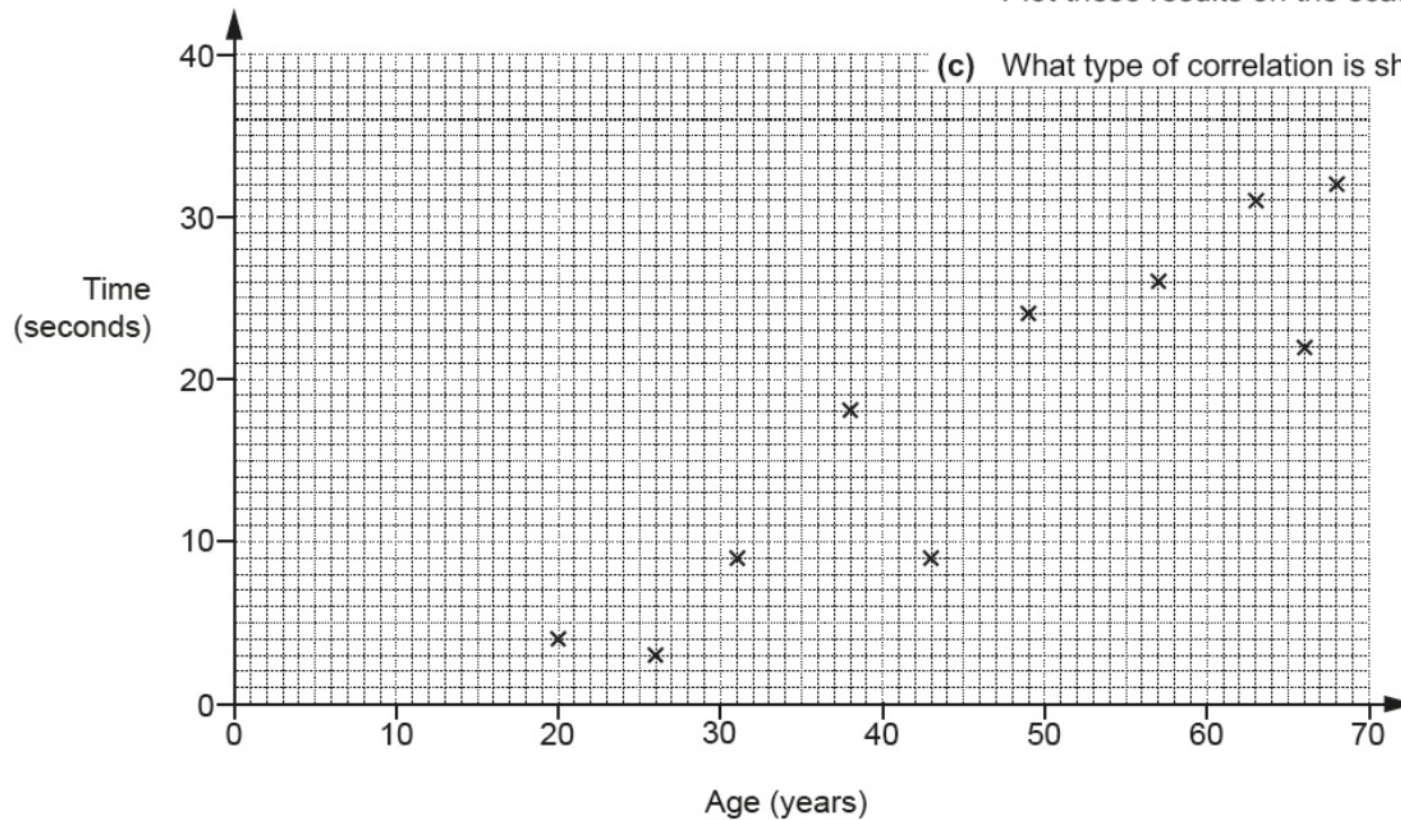
This scatter diagram shows the results for ten of the people in Lee's experiment.

Created by W Neill

(b) Here are the other two results.

Age (years)	47	60
Time (seconds)	21	34

Plot these results on the scatter diagram.



This scatter diagram shows the results for ten of the people in Lee's experiment.

Created by W Neill

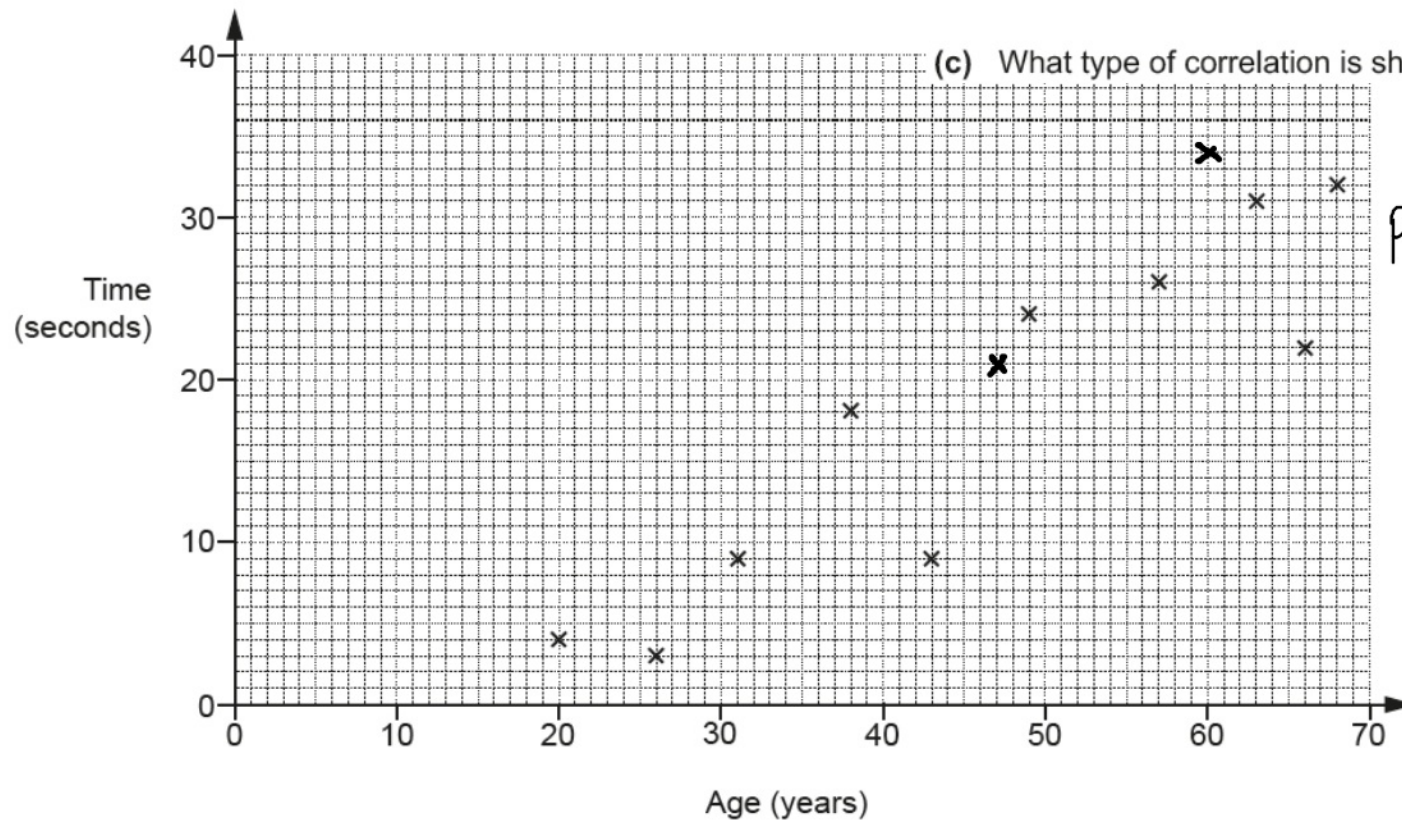
P12/13

(b) Here are the other two results.

Age (years)	47	60
Time (seconds)	21	34

Plot these results on the scatter diagram.

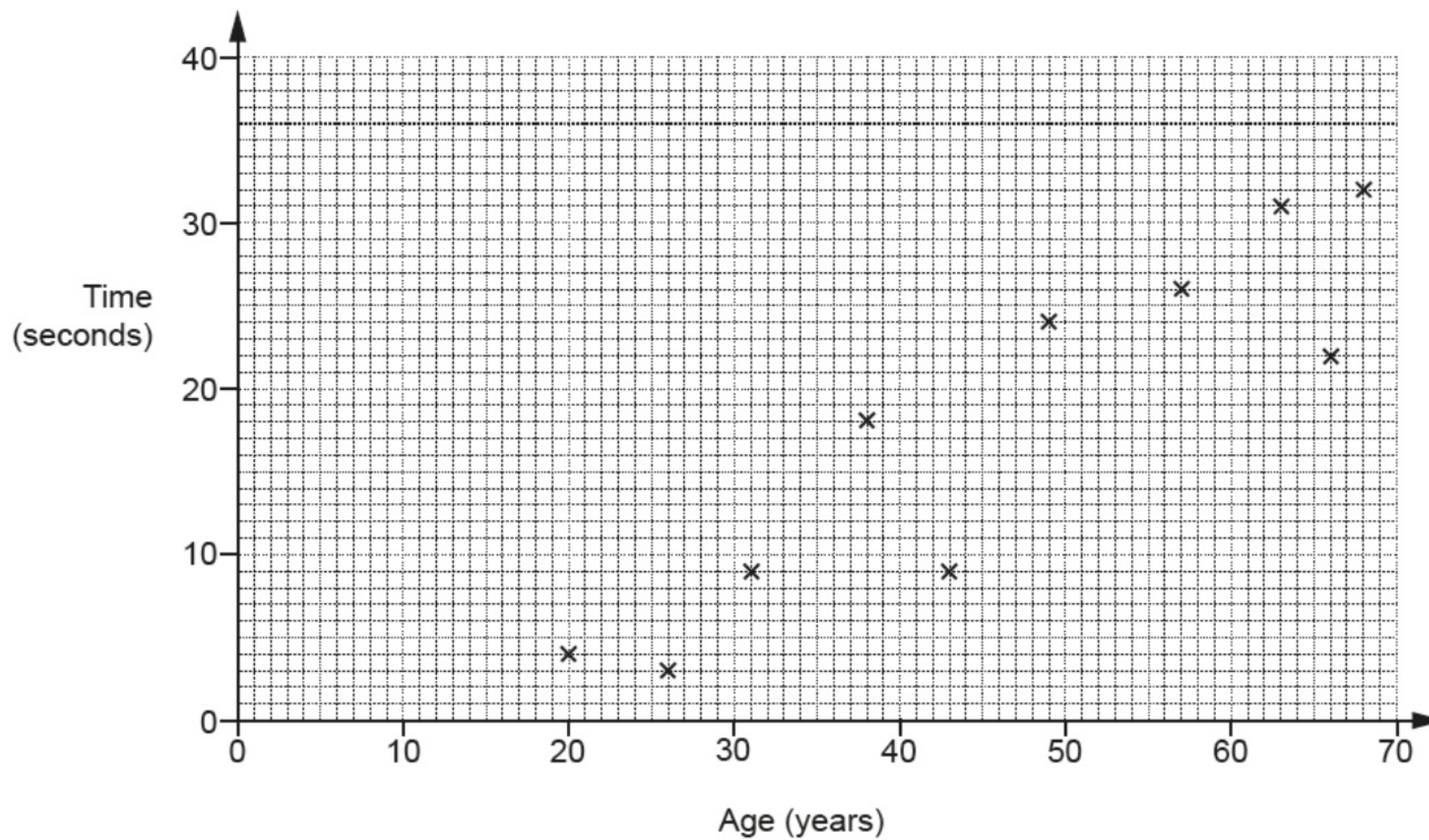
(c) What type of correlation is shown in the scatter diagram?



positive correlation ✓

(d) Estimate the time it would take a person aged 35 to complete the puzzle.
Show your working to justify your answer.

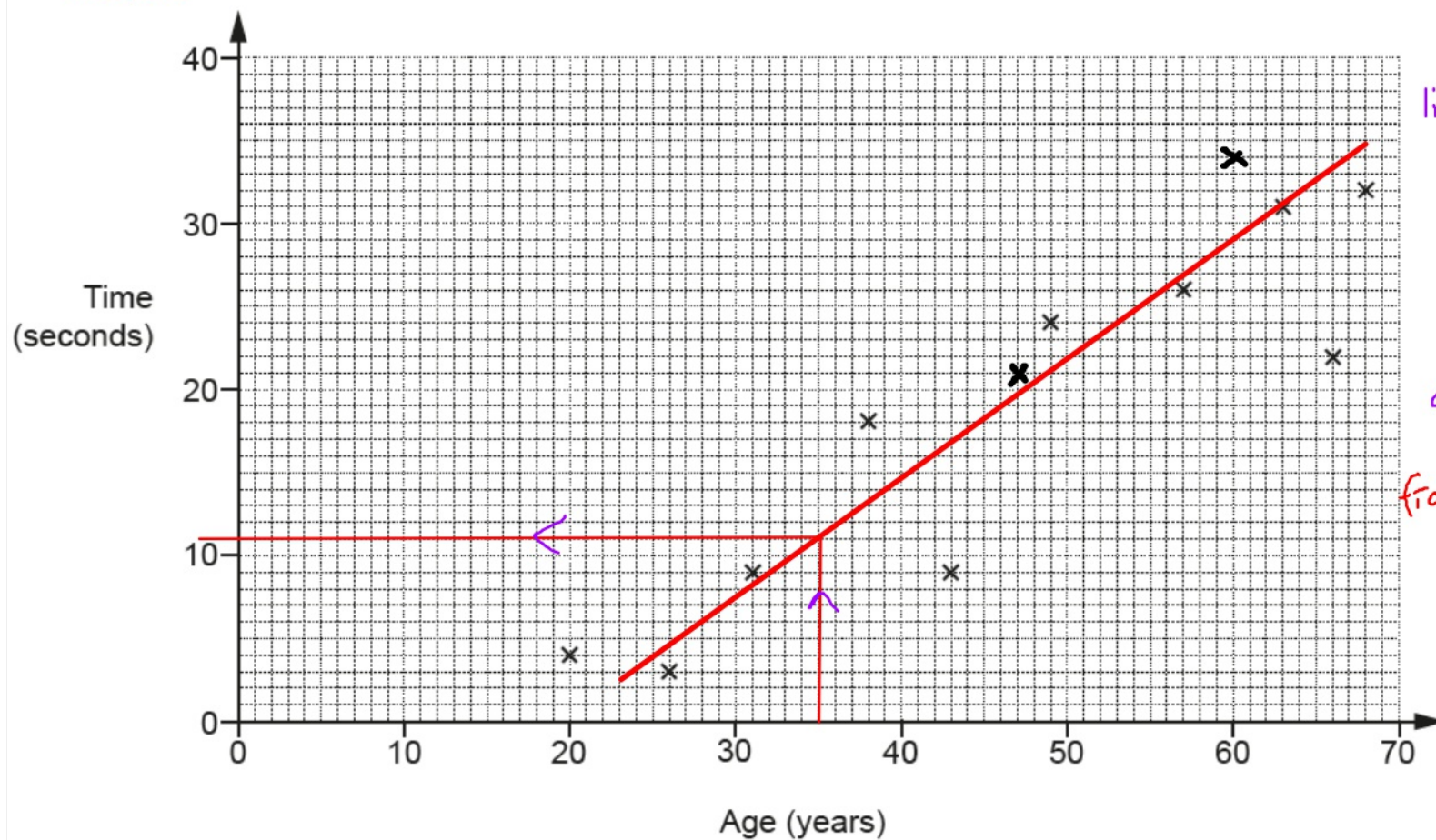
Created by W Neill



(d) Estimate the time it would take a person aged 35 to complete the puzzle.
Show your working to justify your answer.

Created by W Neill

P12/13



line of best fit

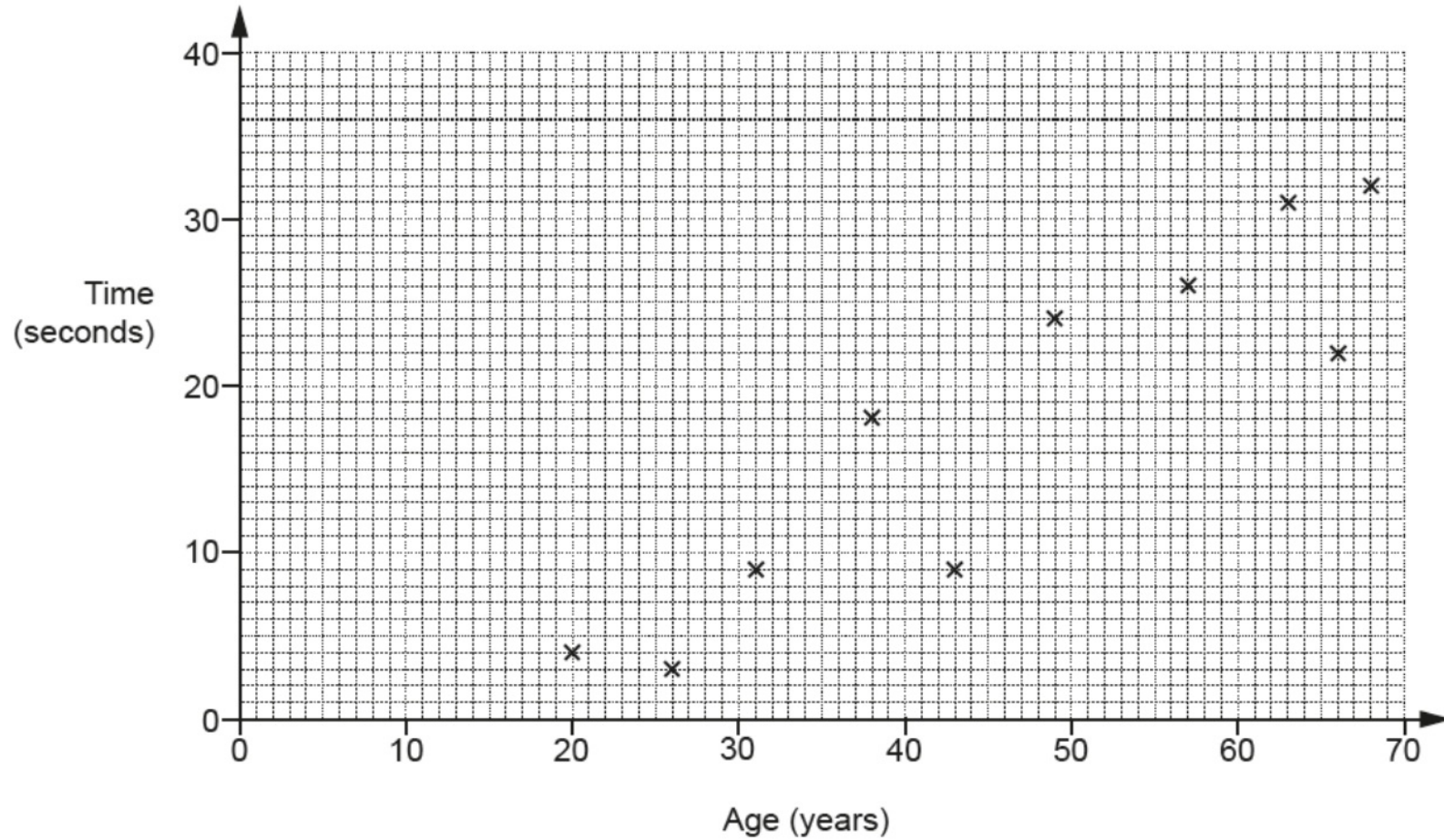
age 11
from age 9-15

(e) Lee says that at least 80% of the 12 people completed the puzzle in under 30 seconds.

Created by W Neill

Is Lee correct?

Show working to support your answer.



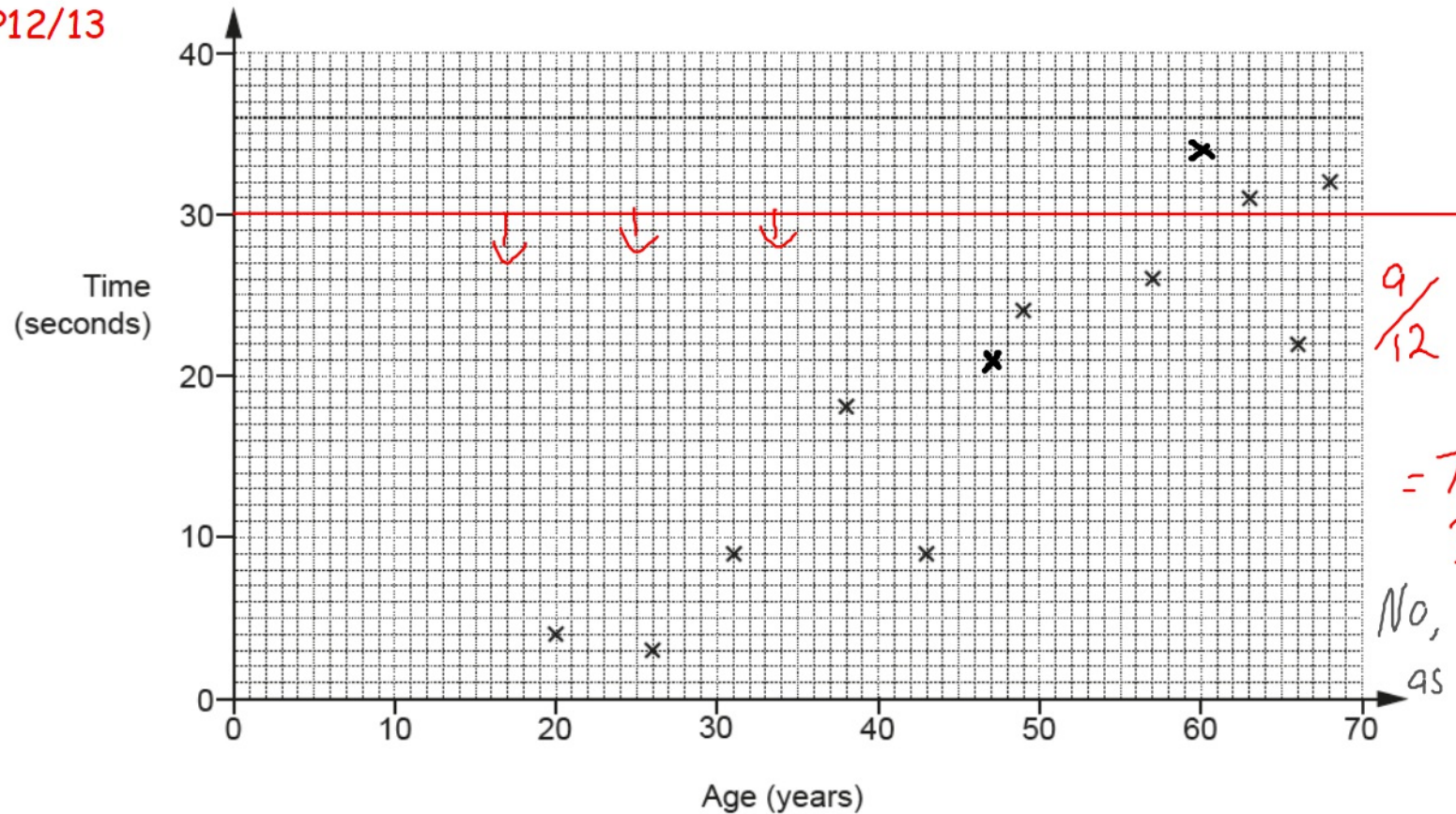
(e) Lee says that at least 80% of the 12 people completed the puzzle in under 30 seconds.

Created by W Neill

Is Lee correct?

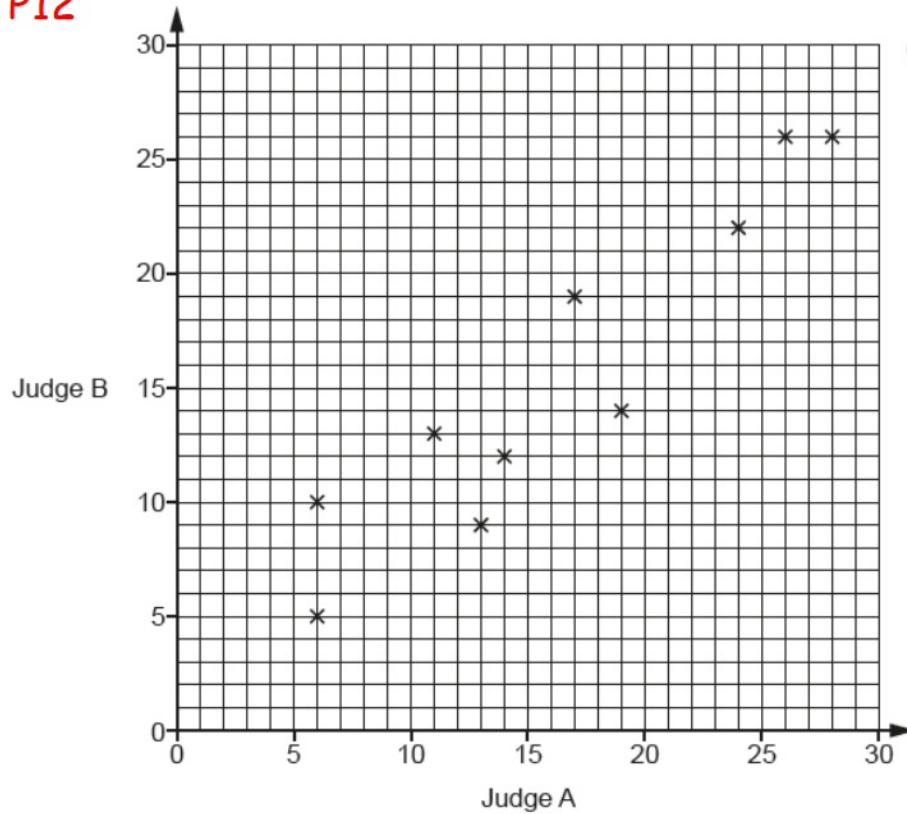
Show working to support your answer.

P12/13



- 16** In a dance competition, two judges each award scores out of 30.
The scatter diagram shows the scores awarded to the first 10 dancers.

P12



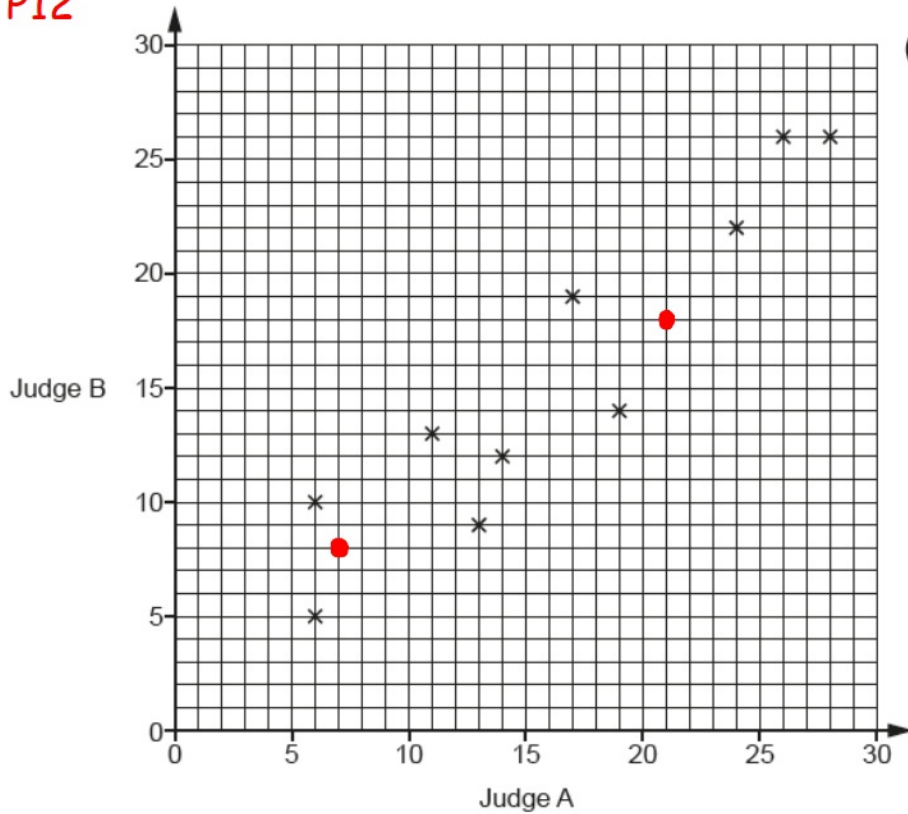
- (a)** Here are the scores for the next two dancers.

Judge A	21	7
Judge B	18	8

Plot their scores on the scatter diagram. **[1]**

16 In a dance competition, two judges each award scores out of 30.
The scatter diagram shows the scores awarded to the first 10 dancers.

P12



(a) Here are the scores for the next two dancers.

Judge A	21	7
Judge B	18	8

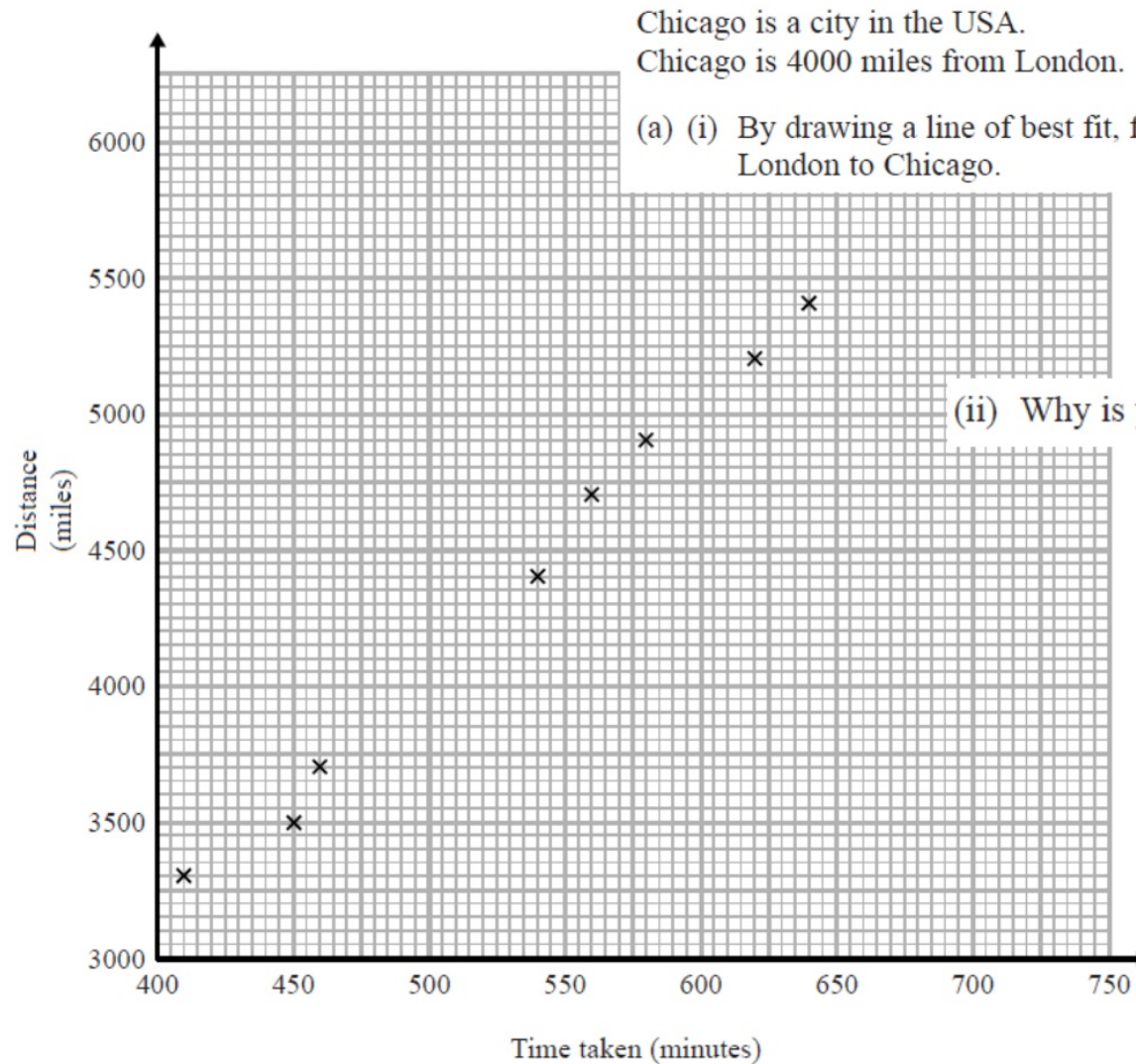
Plot their scores on the scatter diagram. [1]



19 Oliver records the distance from London to each of eight cities in the USA. He also records the time taken to fly from London to each of these cities.

Created by W Neill

The scatter graph shows this information.



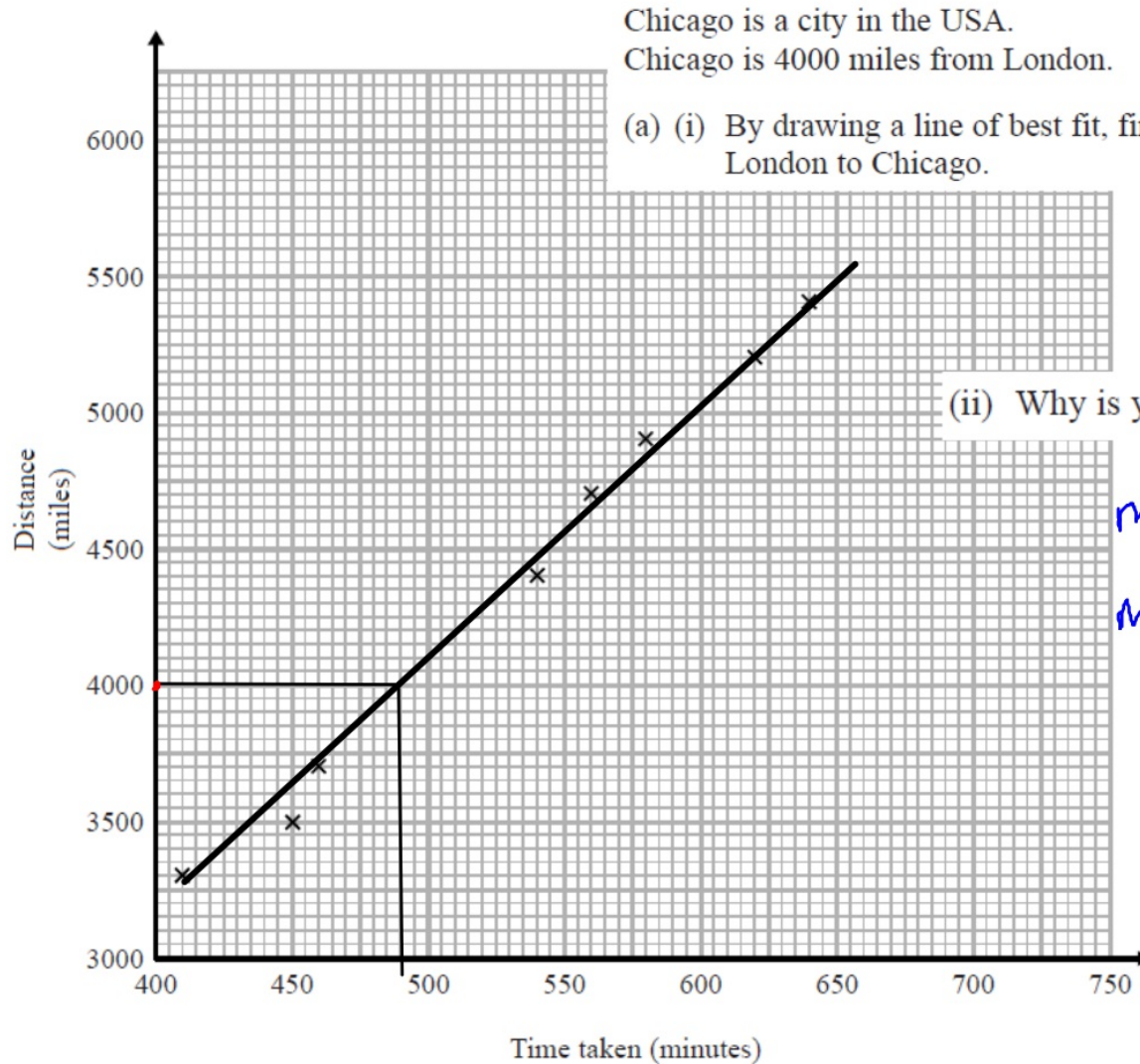
(a) (i) By drawing a line of best fit, find an estimate for the time taken to fly from London to Chicago.

(ii) Why is your answer to part (i) only an estimate?

1 Oliver records the distance from London to each of eight cities in the USA. He also records the time taken to fly from London to each of these cities.

Created by W Neill

The scatter graph shows this information.



(a) (i) By drawing a line of best fit, find an estimate for the time taken to fly from London to Chicago.

480 - 500 min ✓

490 min ✓

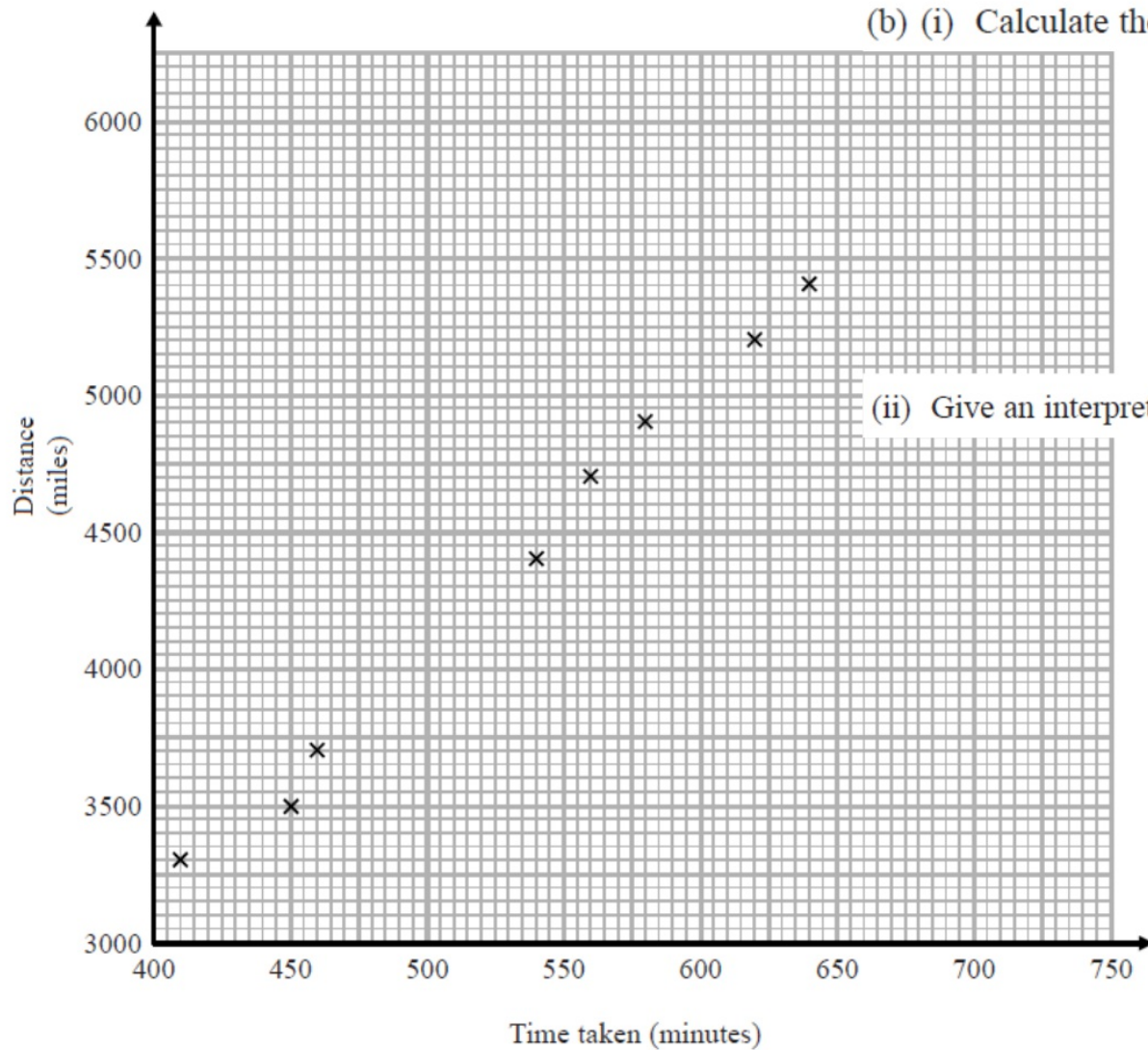
(ii) Why is your answer to part (i) only an estimate?

my line of best fit
may not be 100%
accurate

Edexcel

19 Oliver records the distance from London to each of eight cities in the USA. Created by W Neill
He also records the time taken to fly from London to each of these cities.

The scatter graph shows this information.



(b) (i) Calculate the gradient of your line of best fit.

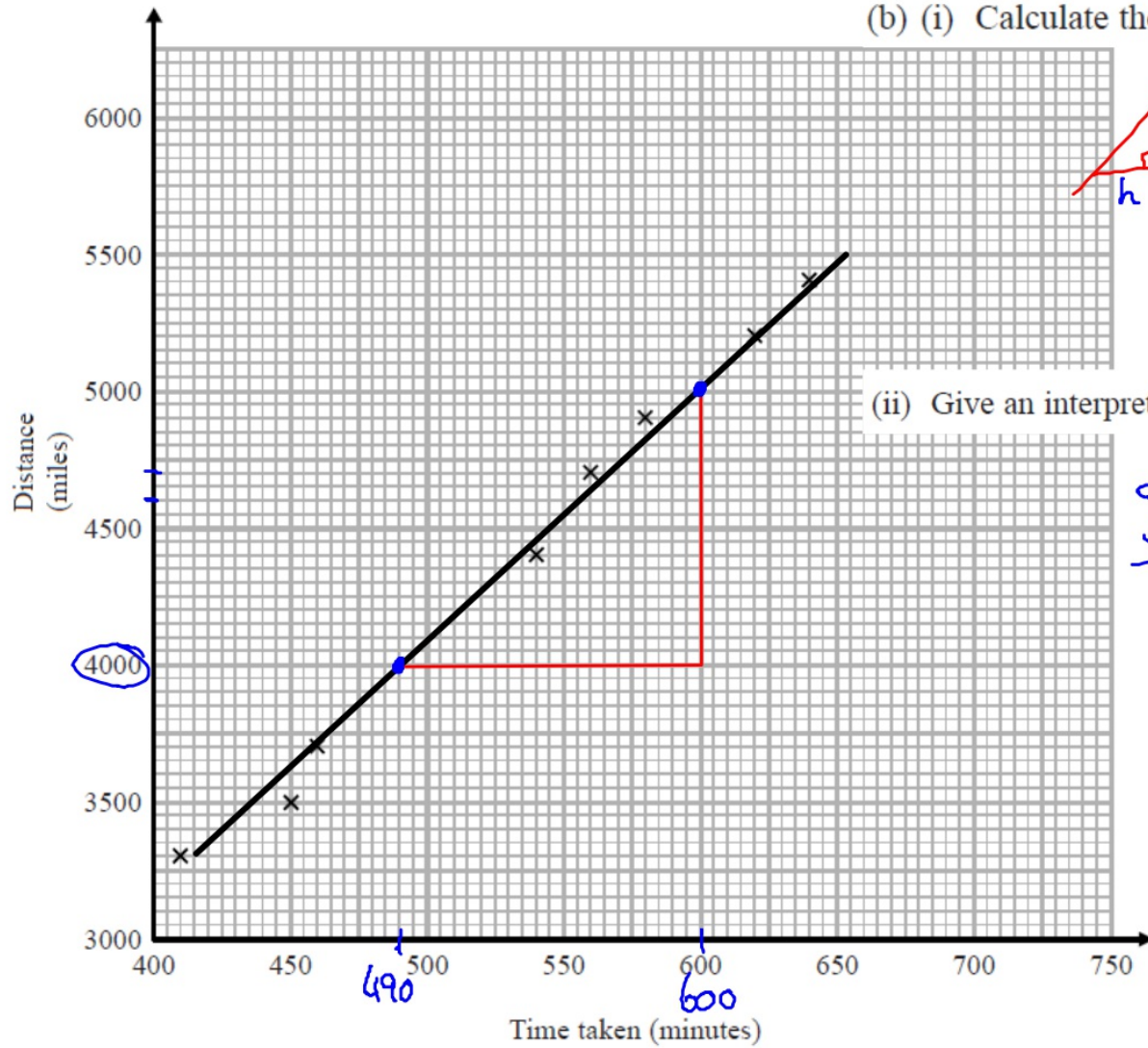
(ii) Give an interpretation of the gradient of your line of best fit.

1 Oliver records the distance from London to each of eight cities in the USA. He also records the time taken to fly from London to each of these cities.

Created by W Neill

The scatter graph shows this information.

9.4 - 9.8 ✓



(b) (i) Calculate the gradient of your line of best fit.

$$\frac{1000}{110}$$

$$= 9.09 \checkmark$$

(ii) Give an interpretation of the gradient of your line of best fit.

Speed
in miles per minute
✓

21 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.

Video created by W Neill

One of the points is an outlier.

(a) Write down the coordinates of this point.

(b) For all the other points write down the type of correlation.

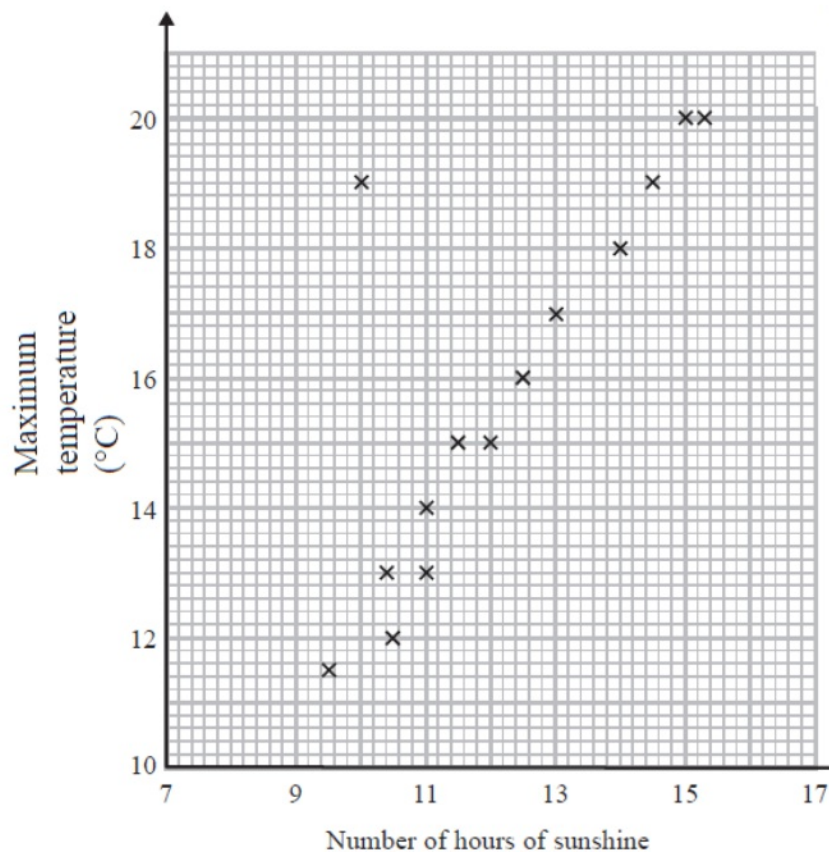
On the same day, in another British town, the maximum temperature was 16.4°C .

(c) Estimate the number of hours of sunshine in this town on this day.

A weatherman says,

“Temperatures are higher on days when there is more sunshine.”

(d) Does the scatter graph support what the weatherman says?
Give a reason for your answer.



100

(1)

21 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.

Video created by W Neill

One of the points is an outlier.

(a) Write down the coordinates of this point.

$(10, 19)$

(b) For all the other points write down the type of correlation.

positive

On the same day, in another British town, the maximum temperature was 16.4°C .

(c) Estimate the number of hours of sunshine in this town on this day.

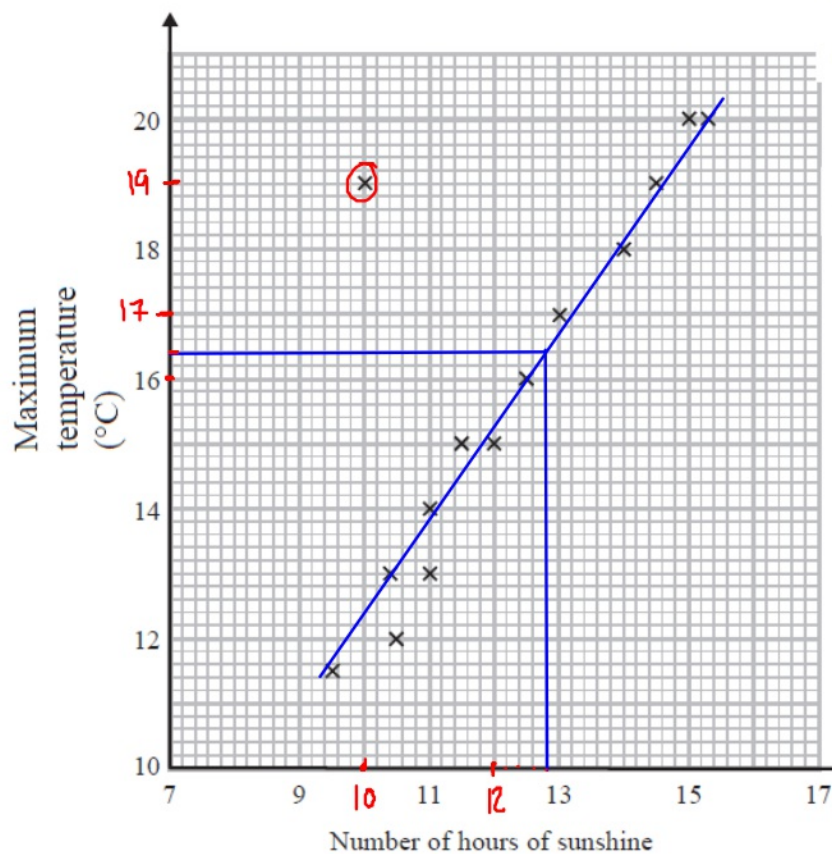
12-13hrs ✓ 12.8 hours

A weatherman says,

“Temperatures are higher on days when there is more sunshine.”

(d) Does the scatter graph support what the weatherman says?
Give a reason for your answer.

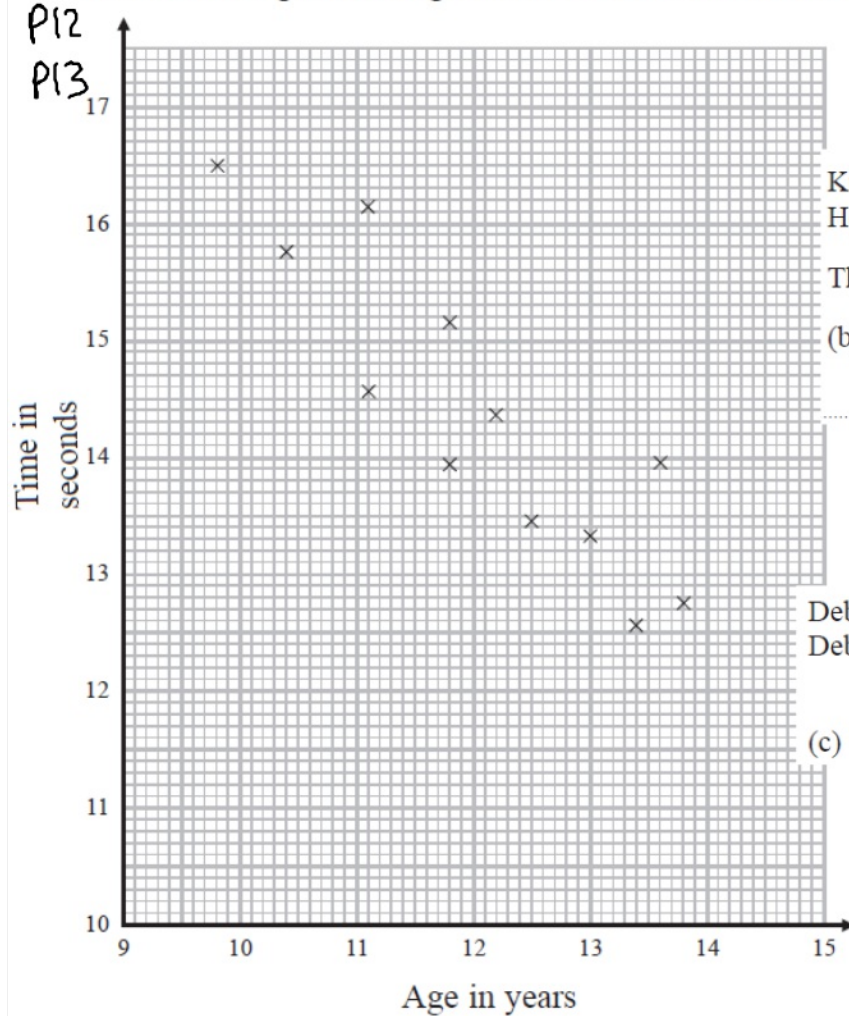
Yes, the graph has positive correlation
as hrs of sunshine increase, so does temp.



19 The scatter diagram shows information about 12 girls.

Video created by W Neill

It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

.....
(1)

Kristina is 11 years old.

Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

.....
Debbie is 15 years old.

Debbie says,

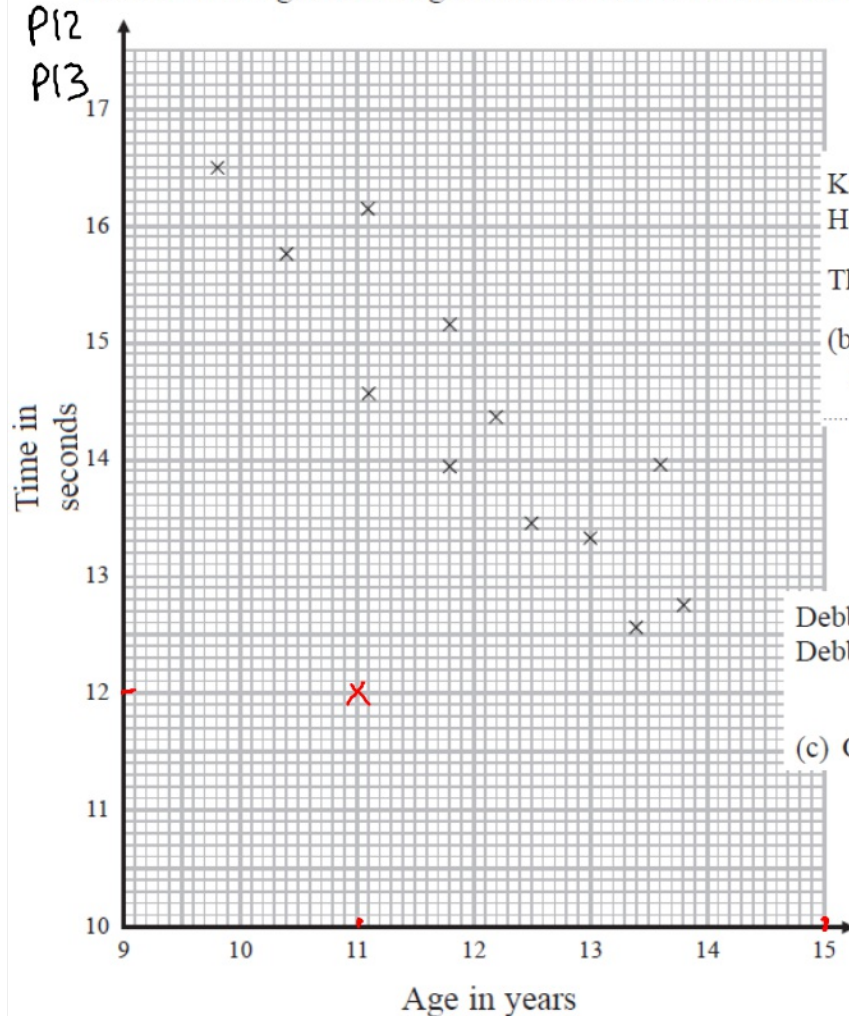
“The scatter diagram shows I should take less than 12 seconds to run 100 metres.”

(c) Comment on what Debbie says.

19 The scatter diagram shows information about 12 girls.

Video created by W Neill

It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

Negative

(1)

Kristina is 11 years old.

Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

That point is not following trend or it is too far away from other point

Debbie is 15 years old.

Debbie says,

"The scatter diagram shows I should take less than 12 seconds to run 100 metres."

(c) Comment on what Debbie says.

Debbie can't say this as there is not data for anyone of 15 yrs of age outside range of data.

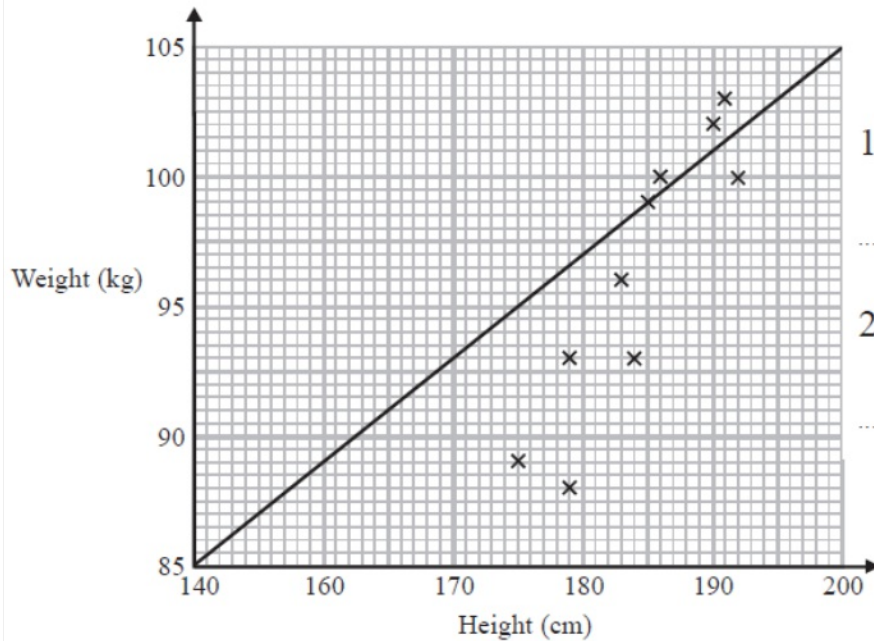
21 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players.

P12 He is asked to draw a scatter graph and a line of best fit for this information.

P13 Here is his answer.

Sean has plotted the points accurately.

Write down two things that are wrong with his answer.



1

2

2 marks)

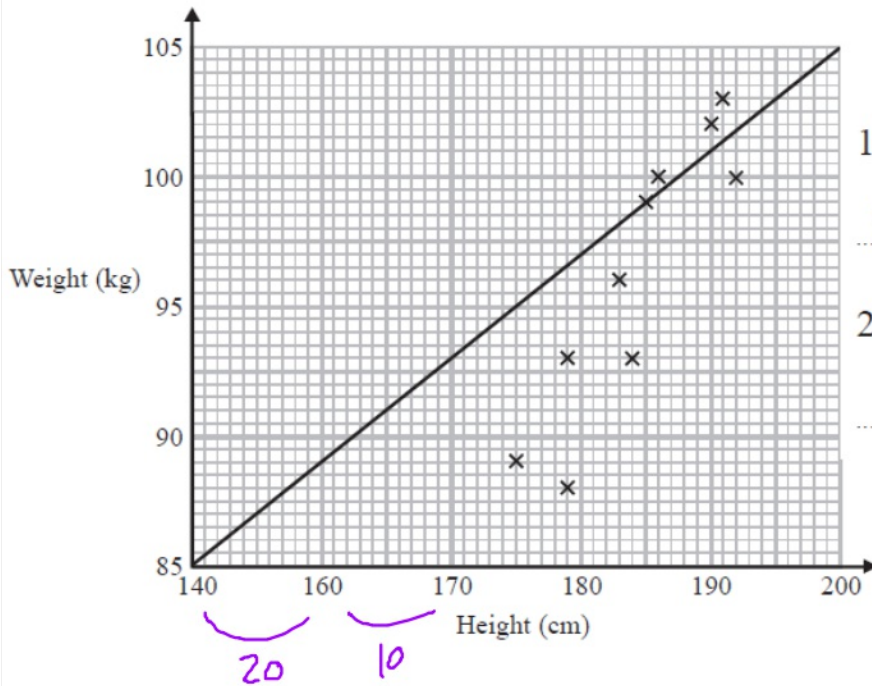
21 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players.

P12 He is asked to draw a scatter graph and a line of best fit for this information.

P13 Here is his answer.

Sean has plotted the points accurately.

Write down two things that are wrong with his answer.



- 1 LOBF is not accurate, it should be in the general direction of points
- 2 Scale on height axis is not going up in equal steps or its not linear. 2 marks)

AQA

12 Lee sells ice creams.

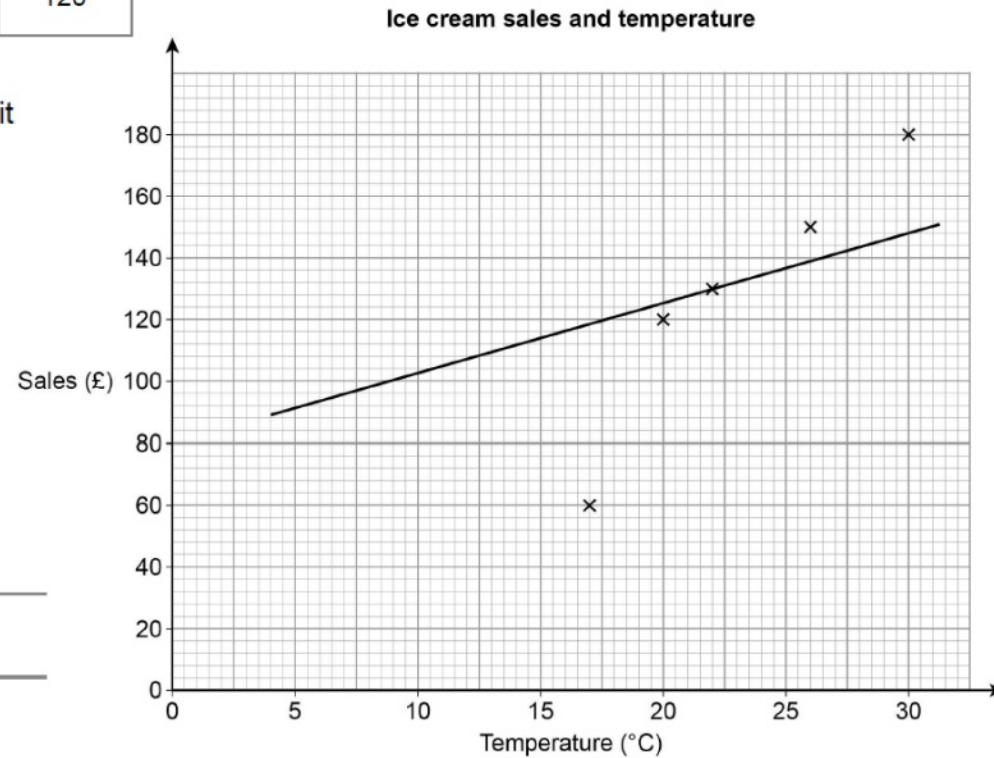
Video created by W Neill

The table shows the midday temperature and his sales for five days.

P12/P13

	Day 1	Day 2	Day 3	Day 4	Day 5
Temperature (°C)	30	26	17	22	20
Sales (£)	180	150	80	130	120

12 (a) He draws this scatter graph and line of best fit



Write down **two** mistakes he has made. **[2 marks]**

Mistake 1 _____

Mistake 2 _____

12 Lee sells ice creams.

Video created by W Neill

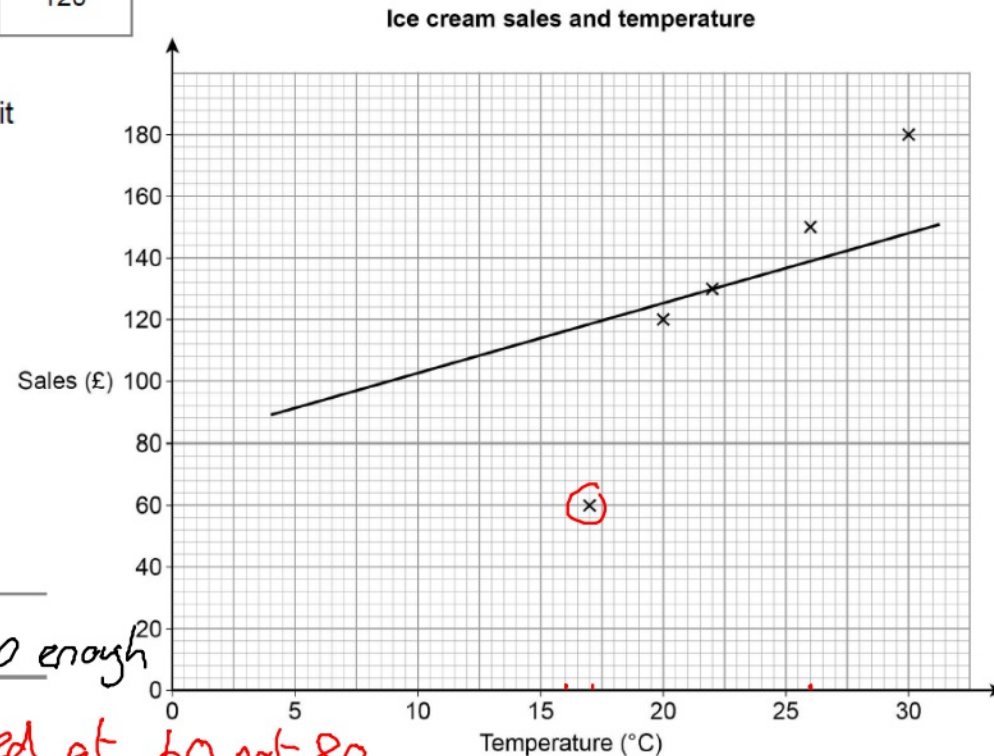
The table shows the midday temperature and his sales for five days.

P12/P13

	Day 1	Day 2	Day 3	Day 4	Day 5
Temperature (°C)	30	26	17	22	20
Sales (£)	180	150	80	130	120

Sales =

12 (a) He draws this scatter graph and line of best fit



Write down two mistakes he has made. [2 marks]

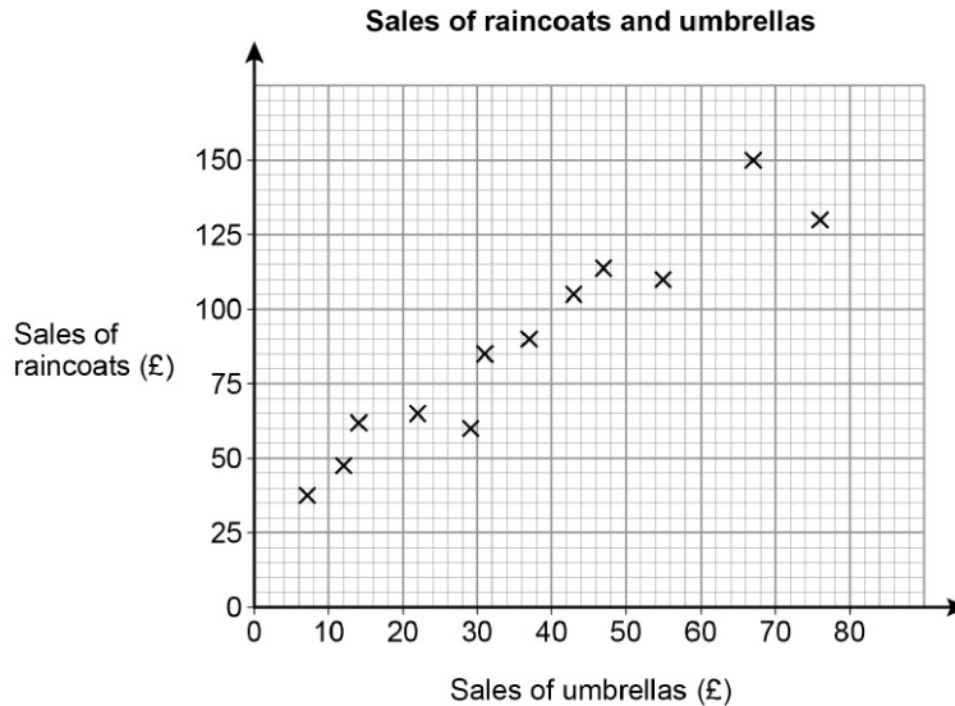
Mistake 1 LOBF is not going in correct direction, not steep enough

Mistake 2 Day 3 is incorrect, plotted at 60 not 80.

18 A shop sells raincoats and umbrellas.

Video created by W Neill

The scatter graph shows the monthly sales for 12 months.



18 (b) The manager expects the sales of umbrellas next month to be £60

Draw a line of best fit to estimate the sales of raincoats next month.

[3 marks]

Answer £ _____

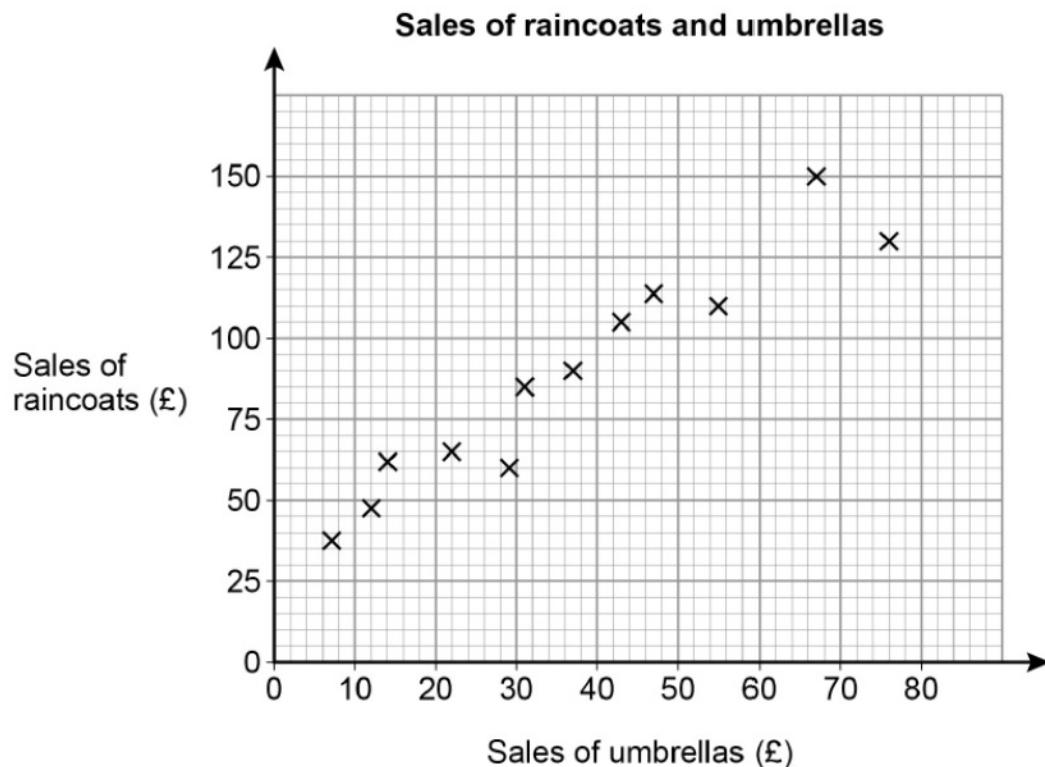
18 A shop sells raincoats and umbrellas.

Video created by W Neill

The scatter graph shows the monthly sales for 12 months.

P12

P13



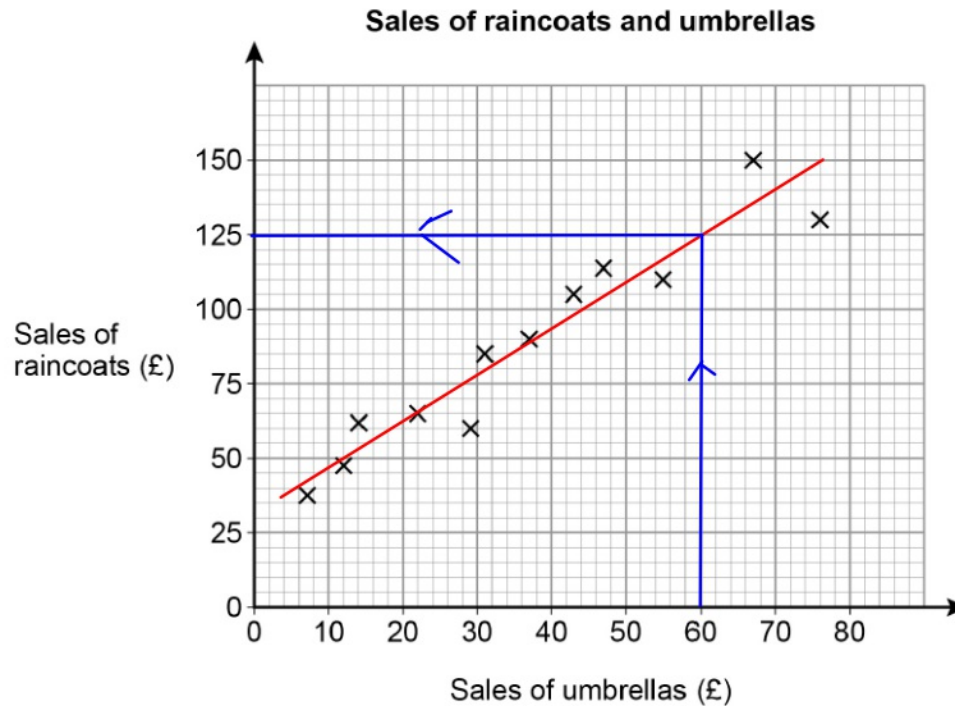
18 (a) Write down the type of correlation shown by the graph. [1 mark]

Answer Positive

18 A shop sells raincoats and umbrellas.

Video created by W Neill

The scatter graph shows the monthly sales for 12 months.



18 (b) The manager expects the sales of umbrellas next month to be £60

Draw a line of best fit to estimate the sales of raincoats next month.

[3 marks]

Answer £ £125