Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Scatter diagrams and correlation

Time allowed: 45 minutes

Subject code **0580**

Mathematics

Questions from Paper 1, Paper 2 and Paper 3

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 37

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 37 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

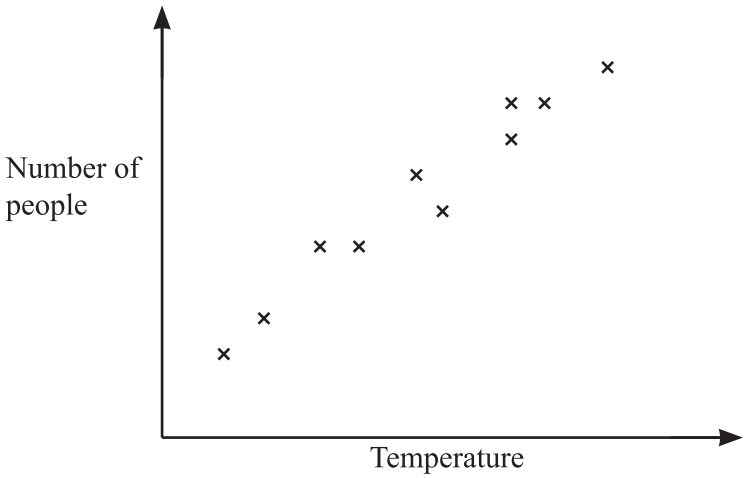
Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 Jill records the temperature and the number of people on a beach for each of ten days.
The results are shown in the scatter diagram.



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

..... [1]

(b) Describe the relationship between the temperature and the number of people on the beach.

.....

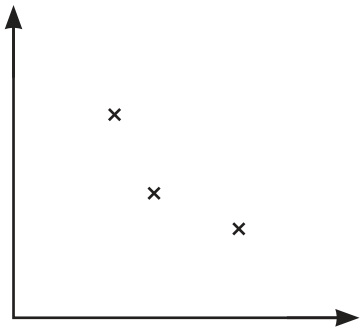
..... [1]

(a) Scatter graphs and correlation (b) Scatter graphs and correlation Click for more variations

1(a)	positive	**1**	
1(b)	the higher the temperature the higher the number of people oe	**1**	

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2 **(a)** Henrik draws this scatter diagram.

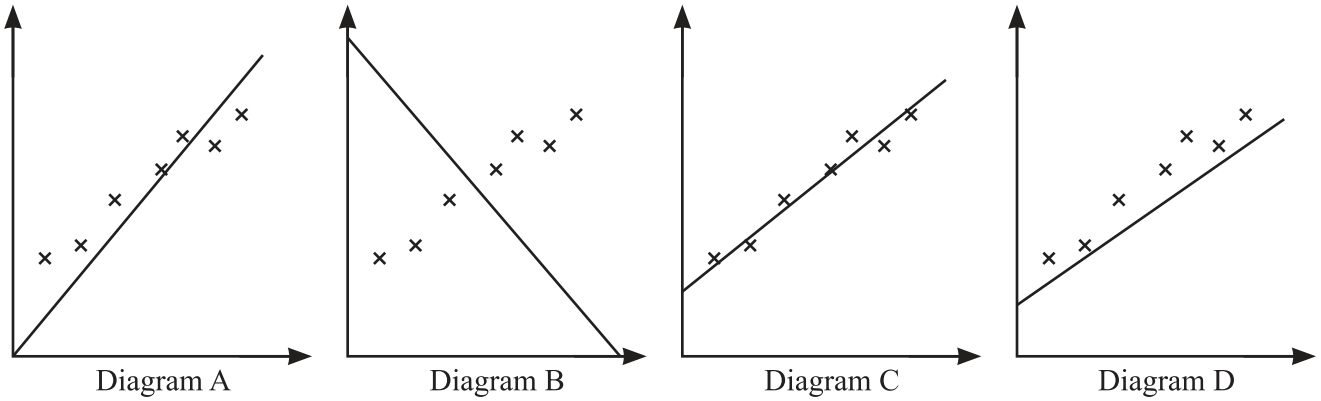


Put a ring around the **one** correct statement about this scatter diagram.

It shows no correlation.	It is not possible to tell if there is correlation as there are not enough points.	It shows negative correlation.	It shows positive correlation.

[1]

(b) Each of the four scatter diagrams shows the same set of data.
A line has been drawn on each diagram.



Complete the statement.

The line in Diagram ..... is the most appropriate line of best fit. [1]

(a) Scatter graphs and correlation (b) Lines of best fit Click for more variations

2(a)	It is not possible to tell if there is correlation as there are not enough points.	**1**	
2(b)	C	**1**	

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3 Scatter diagrams are drawn to compare sets of data from each team in a hockey league during a year.

Write down the type of correlation you would expect to see when the data recorded is

(a) the number of games won and the total points scored,

Answer(a) ..... [1]

(b) the number of games drawn and the average height of the team,

Answer(b) ..... [1]

(c) the number of goals scored and the final position in the league.

Answer(c) ..... [1]

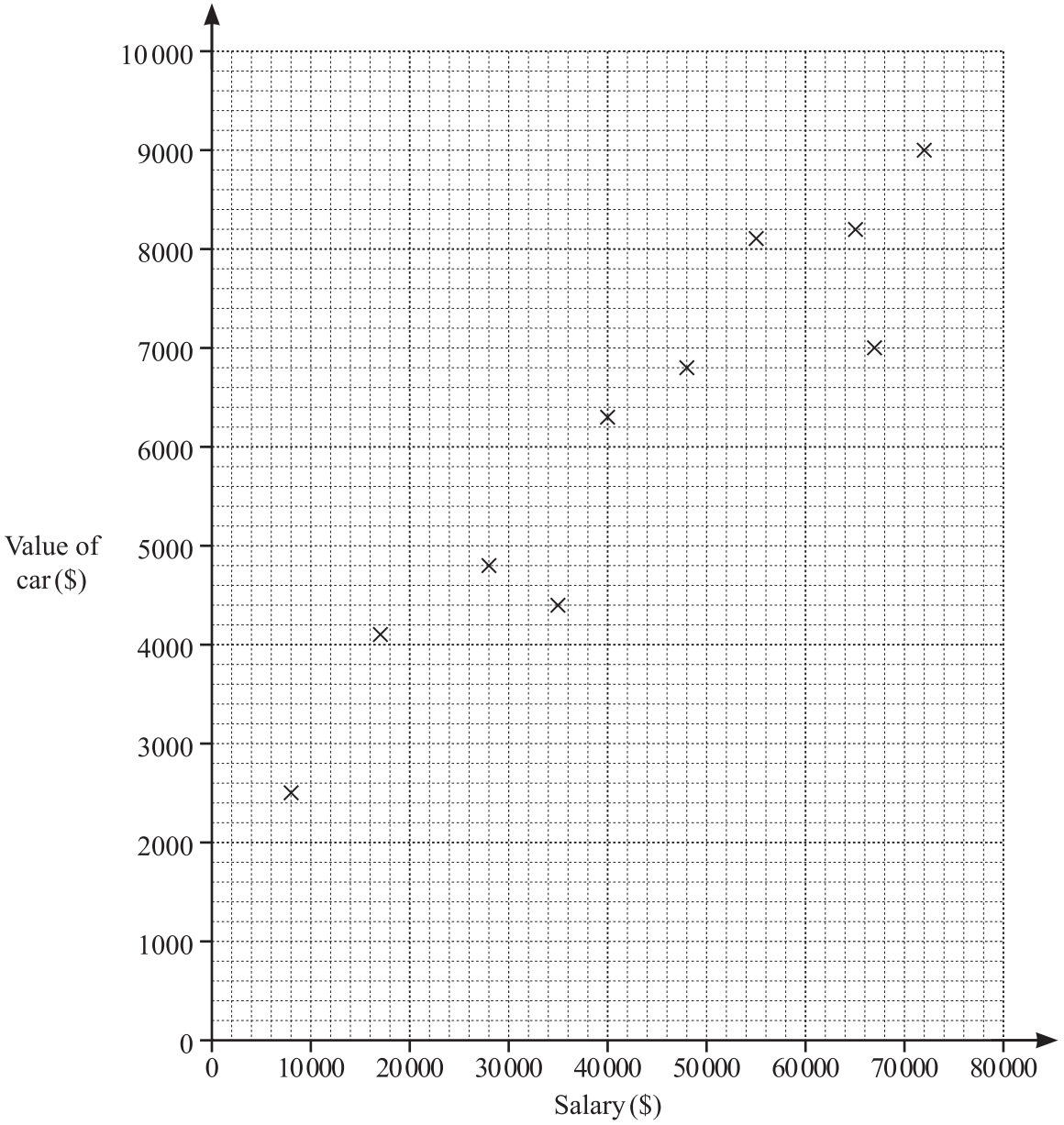
(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Scatter graphs and correlation

Click for more variations

3	**(a)**	Positive	**1**	
	(b)	Zero oe	**1**	
	(c)	Negative	**1**	

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4 For each of 10 people working in an office, the scatter diagram shows their salary and the value of their car.



(a) One of these people has a salary of $28 000.

Find the value of their car.

$ ..... [1]

(b) Another person starts to work in the office.
Their salary is $54 000 and the value of their car is $6100.

Plot this information on the scatter diagram. [1]

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

..... [1]

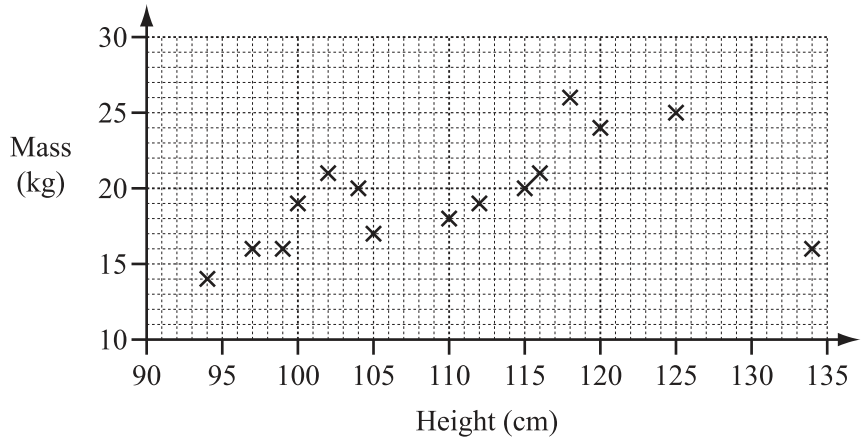
(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Scatter graphs and correlation

Click for more variations

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4(a)	4800	**1**	
4(b)	Point plotted at (54 000, 6100)	**1**	
4(c)	Positive	**1**	

5 The scatter diagram shows the heights and masses of some five-year-old boys.



(a) The height of one of the boys is likely to have been recorded incorrectly.

Write down the mass of this boy.

Answer(a) ..... kg [1]

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

Answer(b) ..... [1]

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

(ii) Another boy had a height of 108 cm.
His mass was not recorded.

Use your line of best fit to estimate the boy's mass.

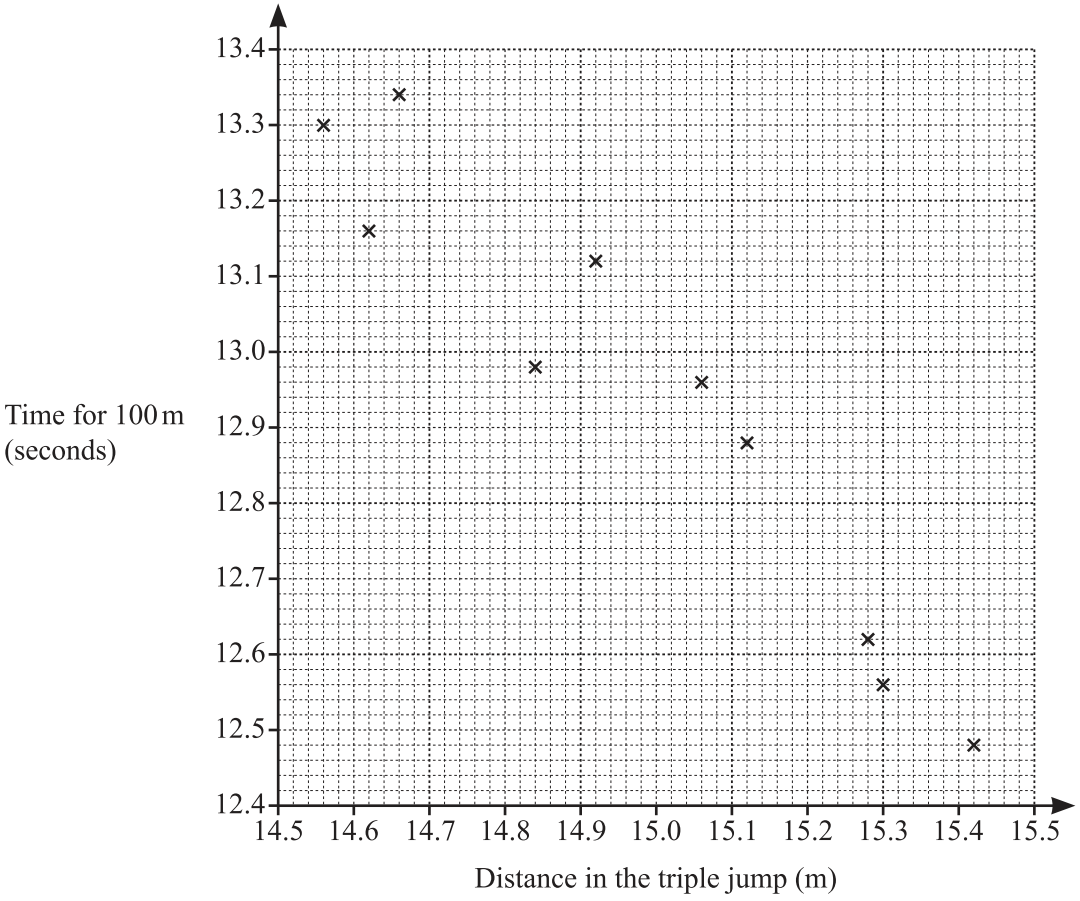
Answer(c)(ii) ..... kg [1]

(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c)(i) Lines of best fit (c)(ii) Lines of best fit Click for more variations

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5	**(a)**	16 [kg]	**1**	
	(b)	Positive	**1**	
	(c) **(i)**	Ruled line of best fit	**1**	
	(ii)	Correct reading from ruled line	**1FT**	

6 Ten athletes compete in both the 100 metre race and the triple jump.
Their results are shown in the scatter diagram.



(a) One of these athletes jumps 15.12 m in the triple jump.

Write down his time for the 100 metre race.

..... s [1]

(b) The values for two other athletes are shown in the table.

Distance in the triple jump (m)	14.74	15.2
Time for 100 m (seconds)	13.2	12.76

On the scatter diagram, plot these points. [1]

(c) On the scatter diagram, draw a line of best fit. [1]

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

..... [1]

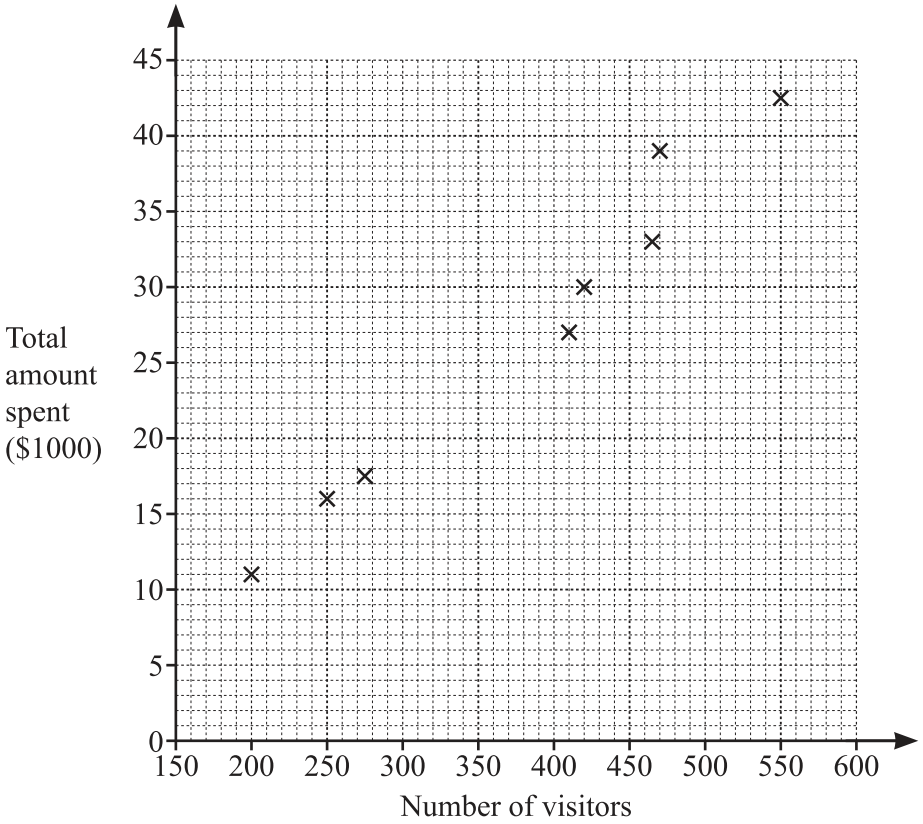
(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Lines of best fit
(d) Scatter graphs and correlation Click for more variations

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6(a)	12.88	**1**	
6(b)	two correct points plotted	**1**	
6(c)	ruled line of best fit	**1**	
6(d)	negative	**1**	

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7 The scatter diagram shows the number of visitors and the total amount spent, in thousands of dollars, at a zoo on each of eight days.



(a) On one of the eight days there are 410 visitors.

Find the total amount spent by visitors during this day.

$ ..... [1]

(b) Information for the ninth day is shown in the table.

Number of visitors	175
Total amount spent ($1000)	9

Plot this information on the scatter diagram. [1]

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

(d) On the tenth day the total amount spent is $22 000.

Estimate the number of visitors on this day.

..... [1]

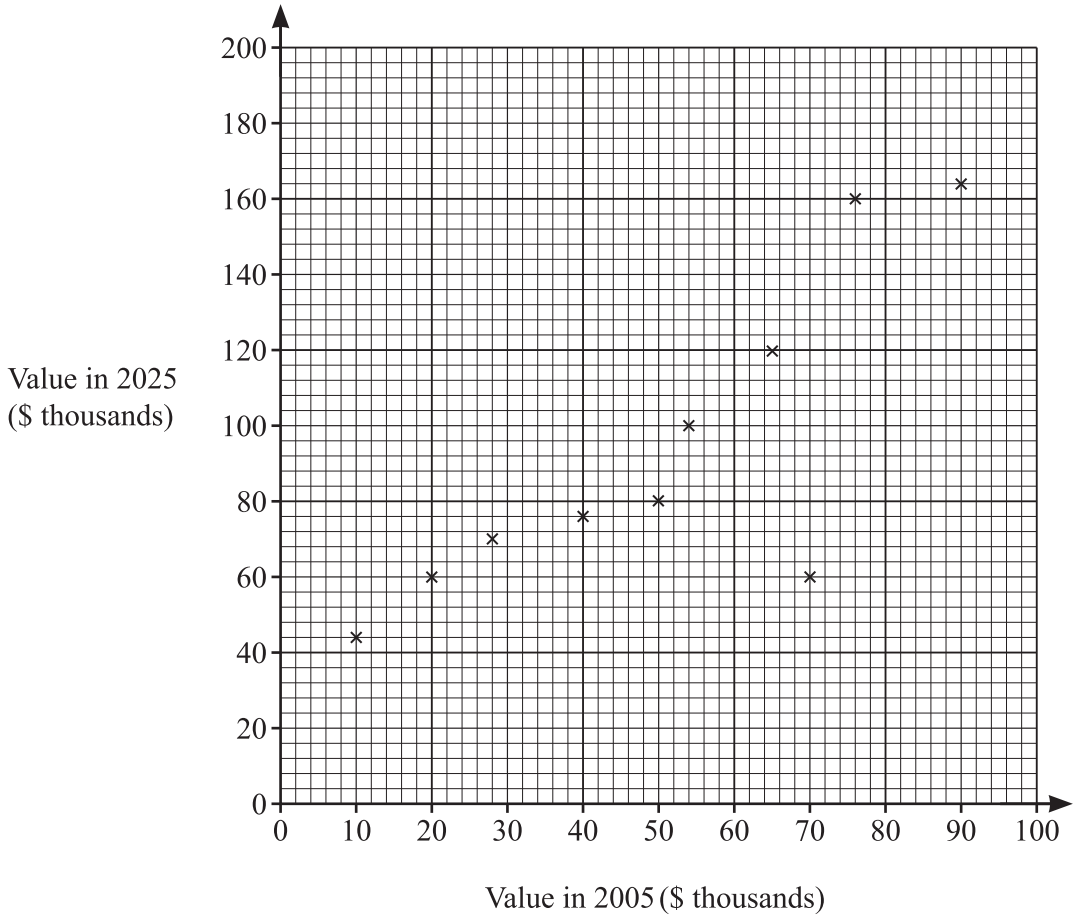
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(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Lines of best fit (d) Lines of best fit

Click for more variations

7(a)	27000	**1**	
7(b)	Point plotted at (175, 9)	**1**	
7(c)	Correct single ruled line of best fit	**1**	
7(d)	300 to 350	**1**	**FT** *their* straight line of best fit provided positive gradient

8 The scatter diagram shows the value, in thousands of dollars, of ten paintings in 2005 and the value of the same paintings in 2025.



(a) The value of one of the paintings in 2025 is less than expected.

Draw a circle around the point that represents this painting. [1]

(b) Another painting had a value of $75000 in 2005 and $140000 in 2025.

On the scatter diagram, plot this point. [1]

(c) Write down the number of paintings with a value of less than $53000 in 2005.

..... [1]

(d) What type of correlation is shown on the scatter diagram?

..... [1]

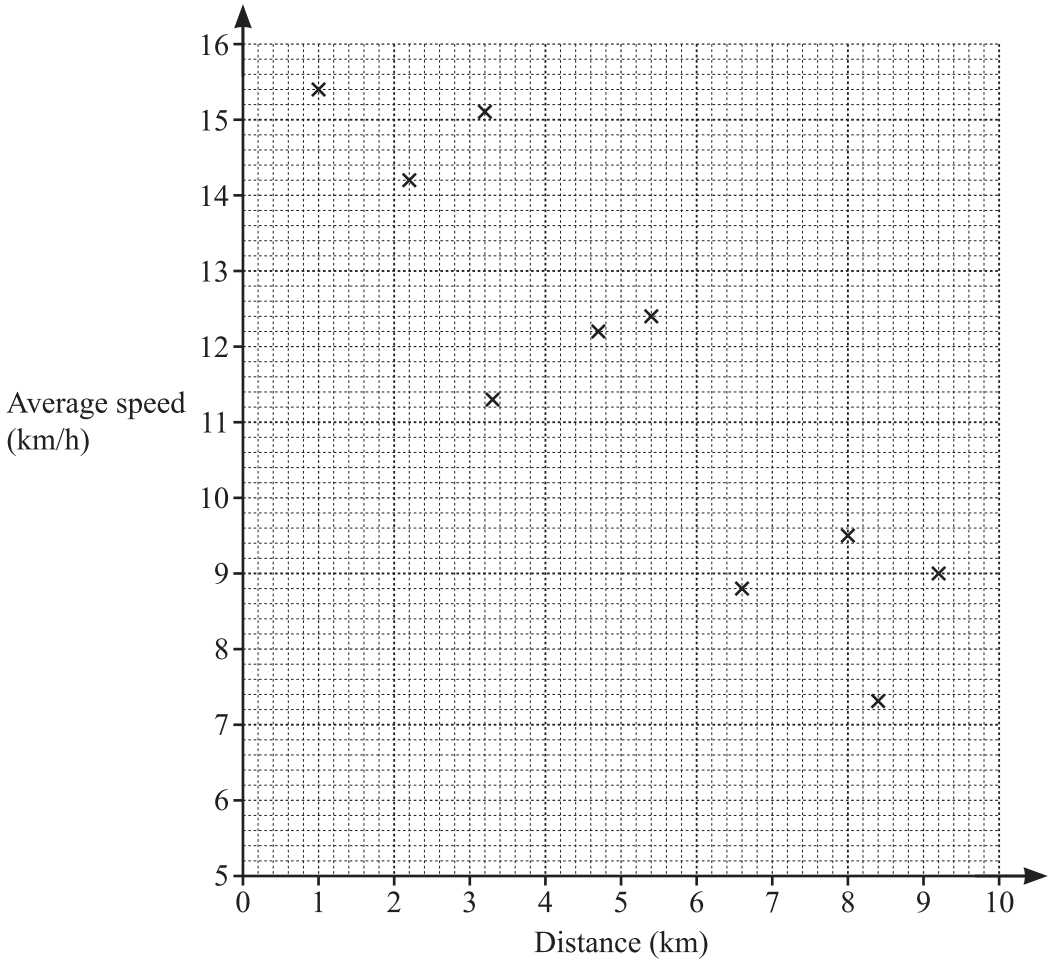
(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Scatter graphs and correlation (d) Scatter graphs and correlation Click for more variations

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8(a)	A ring around the point (70, 60)	**1**	
8(b)	Point correctly plotted at (75, 140)	**1**	
8(c)	5	**1**	
8(d)	Positive	**1**	

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9 Aisha records the distance she runs and her average speed.
The results are shown in the scatter diagram.



(a) The table shows the results of four more runs.

Distance (km)	4.2	5.7	7.1	8.8
Average speed (km/h)	13.4	11.8	9.8	8.3

On the scatter diagram, plot these points. [2]

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

..... [1]

(c) On the scatter diagram, draw a line of best fit. [1]

(d) Use your line of best fit to estimate her average speed when she runs a distance of 6 km.

..... km/h [1]

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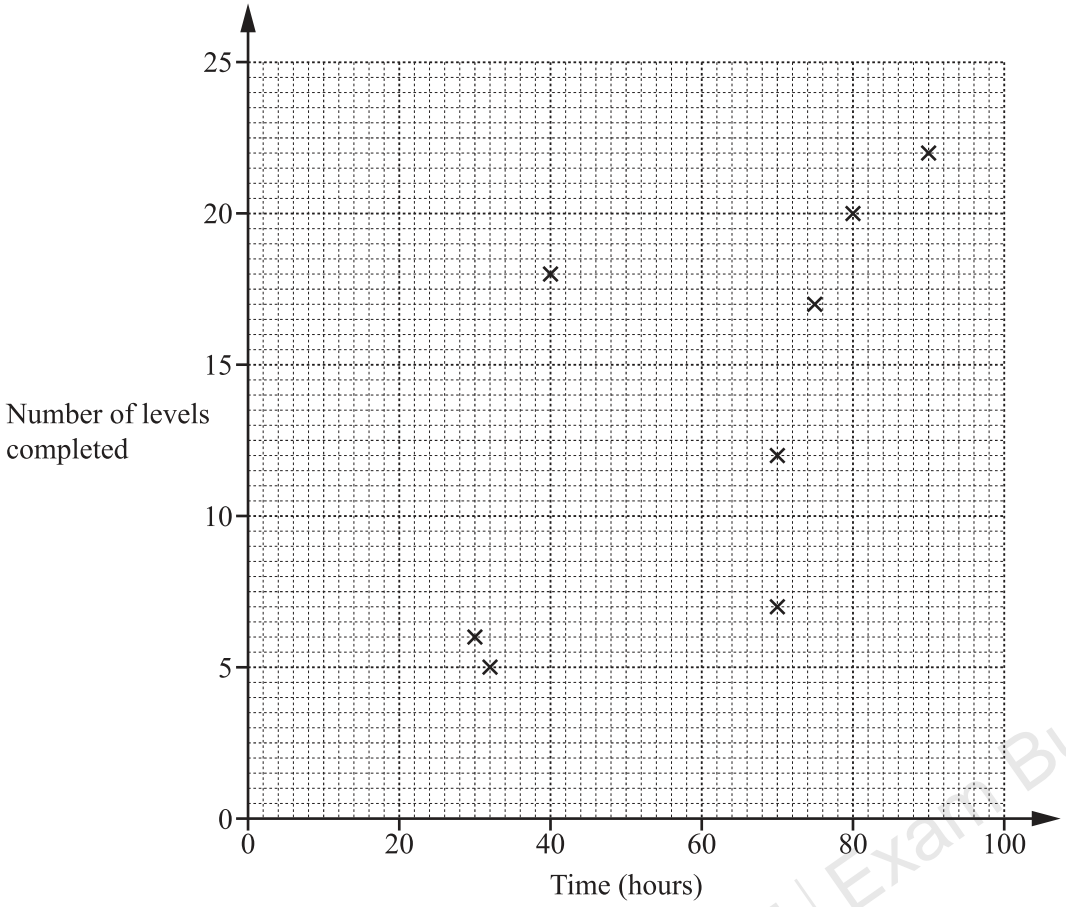
(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Lines of best fit (d) Lines of best fit
Click for more variations

9(a)	4 points correctly plotted	**2**	**B1** for 2 or 3 points correctly plotted
9(b)	Negative	**1**	
9(c)	Correct ruled line of best fit	**1**	
9(d)	10 to 12	**1**	**FT** *their* straight line of best fit

10 Lucy asked 12 people how many hours they each spent playing a computer game and the number of levels they each completed in one month.

The results are shown in the table.

Time spent playing (hours)	90	32	70	75	30	70	40	80	40	65	50	32
Number of levels completed	22	5	12	17	6	7	18	20	8	15	11	9



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(a) Complete the scatter diagram.
The first eight points have been plotted for you. [2]

(b) One person completes more levels per hour than any of the others.

On the scatter diagram, put a ring around the point for this person. [1]

(c) What type of correlation does this scatter diagram show?

..... [1]

(d) On the scatter diagram, draw a line of best fit. [1]

(e) Another person, Monika, completed 19 levels but forgot to record the time spent playing.

Use your line of best fit to estimate the number of hours that Monika spent playing.

..... hours [1]

(a) Scatter graphs and correlation (b) Scatter graphs and correlation (c) Scatter graphs and correlation (d) Lines of best fit (e) Lines of best fit Click for more variations

10(a)	4 points correctly plotted	**2**	**B1** for 2 or 3 points correctly plotted
10(b)	(40, 18) indicated	**1**	
10(c)	Positive	**1**	
10(d)	Correct ruled line	**1**	
10(e)	76 to 80	**1**	**FT** their ruled line of best fit

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