Scatter Diagrams & Lines of Best Fit

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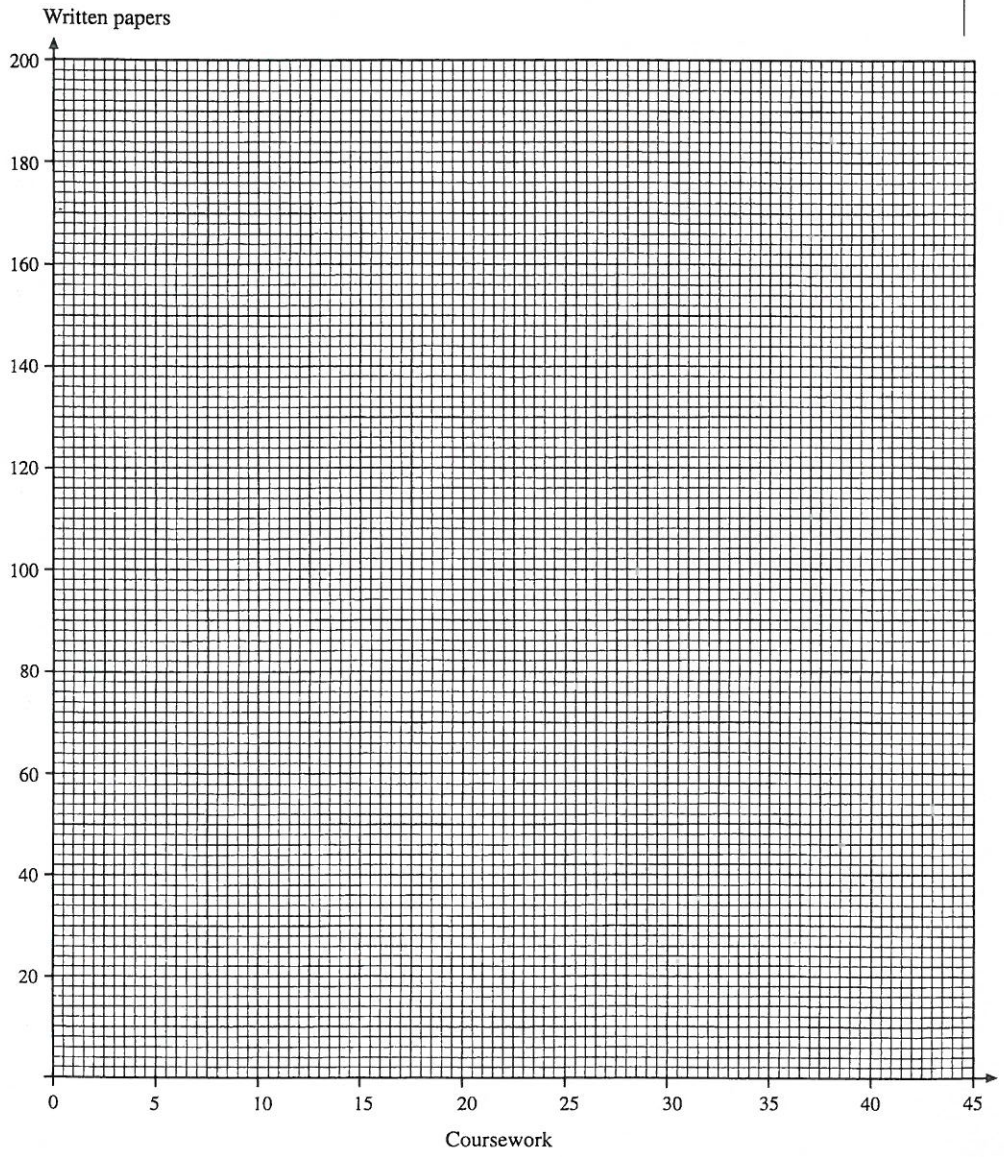
(1) The assessment for a mathematics examination consists of two parts, namely, coursework marked out of 50, and written papers, marked out of 200. The marks for ten pupils are given in the table.

Coursework mark	5	30	15	44	9	22	39	26	33	27
Written papers mark	22	120	64	186	17	76	143	112	148	92

(a) On the graph paper below, draw a scatter diagram to display these results. [2]



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

.....

[1]

(c) The mean coursework mark for the pupils is 25 and the mean mark of the written papers is 98.
Draw a line of best fit on your scatter diagram. [2]

(d) Another pupil completed the coursework and was given a mark of 19, but was absent from the written papers examination. Use your line of best fit to estimate the mark on the written papers for this pupil.

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[1]

Turn over.

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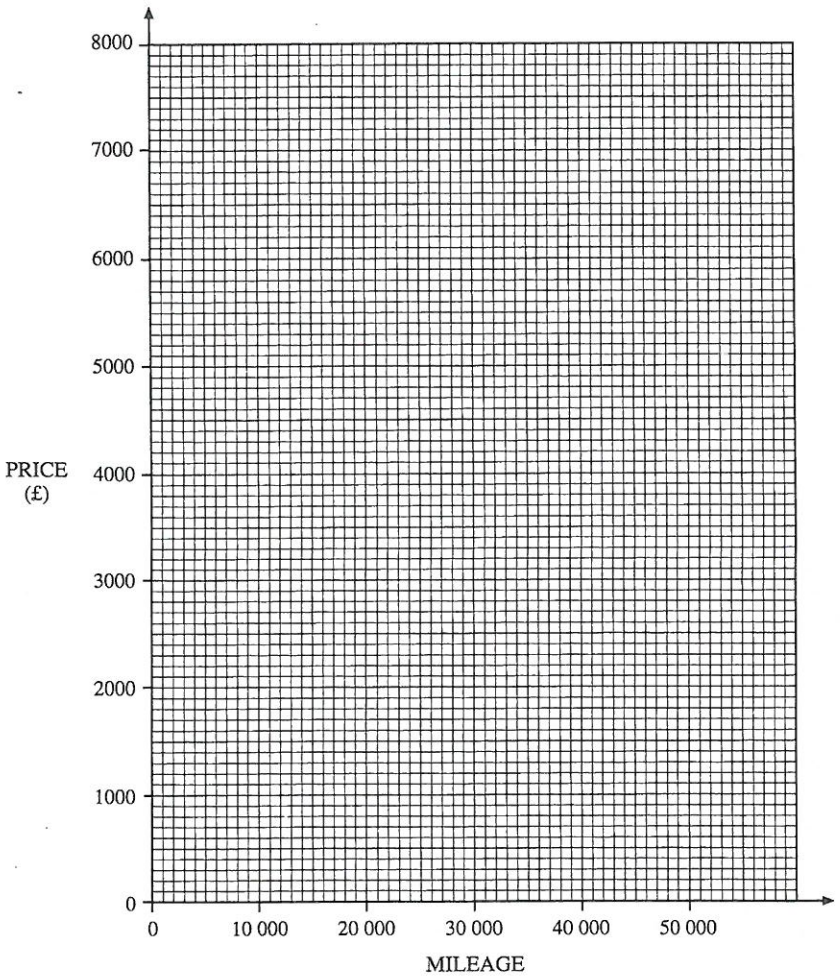
2

The prices and mileages of second hand cars of a particular make and model were investigated. The table shows the results.

Mileage	8000	15000	25000	22000	34000	2000	40000	46000
Price (£)	7300	5000	3900	5500	4000	6000	2000	2300

(a) On the graph paper below, draw a scatter diagram to display these results.



[2]

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

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[1]

(c) The mean mileage of the cars is 24000 miles and the mean of the prices of the second hand cars is £4500.
Draw a line of best fit on your scatter diagram. [2]

(d) Estimate the price of a second hand car that had a mileage of 30000.

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[1]

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(3) The masses of 8 people who went on a diet were measured before and after the diet. The results were as shown in the following table.

Mass before the diet (kg)	130	50	75	93	112	68	61	83
Mass after the diet (kg)	112	51	61	83	92	60	49	68

(a) On the graph paper opposite, draw a scatter diagram to display these results. [2]

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

.....

[1]

(c) The mean mass of the 8 people before the diet was 84kg and after the diet it was 72kg. Use this information to draw a line of best fit on your scatter diagram. [2]

(d) Use your line of best fit to estimate the mass after the diet for a person whose mass was 95kg before going on the diet.

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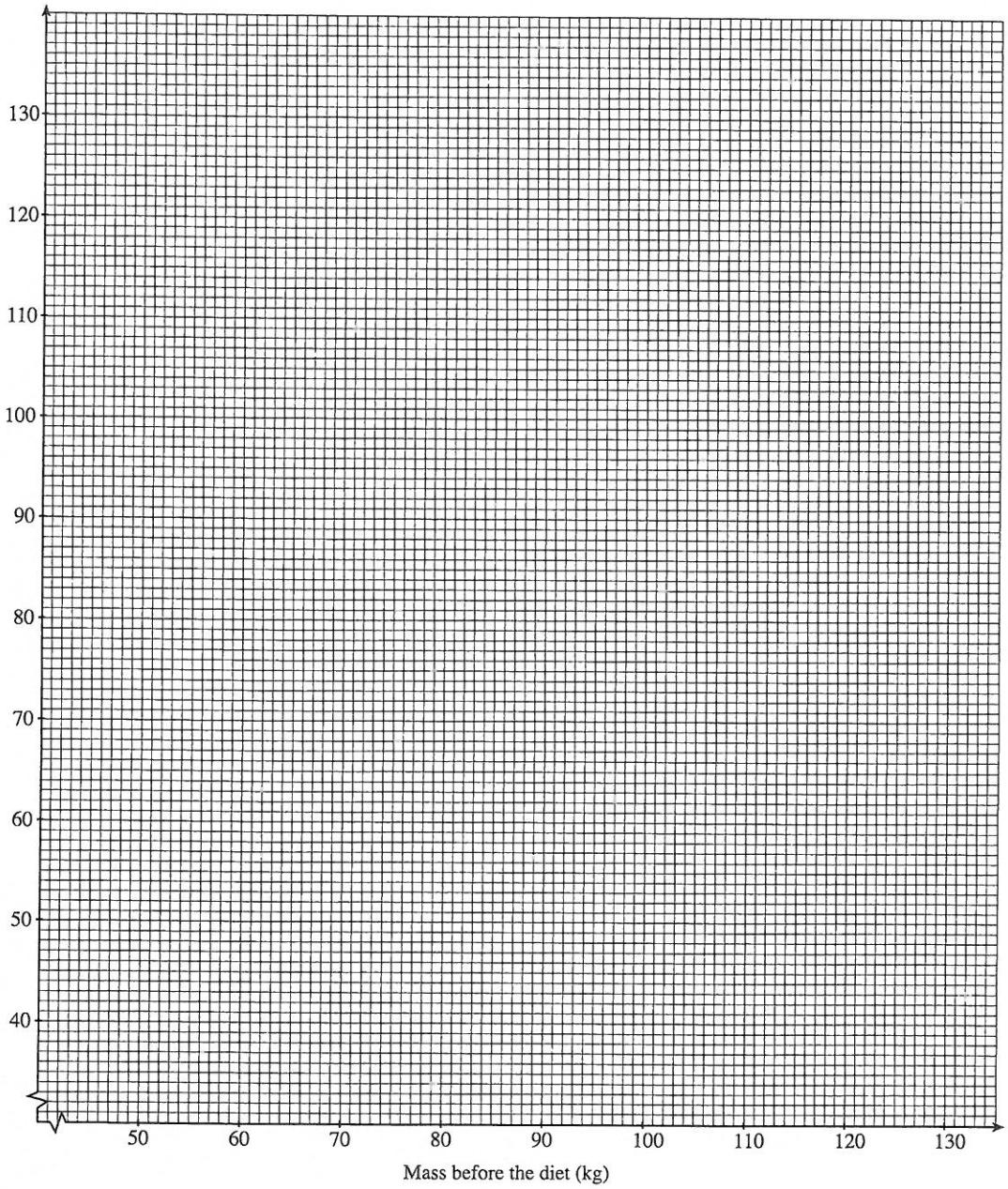
[1]

For use with Question 15

Mass after the diet (kg)



Turn over.

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(4)

The engine capacity, measured in cubic centimetres (c.c.) and the time, in seconds, taken to accelerate to a certain speed, for each of 8 cars, are given in the table.

Engine capacity (c.c.)	1000	1100	1200	1300	1400	1600	1800	2000
Acceleration time (s)	15·4	14·0	13·4	11·4	11·8	9·1	6·9	6·0

(a) On the graph paper opposite, draw a scatter diagram to display these results. [2]

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

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[1]

(c) The mean engine capacity is 1425 c.c. and the mean acceleration time is 11 seconds. Draw a line of best fit on your scatter diagram. [2]

(d) Use your line of best fit to estimate the acceleration time for a car with an engine capacity of 1750 c.c.

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[1]

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For use with question 13