In a science lesson Jessica hangs some weights on an elastic band and measures the distances between the weights and the workbench. The table below shows her results.

| Weight (g) | 60 | 110 | 30 | 80 | 60 | 100 | 90 | 120 | 40 | 110 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Distance between <br> weight and <br> workbench (cm) | 12 | 6 | 16 | 10 | 14 | 9 | 5 | 7 | 13 | 8 |

(a) On the grid below, draw a scatter diagram to show these results.

(a) Draw the line of best fit on the scatter diagram.
(b) Jeremy had wired a plug 5 times. Estimate how long it will take him to wire one plug.

A psychologist asks some people how many times they have wired a plug. Each person is then asked to wire a plug and the time taken is recorded. The mean number of times people have wired a plug is 6 . The mean time taken to wire a plug is 10 minutes.
The scatter diagram below shows the number of times a person has wired a plug and the time taken to wire a plug for each of 10 people.


Number of times a person has wired a plug
(b) The mean of the weights is 80 g . Calculate the mean distance of the weights from the workbench.
(c) Draw the line of best fit on your scatter diagram.
(d) Which type of correlation does your scatter diagram show?

| 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.

Written papers

(b) What type of correlation does your scatter diagram show?
(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.
(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 estimqte the mark on the written papers for this pupil.

c) The mean marks for the French and German tests are 40 and 33 respectively Draw the line of best fit on your scatter diagram.
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$\qquad$
(d) Jill scored 45 on her French test, but was absent for the German test. Use your tine to estimate the mark she would have obtained in the German test

Adrian, Neville and Bobby invest $£ 1800, £ 3700$ and $£ 2500$ respectively in a business venture which makes them a profit of $£ 1600$. They share the profit in proportion to how much they each invested. Calculate how much each of them gets.
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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) | $15 \cdot 4$ | $14 \cdot 0$ | $13 \cdot 4$ | $11 \cdot 4$ | 11.8 | $9 \cdot 1$ | 6.9 | 6.0 |

(a) On the graph paper opposite, draw a scatter diagram to display these results.
(b) What type of correlation does your scatter diagram show?
(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.
(d) Use your line of best fit to estimate the acceleration time for a car with an engine capacity of 1750 c.c.


