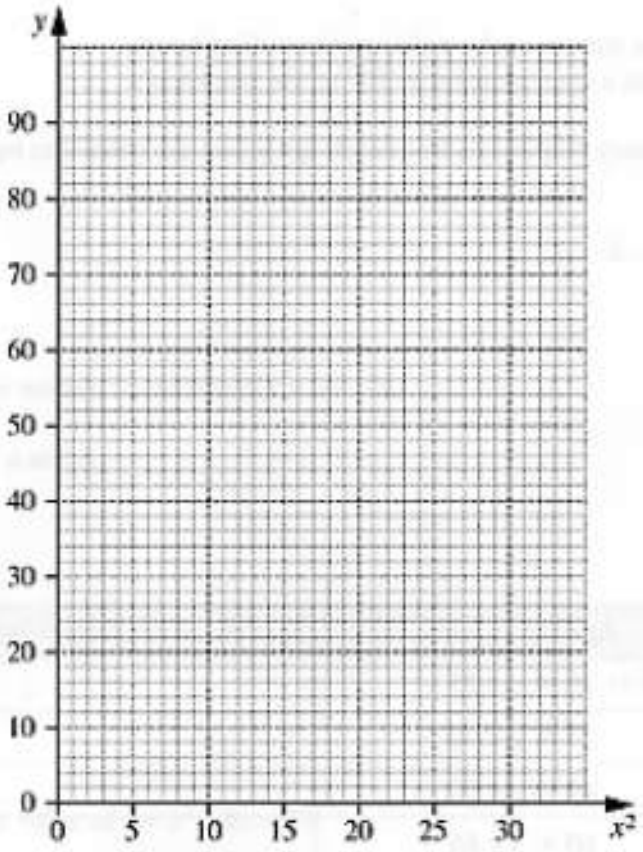
7 The table shows the values of x and y recorded during an experiment.

x	1	2	3	4	5
y	14	21	37	57	87
x^2					

(a) Plot the graph of y against x^2 and draw a line of best fit.



[2]

(b) Use your graph to find an equation that approximately connects y and x^2.

(b) .....[3]

5

8 The table shows the age distribution of employees in a large factory.

Age in years (y)	Number of Employees
$16 \leqslant y < 25$	300
$25 \leqslant y < 40$	447
$40 \leqslant y < 60$	375
$60 \leqslant y < 65$	228
Total	1350

The company directors want to make a change in working hours.
They decide to send out a questionnaire to 100 of the employees.

(a) Calculate how many employees from each age group are needed to make a stratified sample.

Age in years (y)	Number of employees in sample
$16 \leqslant y < 25$	
$25 \leqslant y < 40$	
$40 \leqslant y < 60$	
$60 \leqslant y < 65$	
Total	100

[3]

(b) State **one** advantage of using a stratified sample rather than a simple random sample.

.....

.....[1]

[4]

9 A sum of money invested on March 1st 1995 has increased by 4·5% each year.
On March 1st 2005 the investment was worth £13 200·24.

Calculate, to the nearest pound, how much was invested in 1995.

£.....[3]

3

10 (a) $x^2 + 8x - 24$ can be written in the form $(x + a)^2 - b$.

Find the values of a and b.

(a) a = ...

b = ...[3]

(b) State the minimum value of $y = x^2 + 8x - 24$.

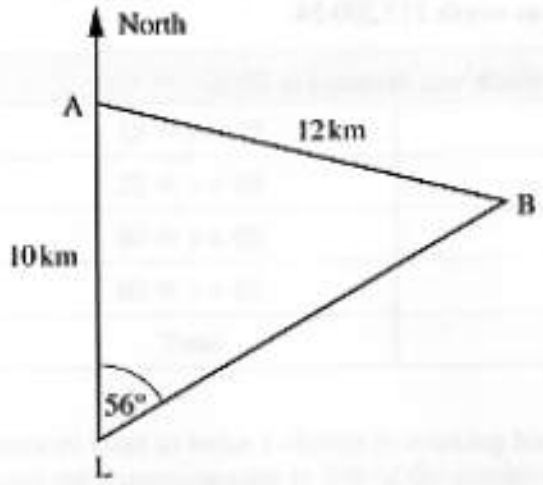
(b) .....[1]

(c) Solve the equation $x^2 + 8x - 24 = 0$.

(c) .....[2]

6

11



Not to scale

Ship A is 10 km due North of lighthouse L.
Ship B is 12 km from A and is on a bearing of 056° from L.

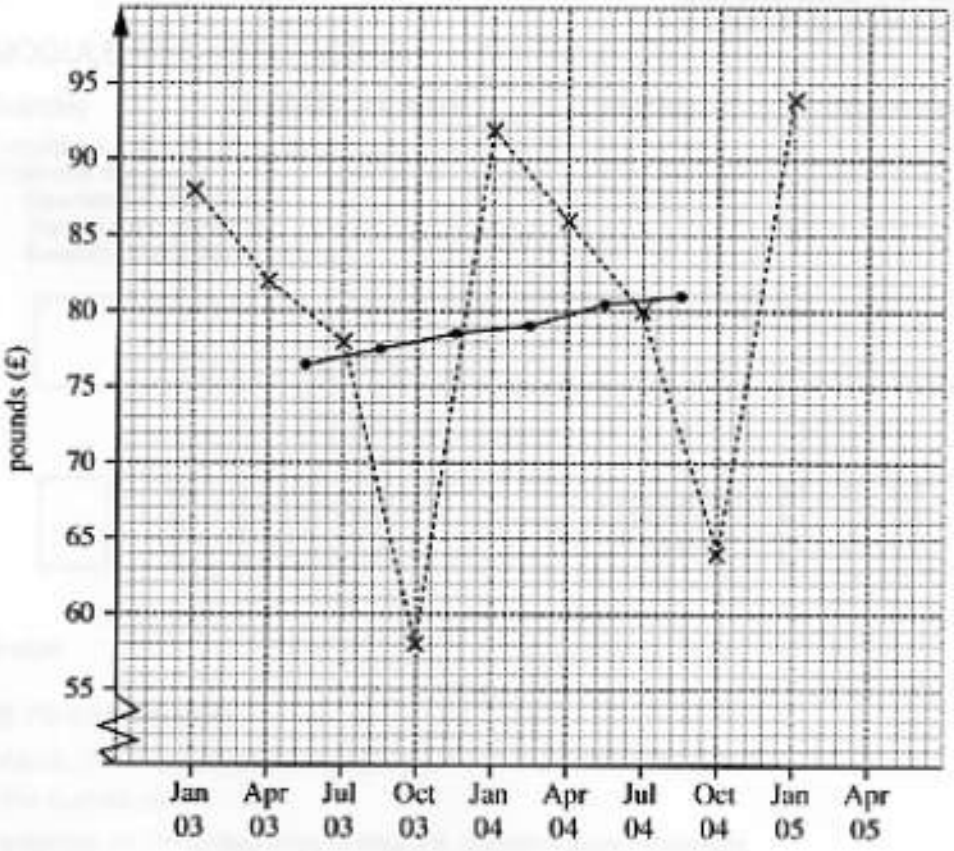
Calculate the bearing of B from A.

..... ° [4]

4

12 The table shows the quarterly electricity bill for a household from January 2003 to January 2005. These values have been plotted on the graph together with the **4-quarter moving averages.**

Date	Jan 03	Apr 03	Jul 03	Oct 03	Jan 04	Apr 04	Jul 04	Oct 04	Jan 05
Bill (£)	88	82	78	58	92	86	80	64	94



(a) Estimate the next moving average.

(a) £.....[1]

(b) Use the table and your answer to **(a)** to calculate the bill for April 2005.
Show your working clearly.

(b) £.....[2]

3