OCR
Oxford Cambridge and RSA

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Thursday 21 May 2015 – Morning

GCSE MATHEMATICS A

A502/01   Unit B (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
* Geometrical instruments
* Tracing paper (optional)

Duration: 1 hour

Candidate forename		Candidate surname	

Centre number					Candidate number				

INSTRUCTIONS TO CANDIDATES

* Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
* Use black ink. HB pencil may be used for graphs and diagrams only.
* Answer **all** the questions.
* Read each question carefully. Make sure you know what you have to do before starting your answer.
* Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
* Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
* Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

* The number of marks is given in brackets **[ ]** at the end of each question or part question.
* Your quality of written communication is assessed in questions marked with an asterisk (*****).
* The total number of marks for this paper is **60**.
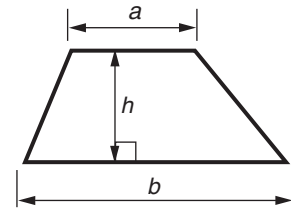* This document consists of **16** pages. Any blank pages are indicated.

WARNING

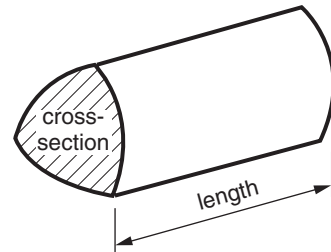**No calculator can be used for this paper**

OCR is an exempt Charity

Turn over

Formulae Sheet: Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$

Volume of prism = (area of cross-section) × length

PLEASE DO NOT WRITE ON THIS PAGE

Answer **all** the questions.

1 **(a)** 5 + 7 = 12

Using this fact, write two different subtractions.
You can **only** use the numbers 5, 7 and 12.

(a) ☐ – ☐ = ☐

☐ – ☐ = ☐

[2]

(b) Work out.

(i) $\frac{3}{4}$ of 12

(b)(i) .... **[1]**

(ii) $6 \times \frac{1}{6}$

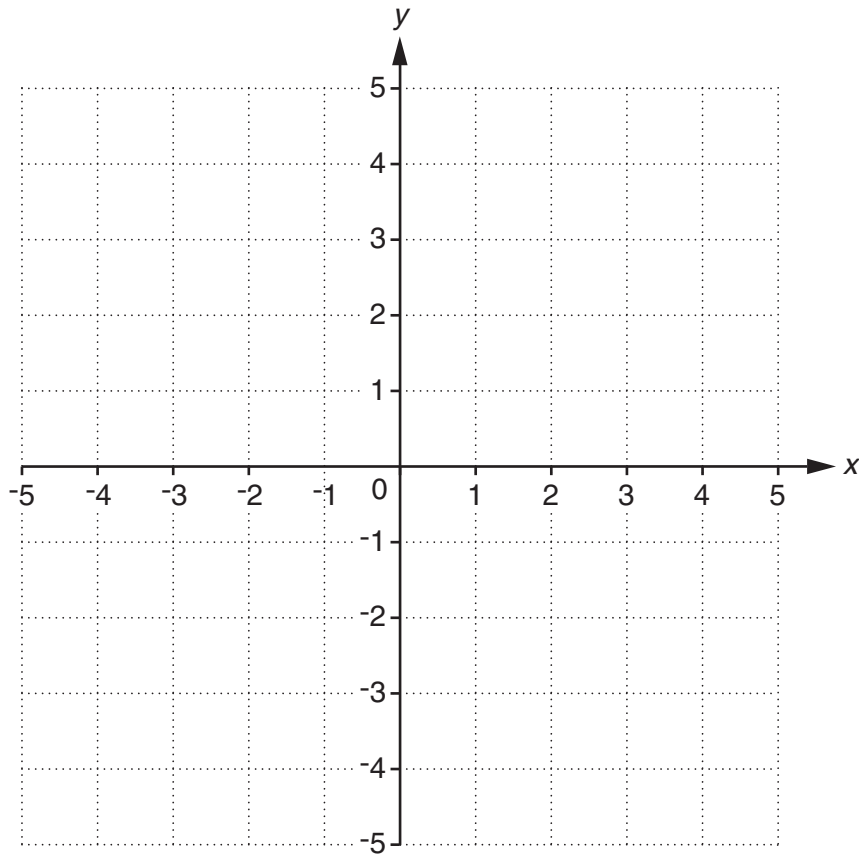**(ii)** .... **[1]**

(c) Ana has some money.
She spends half of it buying a coat.
She gives half of what is left to her mum.
Ana now has £20.

How much money did Ana have to start with?

(c) £ .... **[2]**

2 Here is a coordinate grid.

(a) Plot the point (⁻2, 3). Label it **A**. **[1]**

(b) (i) **B** has the same *x*-coordinate as **A** but a different *y*-coordinate.
Plot and label a possible point **B**. **[1]**

(ii) Write down the coordinates of your point **B**.

(b)(ii) (........................ , ...) **[1]**

(c) **C** has the same *y*-coordinate as **A** but a different *x*-coordinate.

Plot and label a possible point **C**. **[1]**

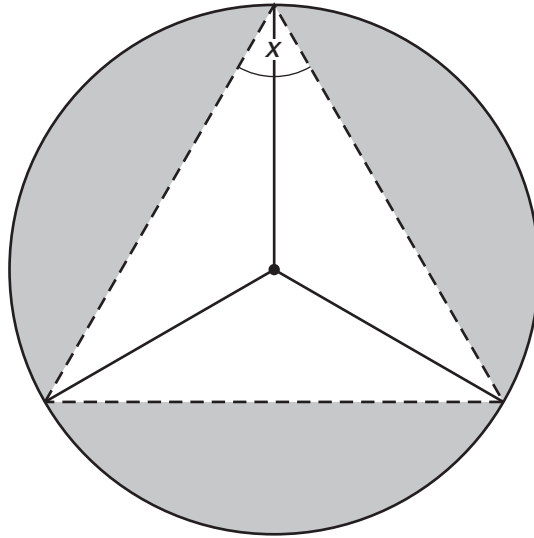**(d)** Join points **A**, **B** and **C** to make a triangle.

Tick the correct statement about the angles in triangle **ABC**.

All the angles are acute.	
All the angles are obtuse.	
One angle is a right angle.	
One angle is obtuse.	

[1]

3 This is a logo.
It is made by drawing three congruent triangles inside a circle.

Not to scale

(a) From this list, choose the name for one of the **solid** straight lines in the logo.

> Chord   Diameter   Tangent   Radius

(a) .... **[1]**

(b) Work out the size of angle x.

(b) ....° **[1]**

(c) Work out the size of one of the angles at the centre of the circle.

(c) ....° **[2]**

Turn over

4 Callum and Elena take part in a Sponsored Read.
Callum starts reading on day 1 and Elena starts reading on day 4.

They each record the overall number of pages they have read at the end of each day.
These results are shown on the graph.
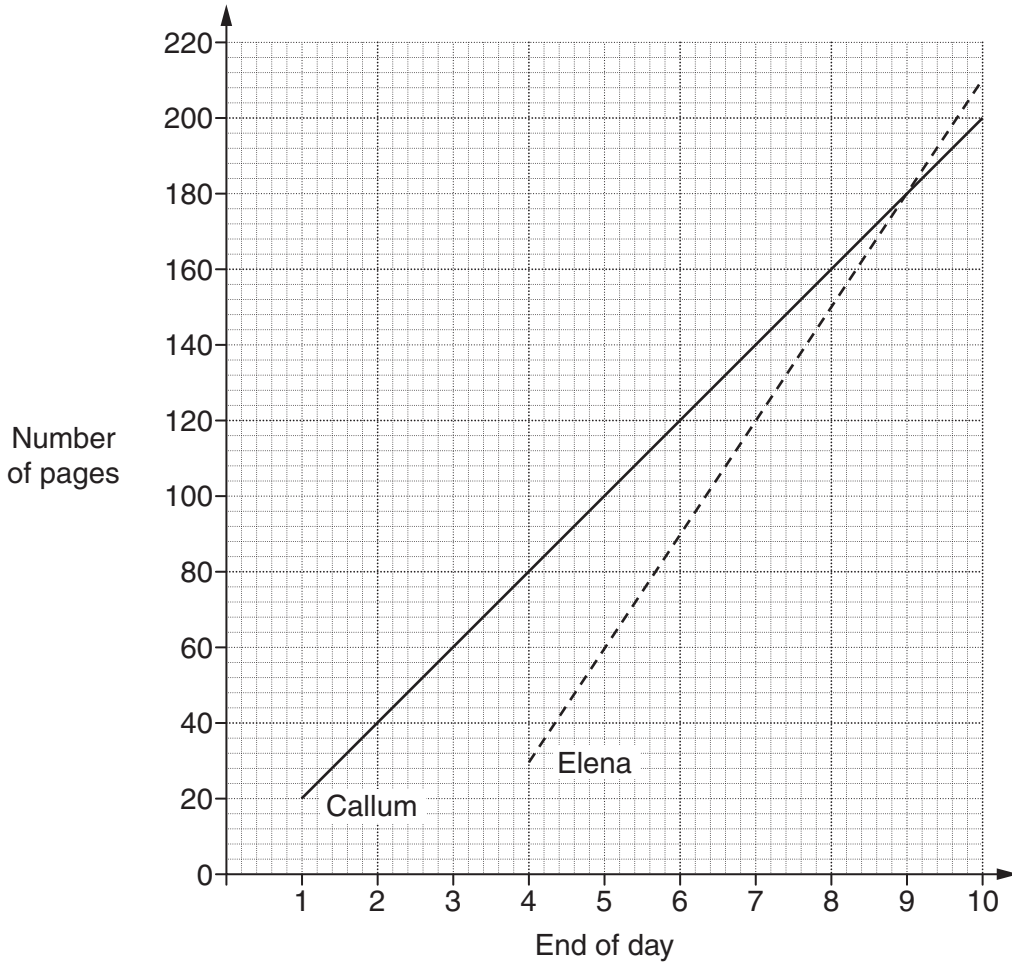
 (a) (i) How many pages has Callum read by the end of day 5?

 (a)(i) .... **[1]**

 (ii) How many pages does Callum read each day?

 (ii) .... **[1]**

 (iii) How many **more** pages has Elena read than Callum by the end of day 10?

 (iii) .... **[1]**

(b)* Callum raises £2 for every 10 pages he reads.
Elena raises 15p for every page she reads.

At the end of day 9, Elena says

"I have raised the same amount of money as Callum".

Is Elena correct? **[4]**

5 **(a)** Solve.

  (i) $y - 1 > 7$

  (a)(i) .... **[1]**

  (ii) $2w < 8$

  (ii) .... **[1]**

(b) You are given that $5 \leqslant x < 9$ **and** that x is a whole number.

  Tick the set of **all** possible values of x.

5, 8	
5, 9	
6, 7, 8	
5, 6, 7, 8	
5, 6, 7, 8, 9	

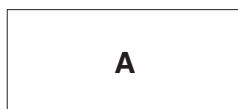 **[1]**

6* Tariq thinks of a number.

My number is less than 100.
It is the square of a whole number
and
it is also 9 more than the cube of a
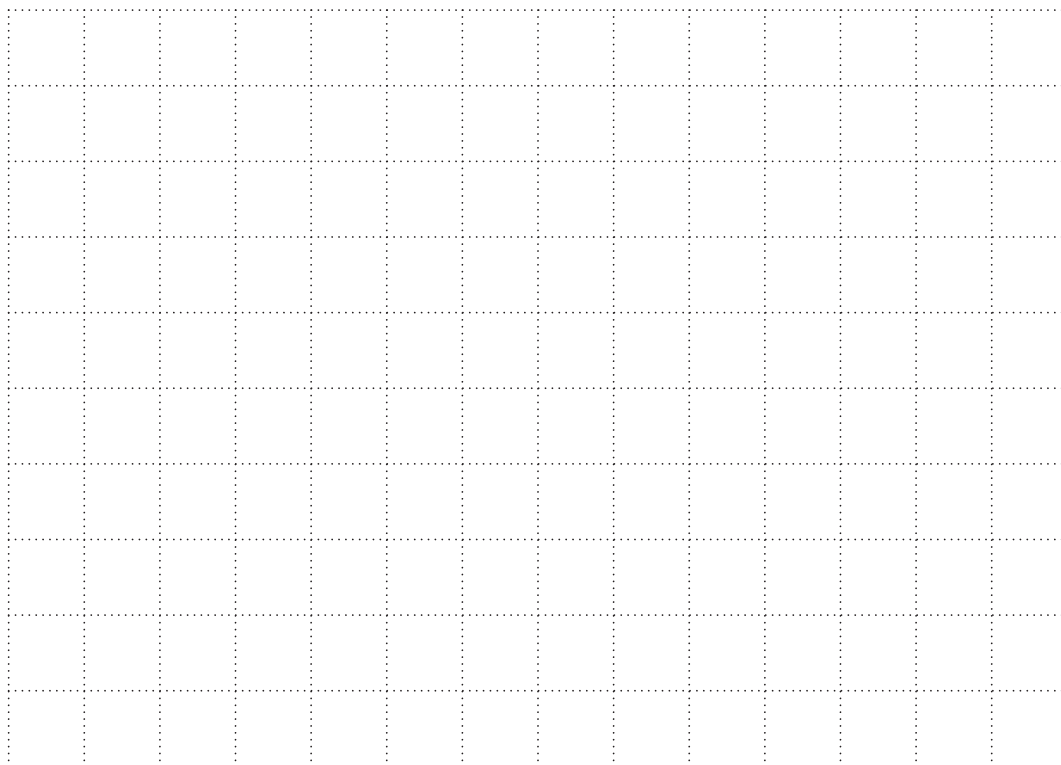whole number.

Is Tariq's number even?

Show how you decide. **[4]**

Turn over

7 (a) Rectangle **A** is 4 cm long and 2 cm wide.

```
┌─────────────────┐
│                 │
│        A        │
│                 │
└─────────────────┘
```

On the grid, draw a rectangle, **B**, that is **not** similar to **A**.
All the sides of the rectangle must lie on grid lines.

[1]

(b) Use values to explain why rectangles **A** and **B** are **not** similar. **[2]**

8 **(a)** **(i)** Complete the following using a decimal.

$$\frac{27}{100} = \boxed{}$$

[1]

(ii) Complete the following using a whole number.

$$0.\dot{3} = \frac{1}{\boxed{}}$$

[1]

(b) Complete this grid.
Each row and each column is a complete calculation.
You may put a number or any of the symbols +, −, ×, ÷ in the boxes.
Each symbol may be used more than once.

	6		$1\frac{1}{4}$			
2		$2\frac{1}{2}$		2.5	=	7.5
	1.5		2.75			
1.25	+		+	5	=	10
	1					
	=		=			
	10		10			

[4]

9 Kennon discovers a water leak from the pipe supplying his house.

(a) He thinks the water has been leaking for just over 3 months.

Explain why "just over 3 months" is about 100 days.

....

....

.... **[1]**

(b) Kennon checks his water meter and finds the pipe is losing 0.2894 cubic metres of water each day.

(i) Round 0.2894 correct to 1 decimal place.

(b)(i) .... **[1]**

(ii) Use your answer to part **(b)(i)** to show that about 30 cubic metres of water has leaked in 100 days. **[1]**

(c) This is how the water company charges for water.

> STEP 1: Charge £1.04 for each cubic metre of water.
>
> STEP 2: Find 91% of the number of cubic metres of water.
>
> STEP 3: Charge £2.08 for each cubic metre of water worked out in STEP 2.
>
> STEP 4: Add the answers from STEP 1 and STEP 3 together.

Kennon wants to estimate how much the 30 cubic metres of water has cost him.

Round each value you use correct to one significant figure and find approximately how much Kennon has paid for the water that leaked.

(c) £ .... **[5]**

10 Triangles **L** and **M** are drawn on the grid below.
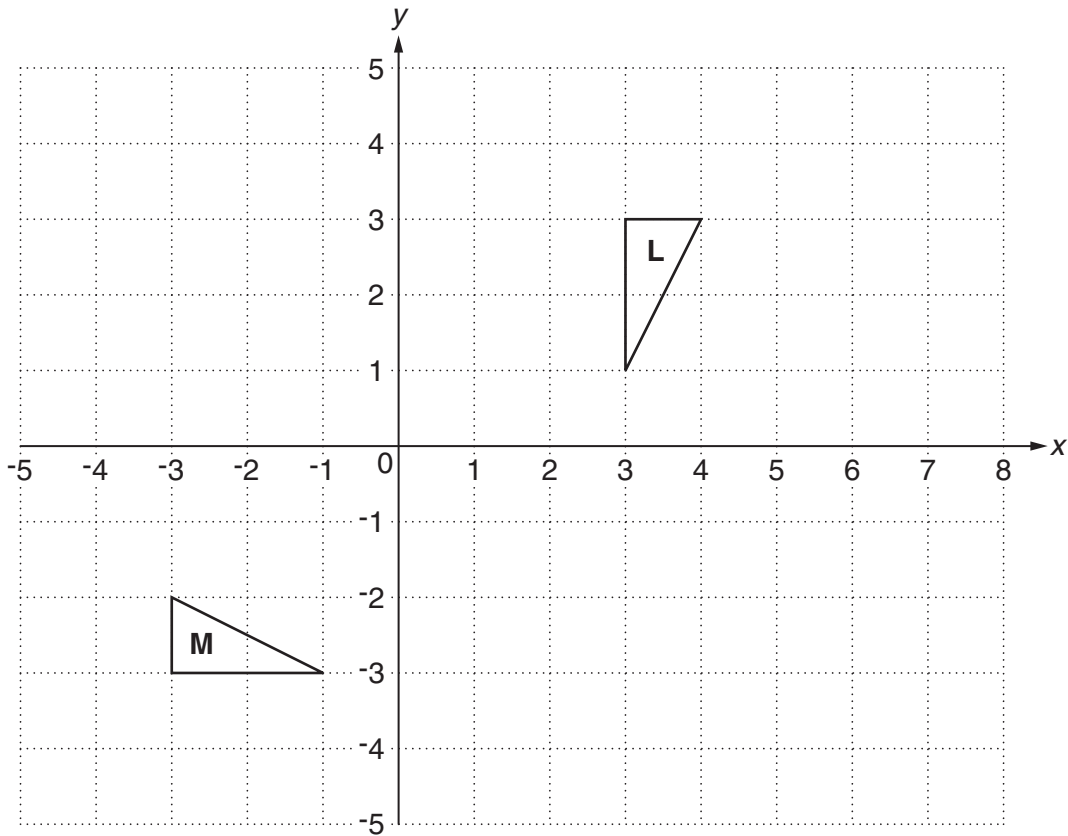
(a) Describe fully the **single** transformation that maps triangle **L** onto triangle **M**.

....

.... **[3]**

(b) Translate triangle **L** using the vector $\begin{pmatrix} 2 \\ -4 \end{pmatrix}$. Label your image **T**. **[2]**

(c) With the transformations in **(a)** and **(b)** both the lengths *and* the angles in the image are the same as in the original shape.
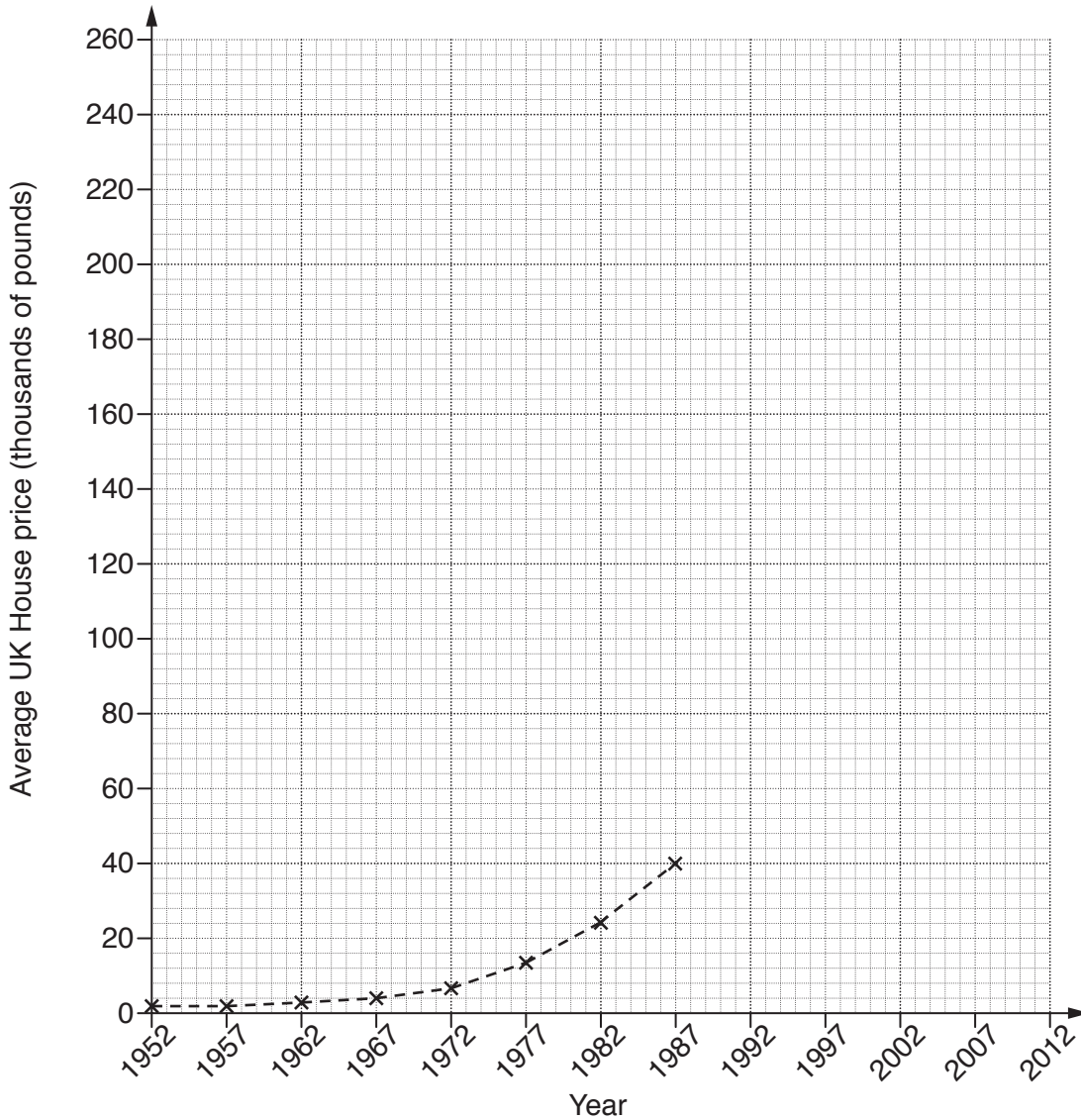
Describe what would happen to the lengths and angles in triangle **L** after an enlargement of scale factor 4.

....

....

.... **[2]**

11 This table shows the average price of a house in the UK every five years from 1952 to 2012. The prices are given to the nearest £1000.

Year	1952	1957	1962	1967	1972	1977	1982	1987	1992	1997	2002	2007	2012
Price (thousands of pounds)	2	2	3	4	7	14	24	40	61	76	128	223	246

(a) Complete the time series graph to show all the data. **[2]**

(b) In which 5 year period did the average house price increase the most?

(b) from .... to ....[1]

(c) Helen said that house prices did not increase from 1952 to 1957.

Explain why Helen might be wrong. Use figures to support your answer.

....

....[2]

Turn over

16

12 **(a)** Complete the statement about this diagram.
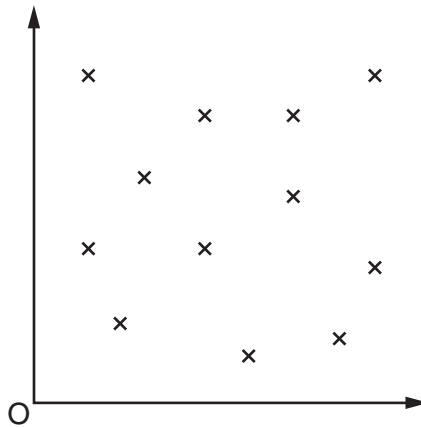
The diagram shows .... correlation. **[1]**

(b) Mark at least 8 more points on this diagram to show negative correlation.

[1]

END OF QUESTION PAPER