Name: _____

Maths Genie Stage 6

Test A

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- **Calculators may not be used.**

Information

- The marks for each question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1   Gary recorded how many goals 10 football teams scored.
He also recorded how many goals they conceded

The information is shown on the scatter graph.
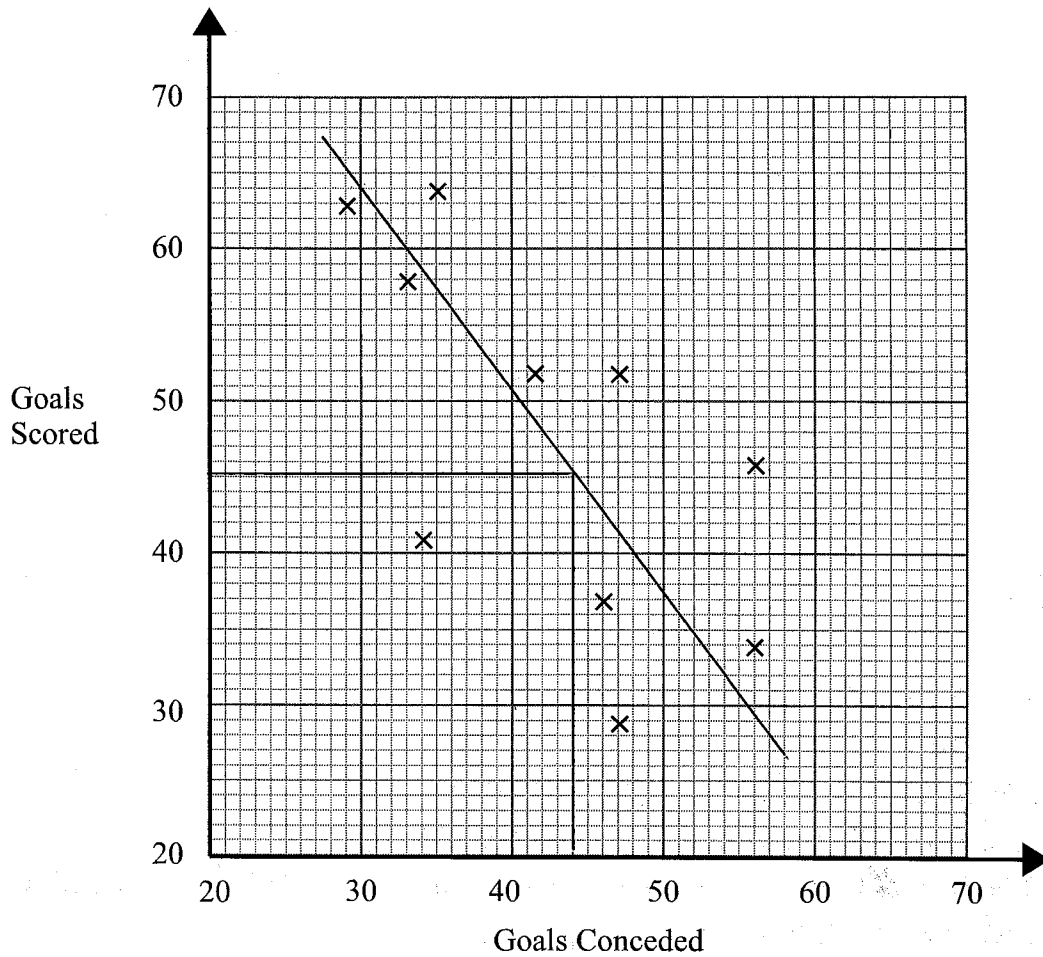
(a) What type of correlation does the scatter graph show?

.... negative ....
(1)

(b) Another team have conceded 44 goals.

Estimate the number of goals this team has scored.

.... 45 ....
(43 – 47)   (2)

(Total for Question 1 is 3 marks)
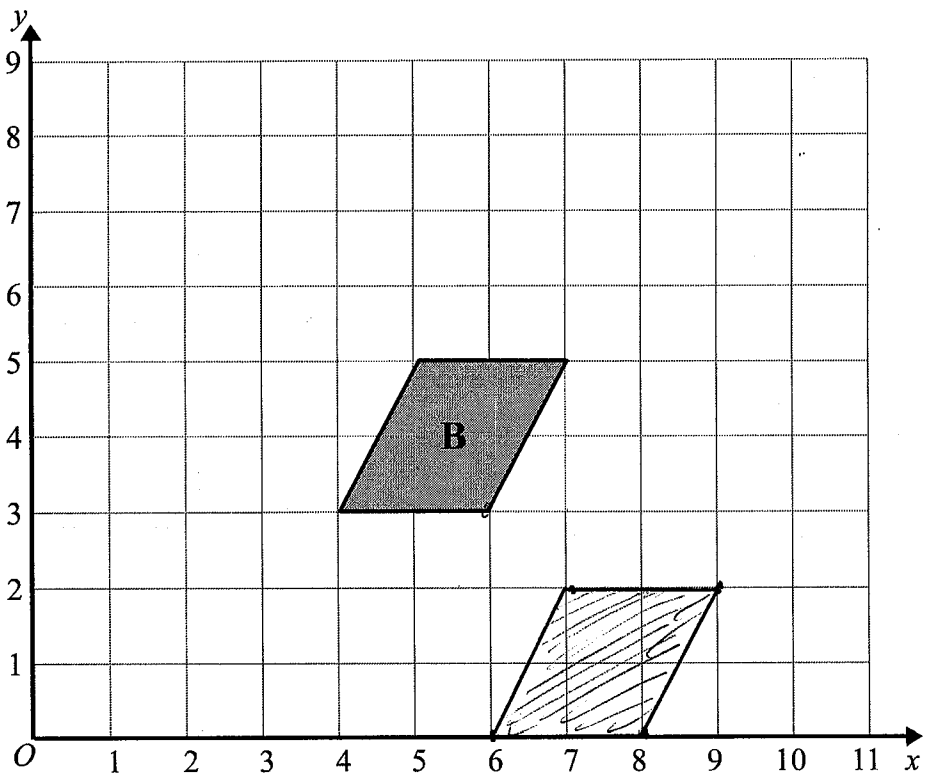
2
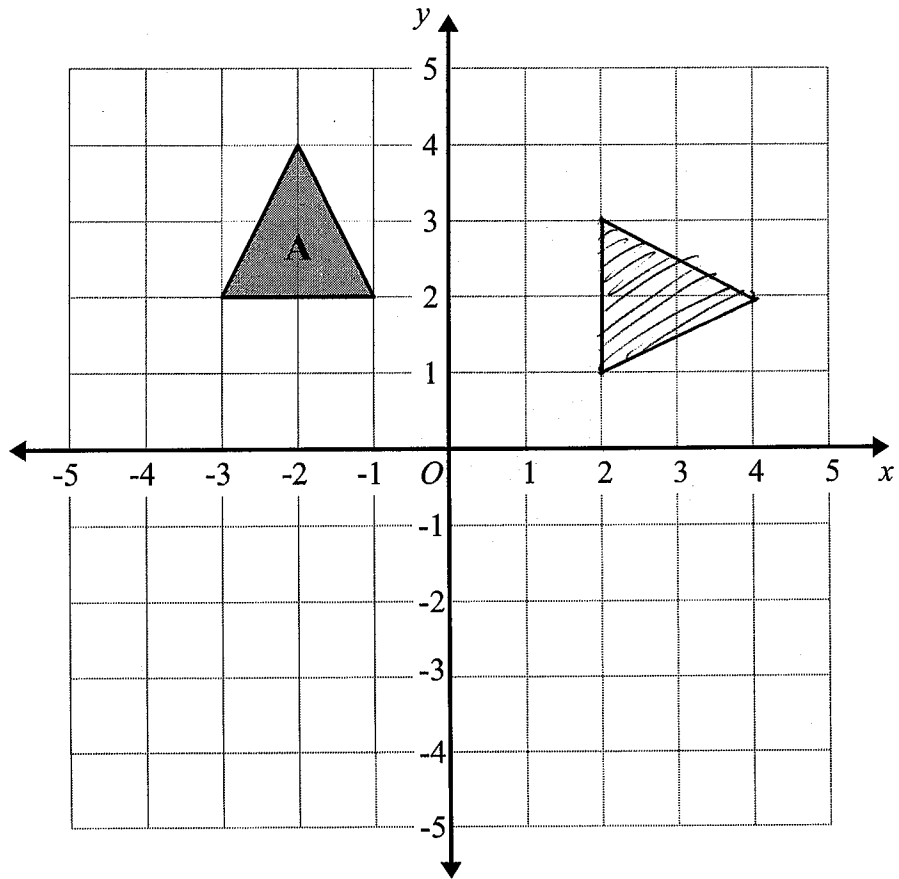
Rotate shape **A** 90° about O

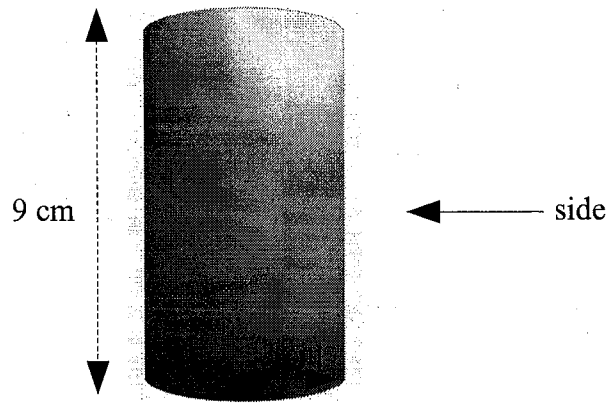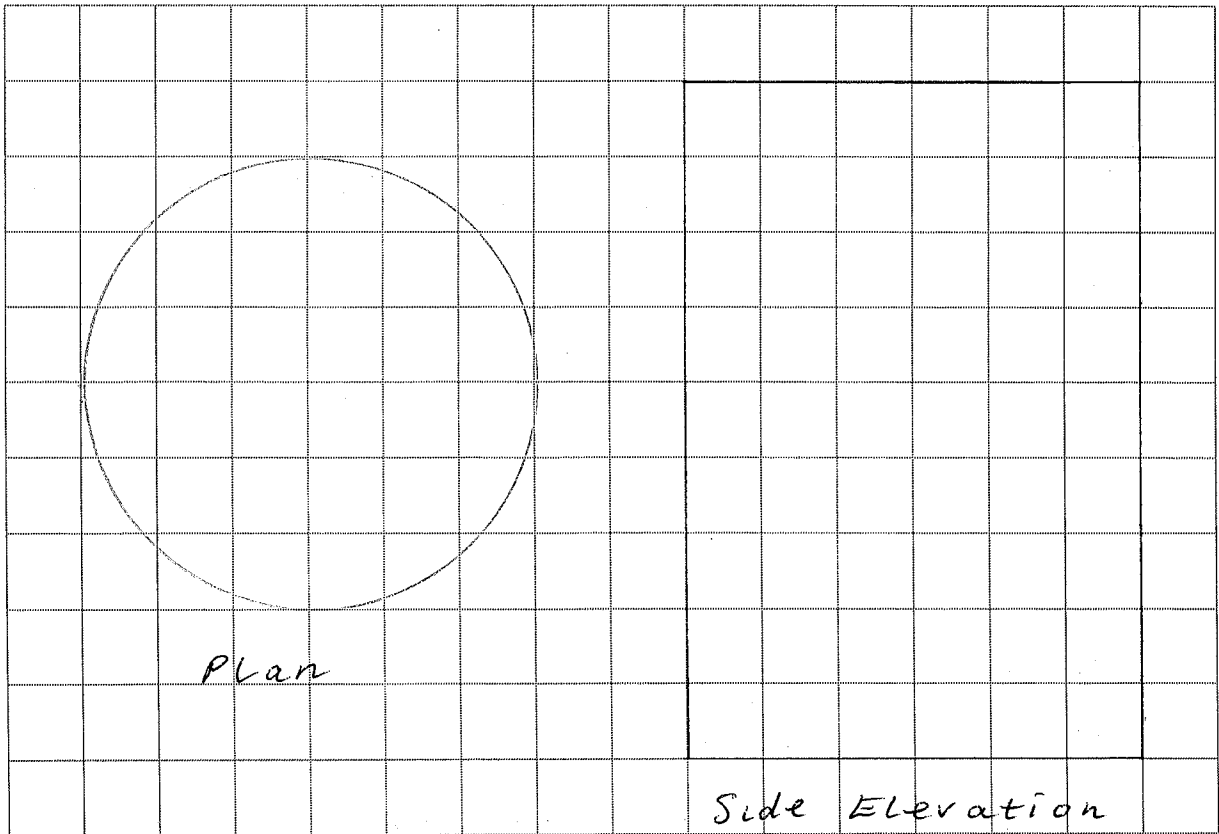**(Total for Question 2 is 2 marks)**

3

Translate shape **B** by the vector $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$

(Total for Question 3 is 2 marks)

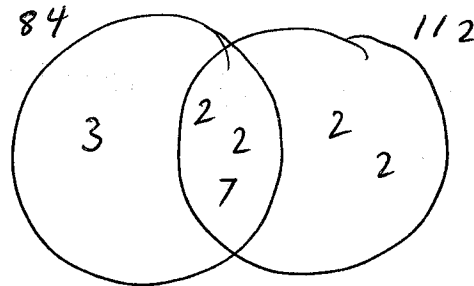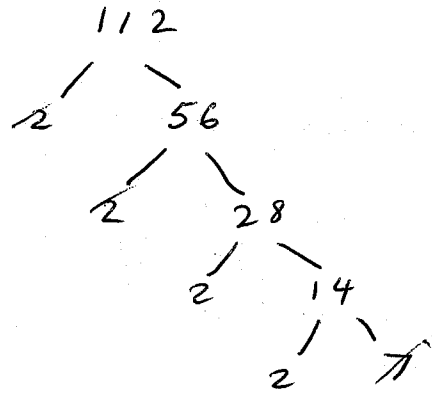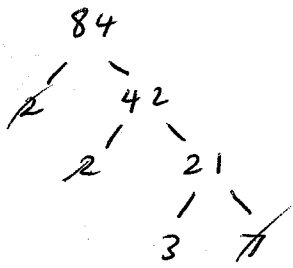**4**   The diagram shows a cylinder with radius 3 cm and perpendicular height of 9 cm

9 cm ←——— side

On the centimetre grid below, draw the plan and the side elevation of the cylinder.

Plan

Side Elevation

5 Find the highest common factor (HCF) of 84 and 112

84
2   42
2   21
3   7

112
2   56
2   28
2   14
2   7

84 / 112 Venn diagram:
- 84 only: 3
- Intersection: 2, 2, 7
- 112 only: 2, 2

$$HCF = 2 \times 2 \times 7$$
$$= 4 \times 7$$
$$= 28$$

28

(Total for Question 5 is 3 marks)

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6 Dennis gets paid £8.79 per hour he works.
Each week Dennis works 39 hours.

(a) Work out an estimate for the amount Dennis gets paid in a week.

$$9 \times 40 = £360$$

£ 360

(2)

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.   both

Overestimate — I rounded the hourly
pay and the number of hours up

(1)

(Total for Question 6 is 3 marks)

7 (a) Simplify $(a^4)^3$

$$a^{4 \times 3}$$

$$a^{12}$$

(1)

(b) Simplify $6m^4n^7 \div 2m^2n$

$$\frac{6}{2}m^{4-2}n^{7-1}$$

$$3m^2n^6$$

(2)

(Total for Question 7 is 3 marks)

8 (a) Expand $6x(2y-7)$

$$12xy - 42x$$

(2)

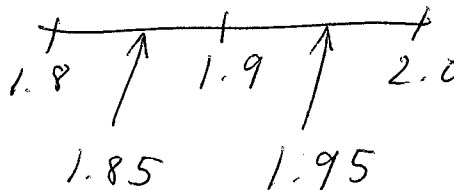(b) Expand and Simplify $5(t-3) + 3(2t-1)$

$$5t - 15 + 6t - 3$$

$$11t - 18$$

(2)

(Total for Question 8 is 4 marks)

9 A number y is rounded to 1 decimal place.

The result is 1.9

Write down the error interval for y.

$$1.8 \quad 1.9 \quad 2.0$$

$$1.85 \quad 1.95$$

$$1.85 \leqslant y < 1.95$$

(Total for Question 9 is 2 marks)