Name: _____

Maths Genie Stage 6

Test C

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.**

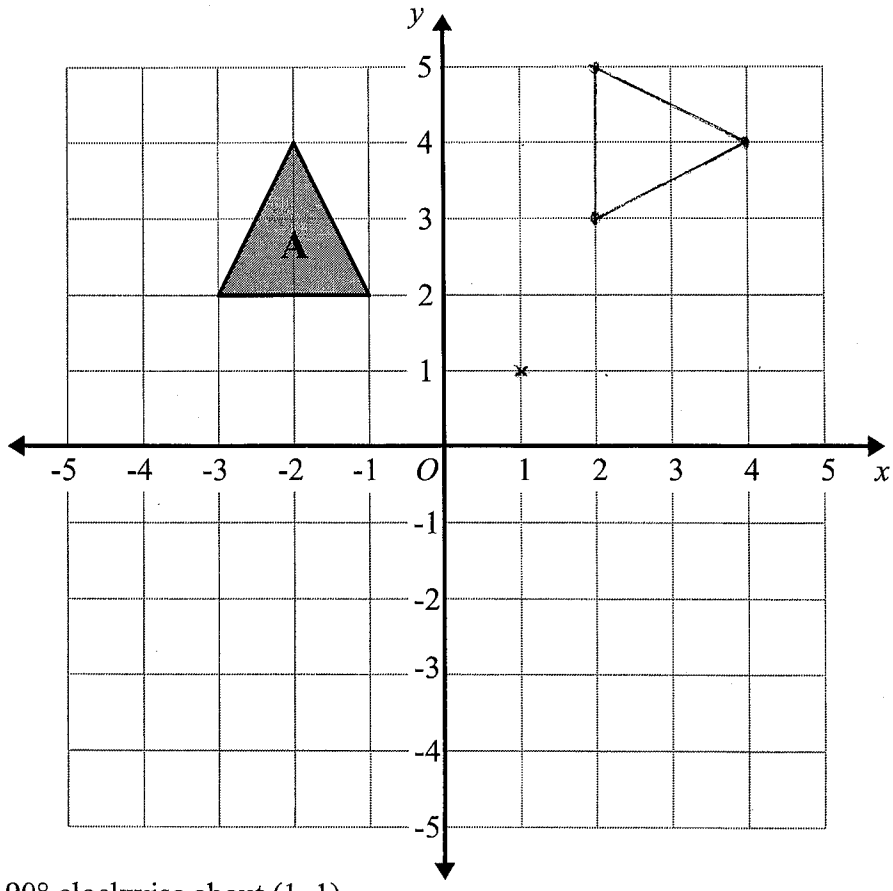
Information

- 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

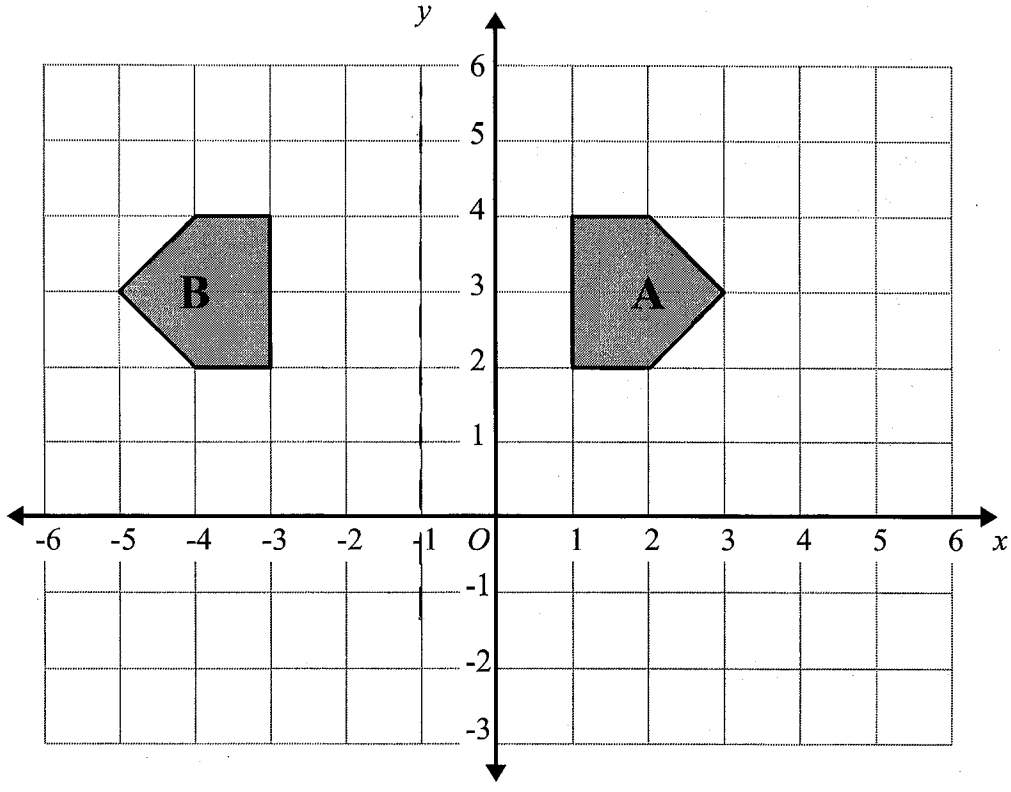
1



Rotate shape **A** 90° clockwise about (1, 1)

(Total for Question 1 is 2 marks)

2

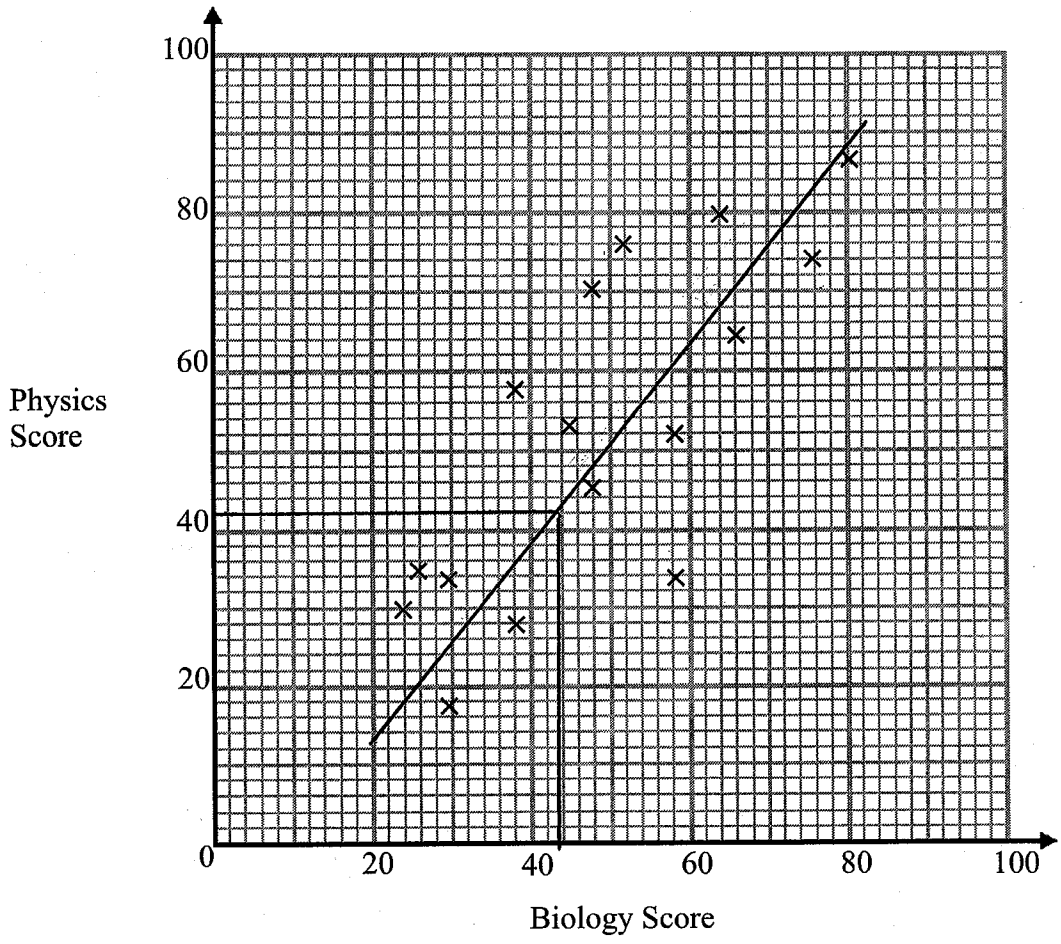


Describe fully the single transformation that maps shape **A** onto shape **B**.

Reflection in the line $x = -1$

(Total for Question 2 is 2 marks)

3 The scatter graph shows the scores of 16 students on their Biology and Physics tests.



(a) What type of correlation does the scatter graph show?

positive

(1)

(b) Another students scored 42 marks on their Physics test.
Estimate the Physics score for this student.

44

[40 – 50] (2)

(Total for Question 3 is 3 marks)

4 (a) Simplify $x^9 \times x^2$

x^{11}

(1)

(b) Simplify $(4y)^3$

$64y^3$

(1)

(c) Simplify $\frac{w^8}{w^3}$

w^5

(1)

(Total for Question 4 is 3 marks)

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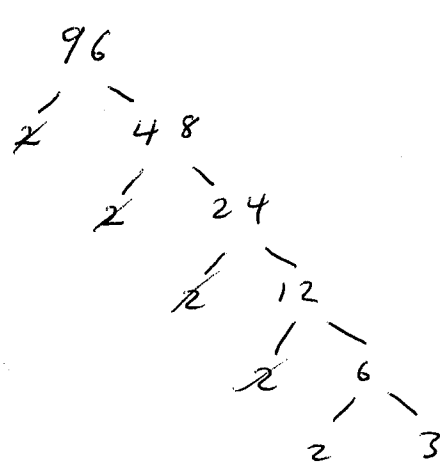
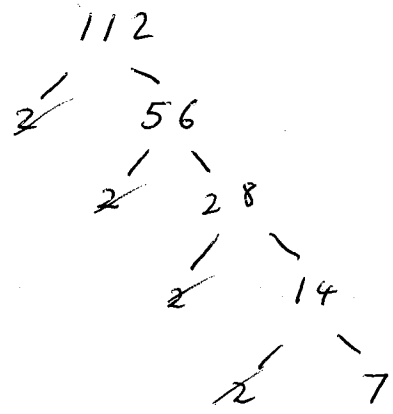
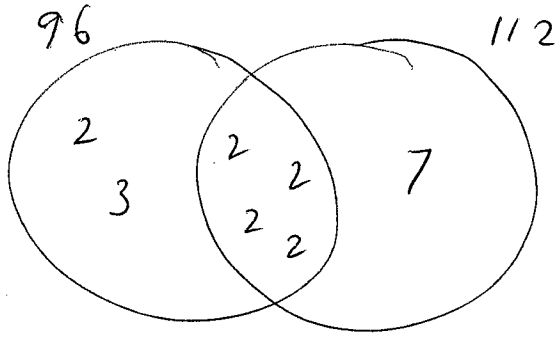
5 Find the lowest common multiple (LCM) of 96 and 112







LCM = 96 × 7

$$\begin{array}{r} 96 \\ \times \quad 7 \\ \hline 672 \end{array}$$

672

(Total for Question 5 is 3 marks)

6 (a) Expand $x(9x + 2)$

$9x^2 + 2x$

(1)

(b) Factorise $21 + 49y$

$7(3 + 7y)$

(1)

(Total for Question 6 is 2 marks)

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7 A circle has a radius of 6.13 metres.

(a) Work out an estimate for the area of the circle.

$\text{Area} = \pi r^2$

$= 3(6)^2$

$= 3 \times 36$

$= 108 \text{ m}^2$

108 m^2

(3)

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

underestimate - I rounded pi and the radius down

(1)

(Total for Question 7 is 4 marks)

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8 A number x is **truncated** to 1 decimal place.

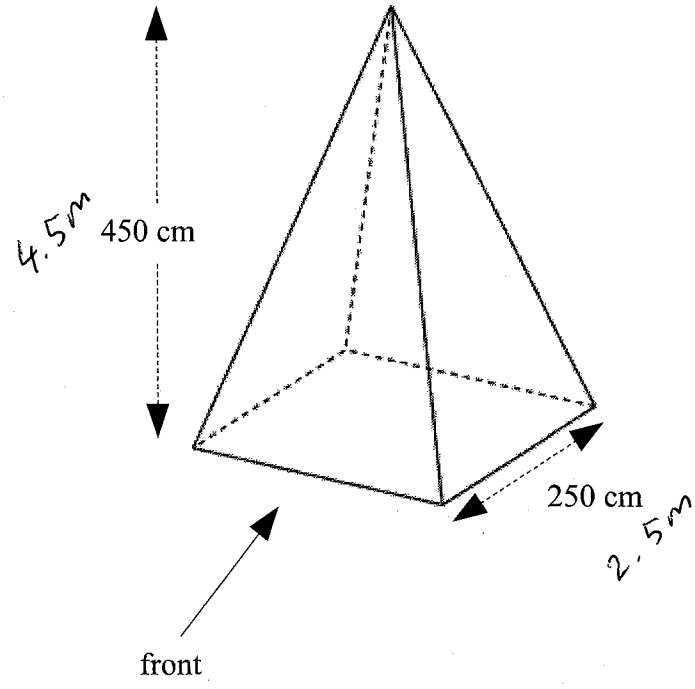
The result is 6.2

Write down the error interval for x.

$6.2 \leq x < 6.3$

(Total for Question 8 is 2 marks)

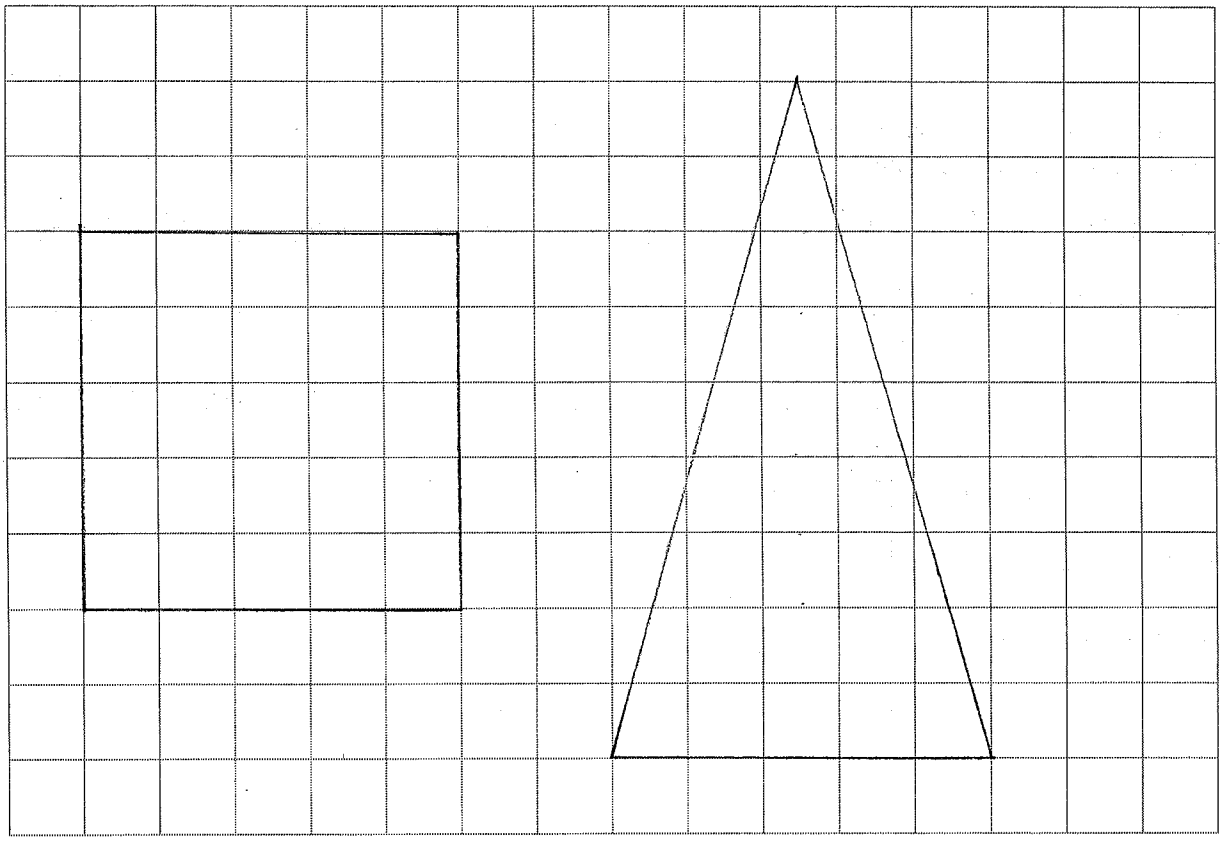
9 The diagram shows a square based pyramid with a perpendicular height of 450 cm.



2.5 × 2 = 5

4.5 × 2 = 9

On the centimetre grid below, draw the plan and the front elevation of the pyramid.
Use a scale of 2 cm to 1 m.



(Total for Question 9 is 4 marks)