

Name: \_\_\_\_\_

# Maths Genie Stage 6

## Test D

### 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

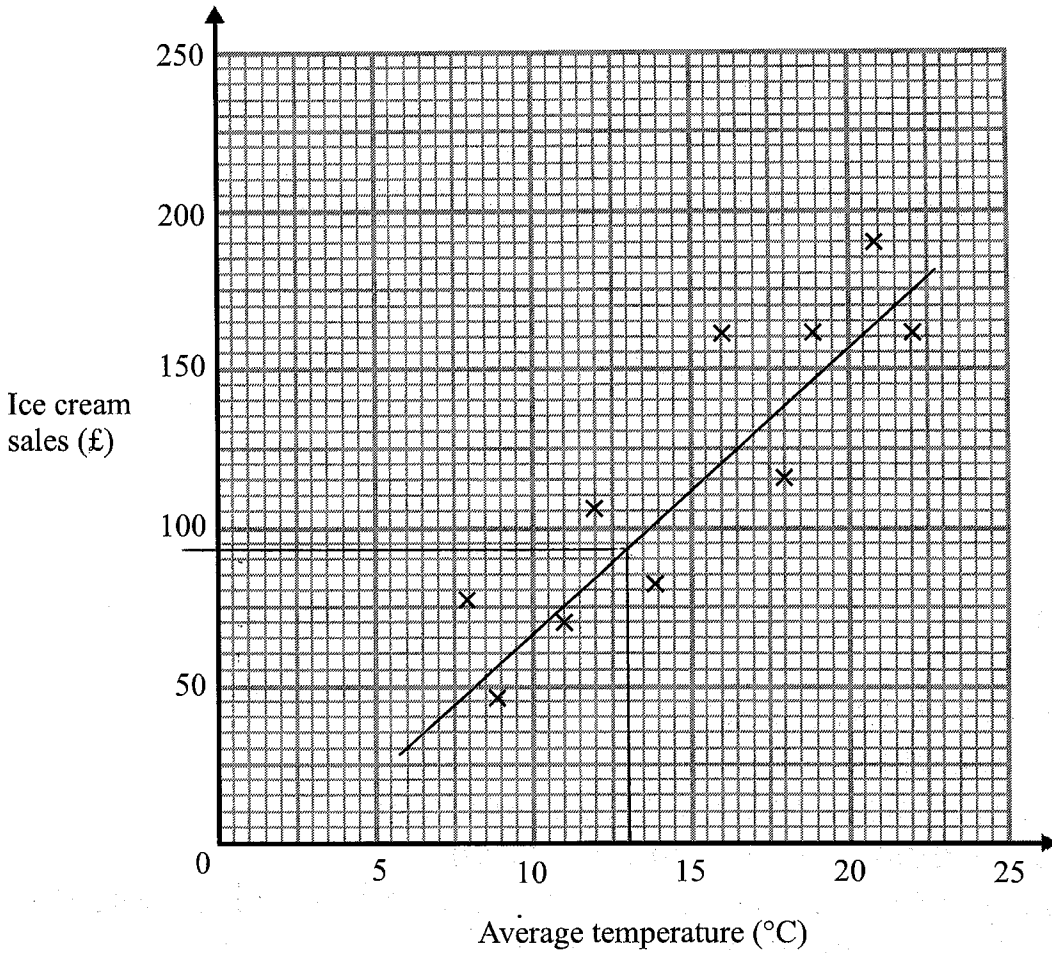
- The marks for each question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### 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 The average daytime temperature for 10 days is recorded.  
A shop also records its ice cream sales for each of the 10 days.

The scatter graph shows this information.



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

positive (1)

- (b) On the 11<sup>th</sup> day the temperature was 13°C.  
Estimate the ice cream sales on the 11th day.

£ 90  
[90 - 110] (2)

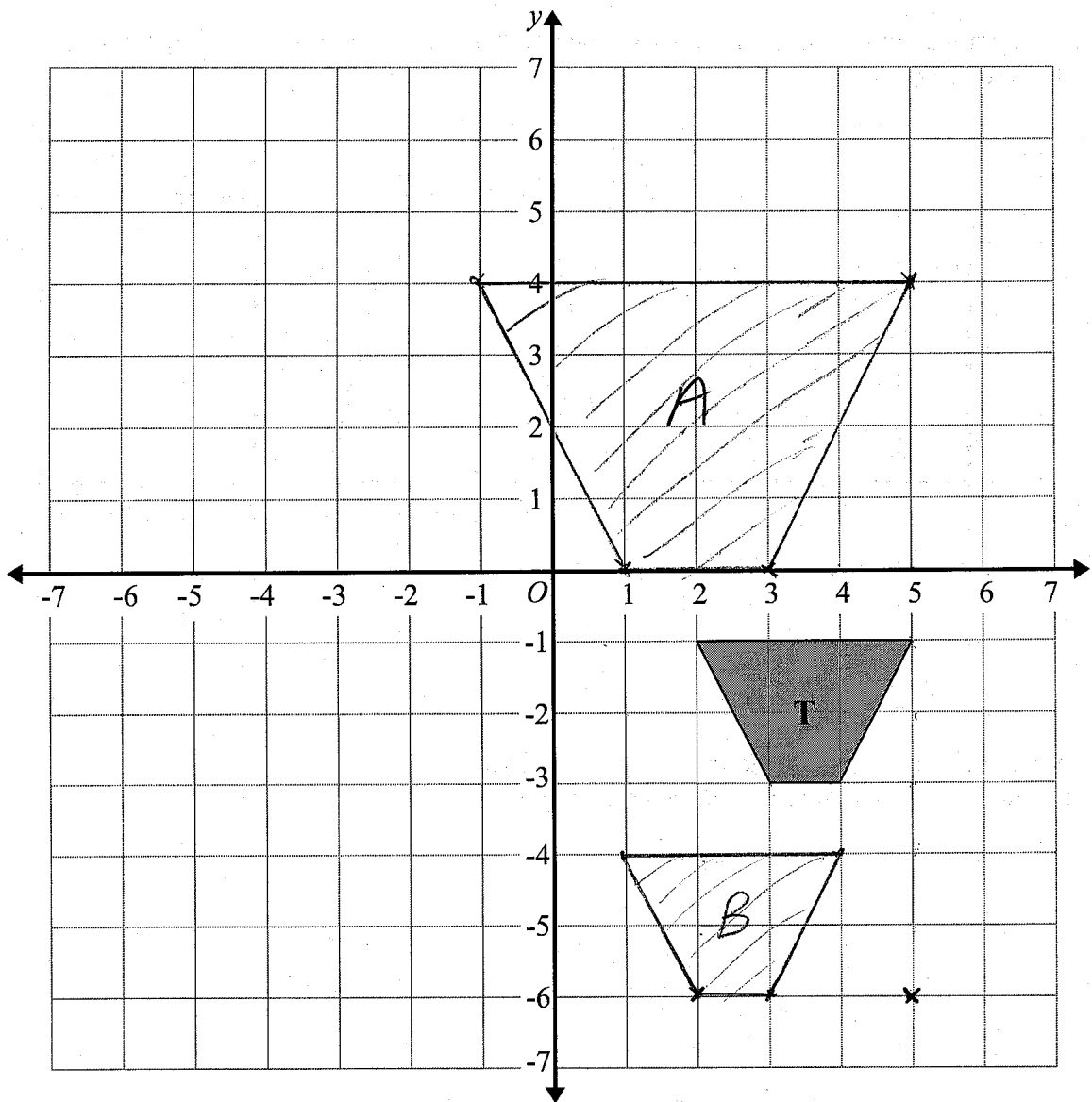
- (c) The shop's manager wants to use the scatter graph to predict the ice cream sales for a day with an average temperature of 2°C. Comment on the reliability of this prediction.

It would be unreliable - 2°C is out  
of the range of data

(1)

(Total for Question 1 is 4 marks)

2

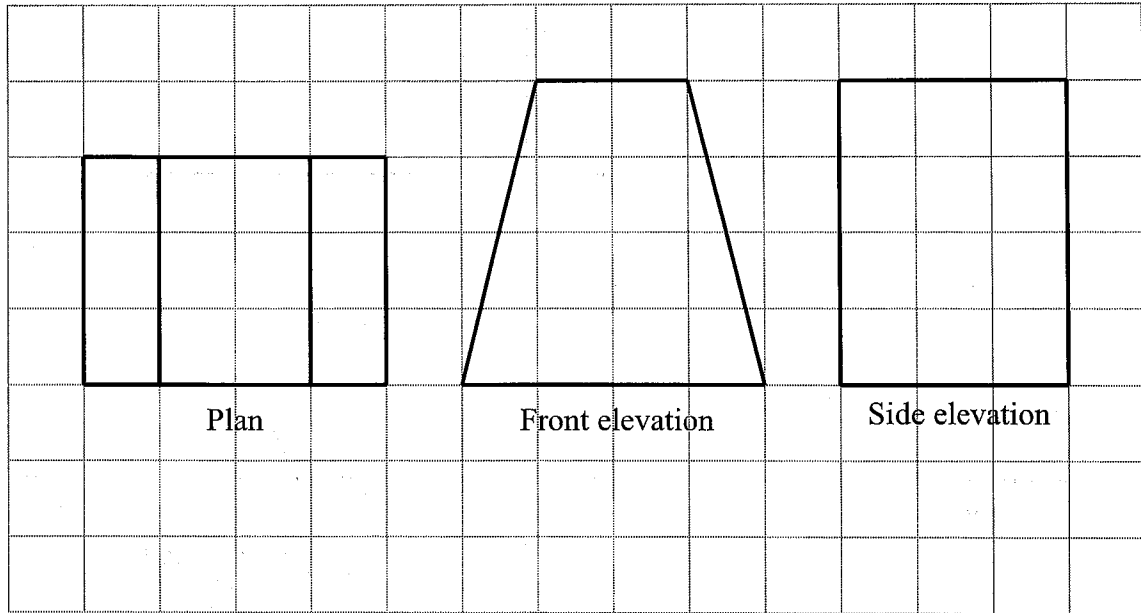


(a) Enlarge trapezium **T** by scale factor 2 centre  $(5, -6)$ .  
Label the new trapezium **A**.

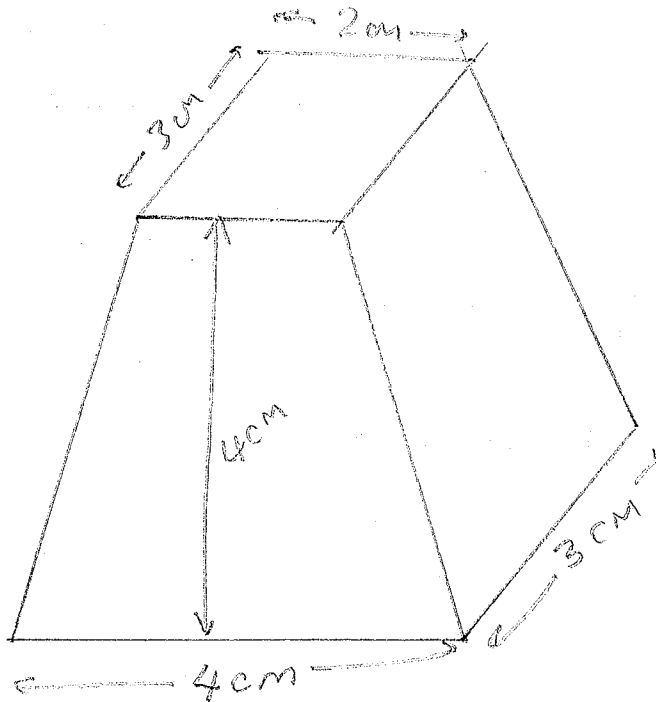
(b) Translate trapezium **T** by the vector  $\begin{pmatrix} -1 \\ -3 \end{pmatrix}$   
Label the new trapezium **B**.

(Total for Question 2 is 4 marks)

- 3 The diagram shows the plan, front elevation and side elevation of a solid shape, drawn on a centimetre grid.



In the space below, draw a sketch of the solid shape.  
Give the dimensions of the solid on your sketch.



(Total for Question 3 is 2 marks)

4 (a) Expand  $2x^2(x+5)$

$$\frac{2x^3 + 10x^2}{(2)}$$

(b) Expand and Simplify  $4(y+7) - 2(y-6)$

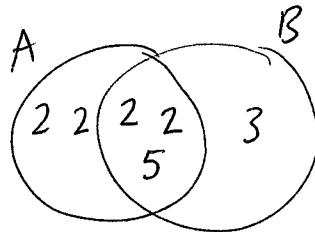
$$4y + 28 - 2y + 12$$

$$\frac{2y + 40}{(2)}$$

(Total for Question 4 is 4 marks)

5  $A = 2^4 \times 5$   $B = 2^2 \times 3 \times 5$

(a) Write down the highest common factor (HCF) of A and B.



$$2 \times 2 \times 5$$
$$4 \times 5$$

$$\frac{20}{(1)}$$

(b) Find the lowest common multiple (LCM) of A and B.

$$2 \times 2 \times 20 \times 3$$

$$4 \times 20 \times 3$$

$$80 \times 3$$

$$240$$

$$\frac{240}{(2)}$$

(Total for Question 5 is 3 marks)

6 (a) Given  $\frac{x^8}{x^a} = x^{11}$

Find the value of  $a$ .

$$8 - a = 11$$

$$8 = 11 + a$$

$$-3 = a$$

$$a = \frac{-3}{(1)}$$

(b) Simplify  $(5m^4)^3$

$$\frac{125m^{12}}{(2)}$$

(Total for Question 6 is 3 marks)

7 Work out an estimate for the value of  $\frac{3.14 + \sqrt{98.9}}{0.19}$

$$\frac{3 + \sqrt{100}}{0.2}$$

$$\frac{3 + 10}{0.2}$$

$$\frac{13}{0.2}$$

$$13 \times 5 = 65$$

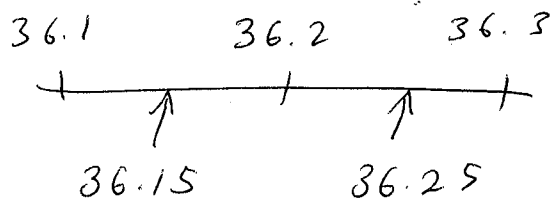
$$\frac{65}{(2)}$$

(Total for Question 7 is 3 marks)

8 A number  $x$  is rounded to 3 significant figures.

The result is 36.2

Write down the error interval for  $x$ .



$$\frac{36.15 \leq x < 36.25}{(2)}$$

(Total for Question 8 is 2 marks)