

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

# Maths Genie Stage 11

## 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.*

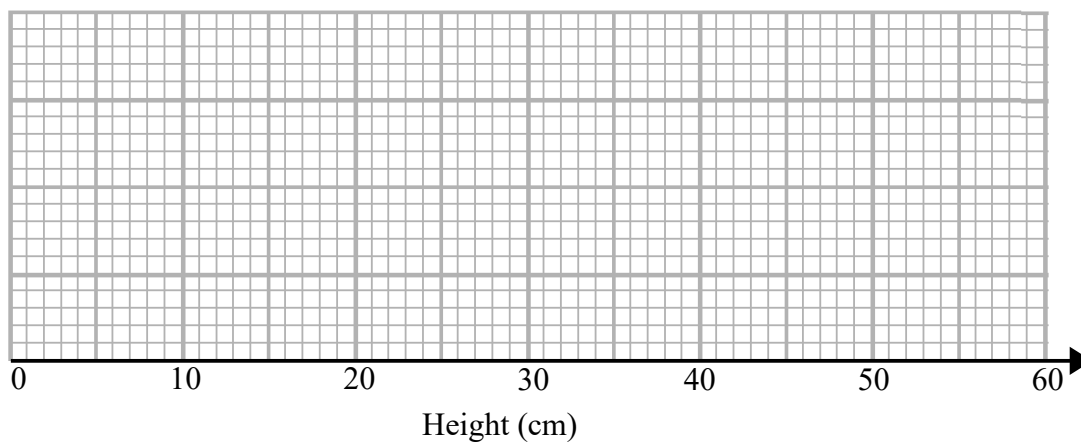
### Advice

- 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 The table shows some information about the heights, in cm, of some plants.

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
10	17	24	33	51

Draw a box plot for this information.



(Total for Question 1 is 2 marks)

2 Expand and Simplify  $(x - 2)(x + 3)(x - 4)$

.....  
(Total for Question 2 is 3 marks)

3 Write  $3.\dot{2}\dot{4}5$  as a fraction in its simplest form.

.....  
**(Total for Question 3 is 3 marks)**

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4 Find the equation of the line perpendicular to  $5y - 4x = 6$  which passes through (0,7)

.....  
**(Total for Question 4 is 2 marks)**

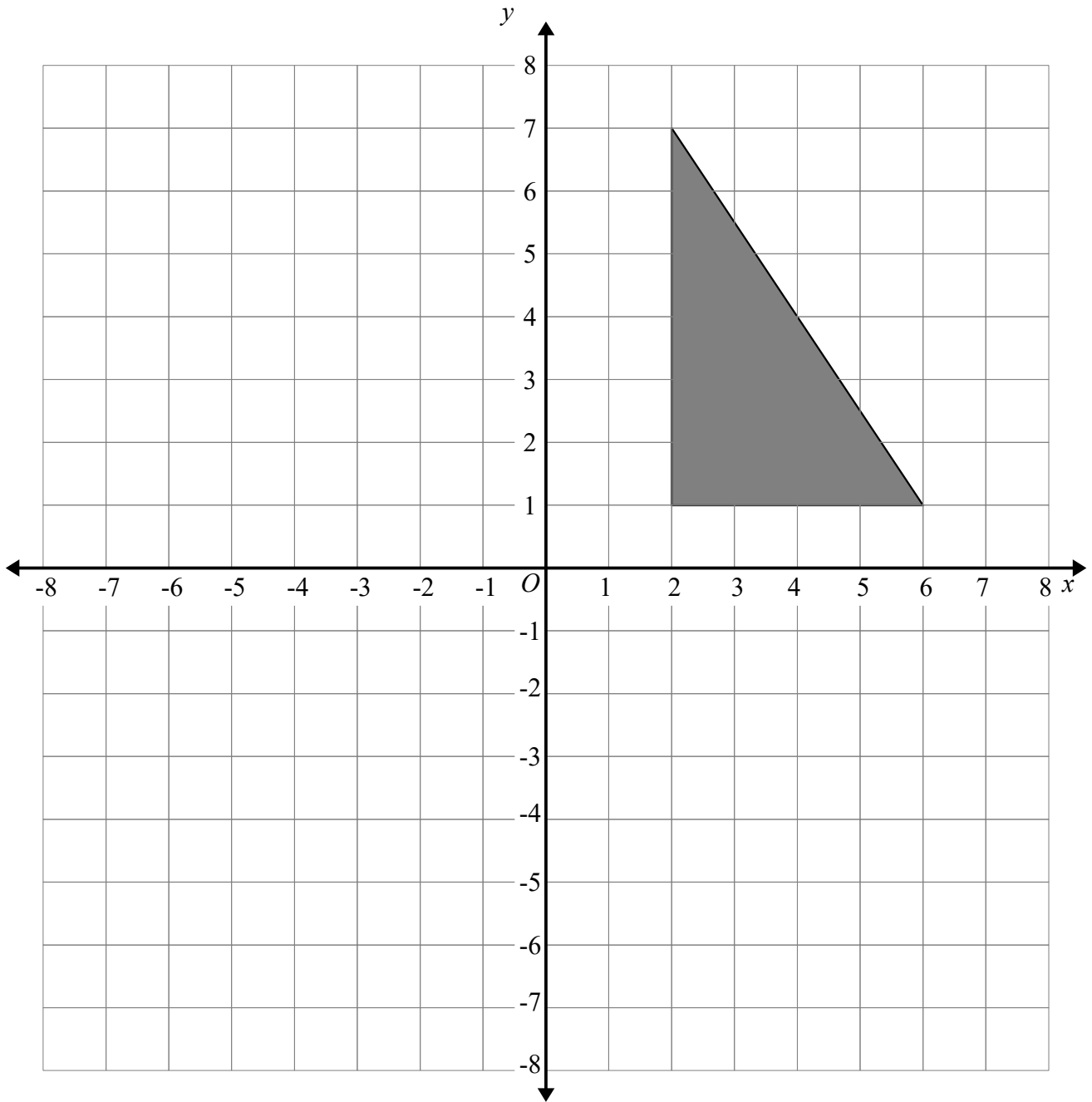
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5 Find the value of  $(27x^9)^{\frac{2}{3}}$

.....  
**(Total for Question 5 is 2 marks)**

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6



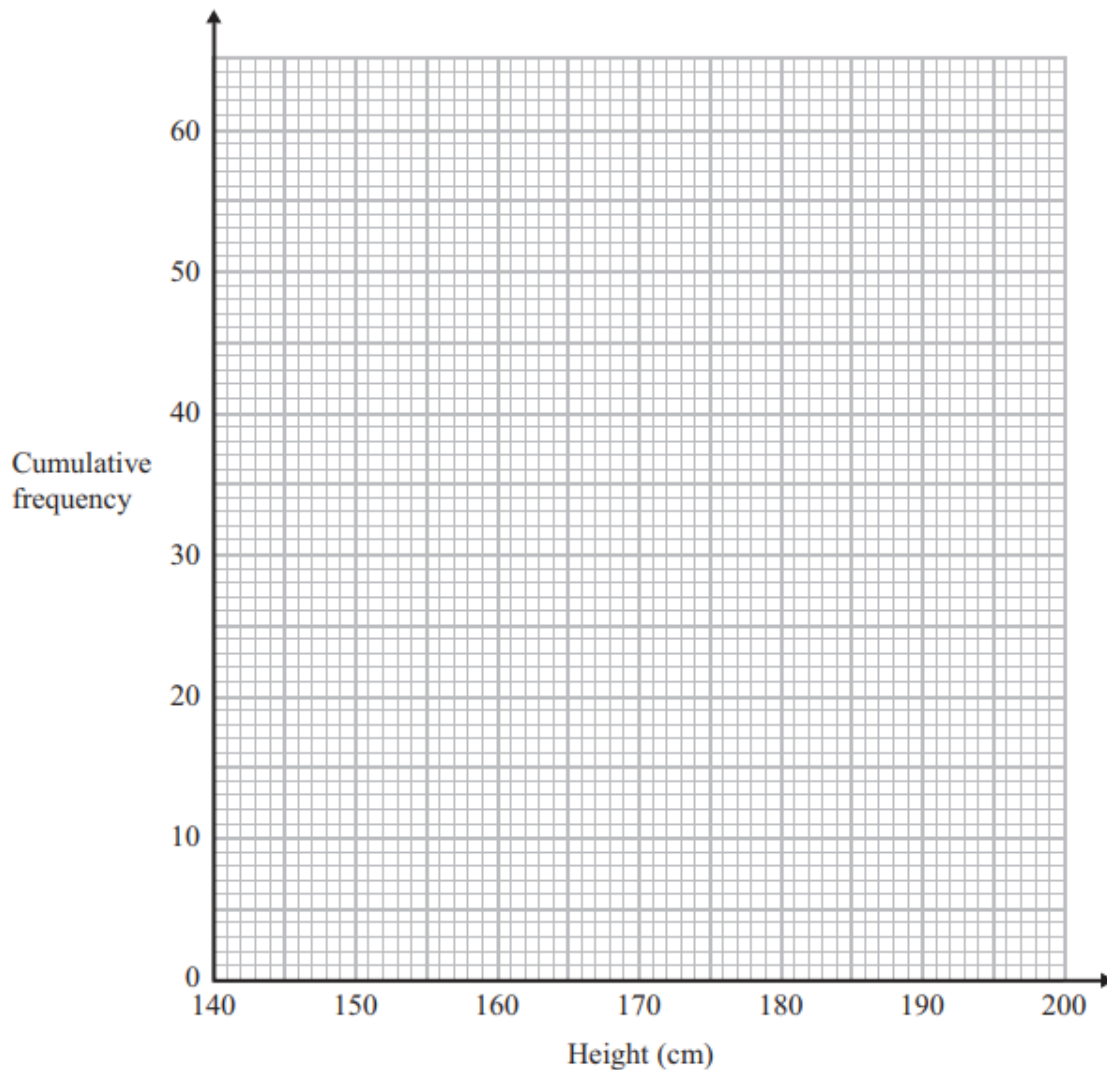
On the grid, enlarge the triangle by scale factor  $-0.5$ , centre  $O$ .

**(Total for Question 6 is 2 marks)**

7 The cumulative frequency table shows the height, in cm, of some tomato plants.

Height	Cumulative Frequency
$140 < h \leq 150$	9
$140 < h \leq 160$	19
$140 < h \leq 170$	36
$140 < h \leq 180$	48
$140 < h \leq 190$	55
$140 < h \leq 200$	60

(a) On the grid, plot a cumulative frequency graph for this information.



(2)

(b) Estimate the median height.

.....cm

(1)

(Total for Question 7 is 3 marks)

8 Make  $x$  the subject of the formula  $\frac{a}{b} = \frac{x}{x-5}$

.....  
**(Total for Question 8 is 3 marks)**

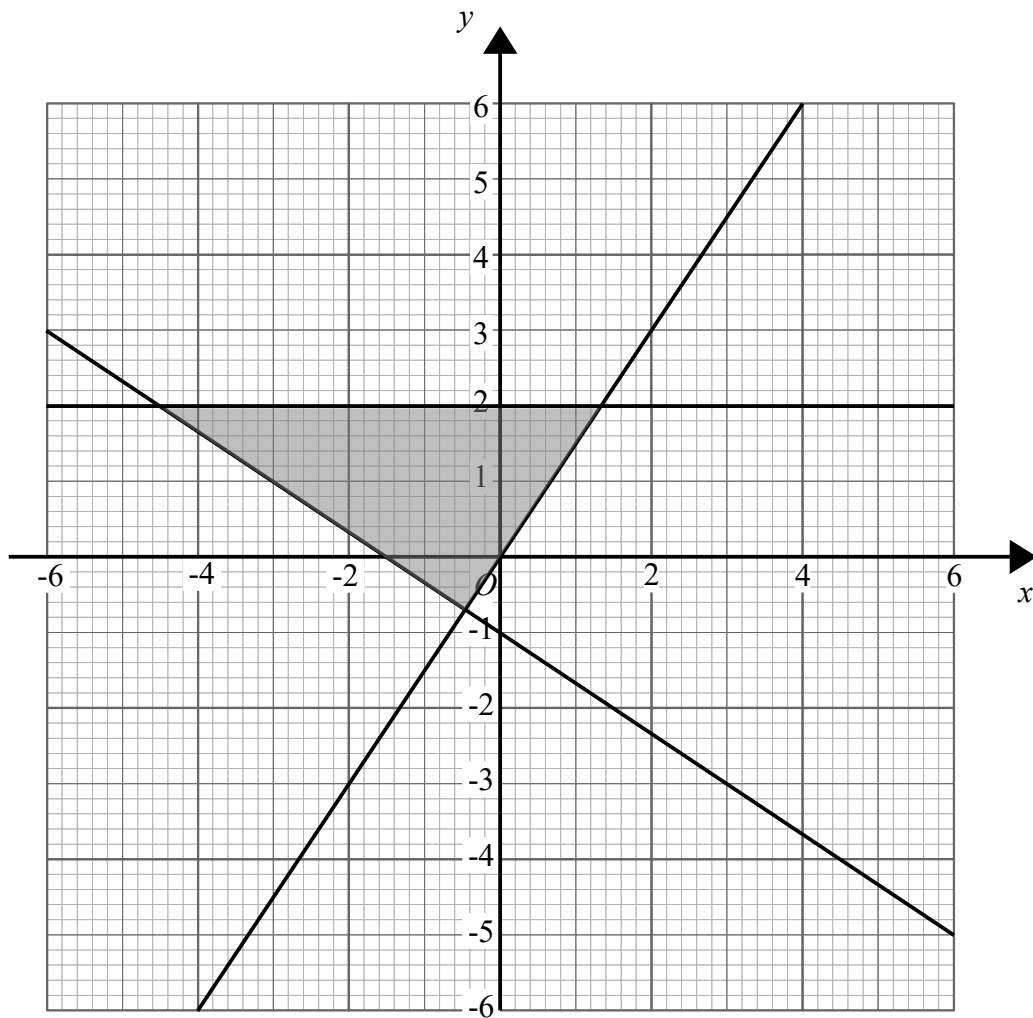
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9 Write  $(4 - \sqrt{3})^2$  in the form  $a + b\sqrt{3}$ , where  $a$  and  $b$  are integers.

.....  
**(Total for Question 9 is 2 marks)**

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10



Write down the three inequalities that define the shaded region

.....  
.....  
.....

(Total for Question 10 is 3 marks)