Name: _____

Maths Genie Stage 11

Test B

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 Find the value of $16^{-\frac{3}{2}}$

....
(Total for Question 1 is 2 marks)

2 Make x the subject of the formula $3x + a = b(x + 5)$

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

3 Expand and Simplify $(x + 5)(x - 2)^2$

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

4
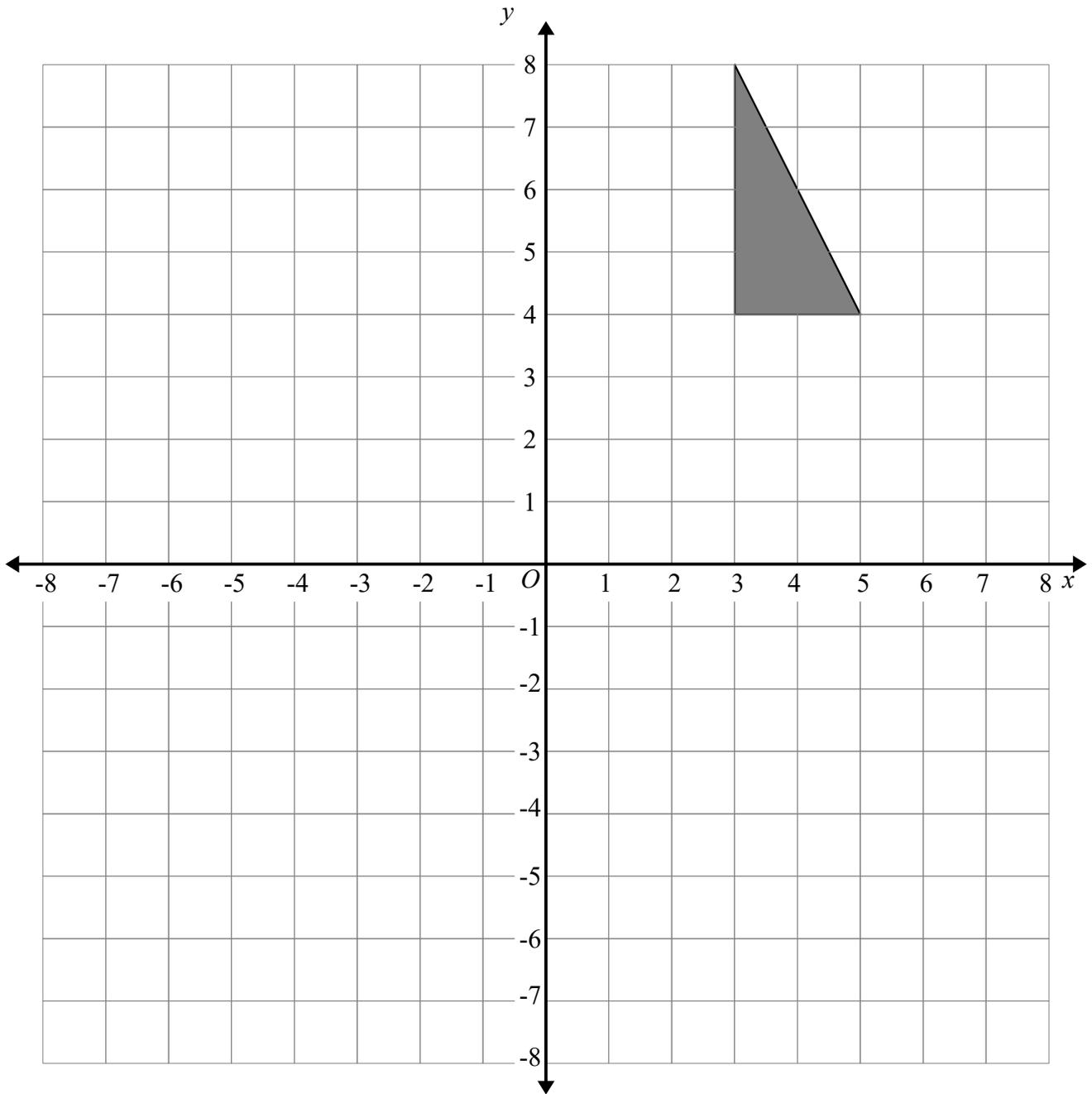
On the grid, enlarge the triangle by scale factor -1.5. centre (1, 2).

5
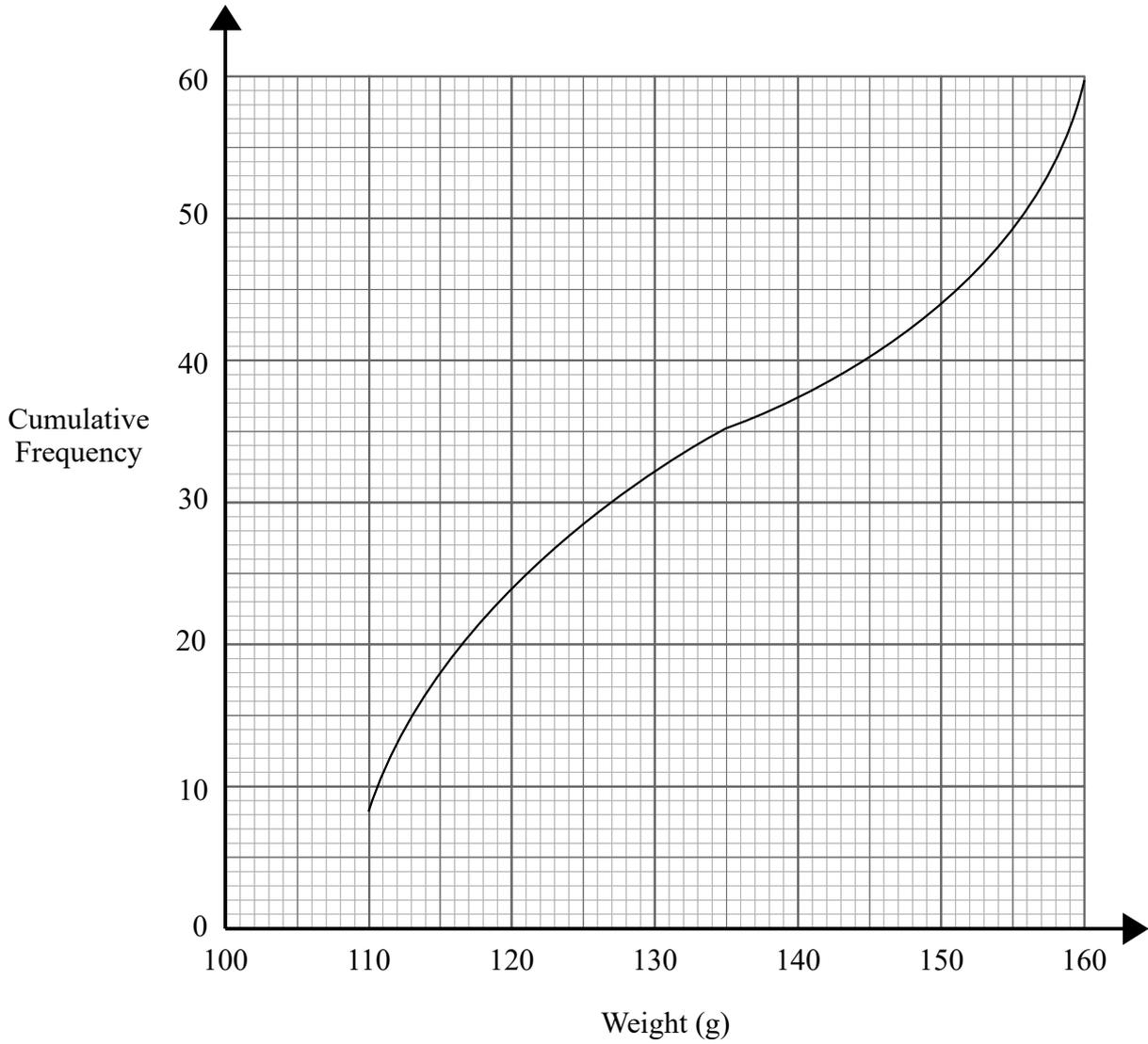
Weight (g)

(a) Find the median weight.

…........................g
(1)

(b) Find the inter quartile range.

…........................g
(2)

(Total for Question 5 is 3 marks)

6 Simplify fully $\dfrac{7 + 2\sqrt{5}}{2 + \sqrt{5}}$

…......................................

(Total for Question 6 is 3 marks)

7 Prove algebraically that the recurring decimal $0.3\overset{\bullet}{1}\overset{\bullet}{8}$ can be written as $\dfrac{7}{22}$

(Total for Question 7 is 2 marks)

8 The graphs of the straight lines with equations $2y = x + 4$ and $4y + 3x = 12$ have been drawn on the grid.
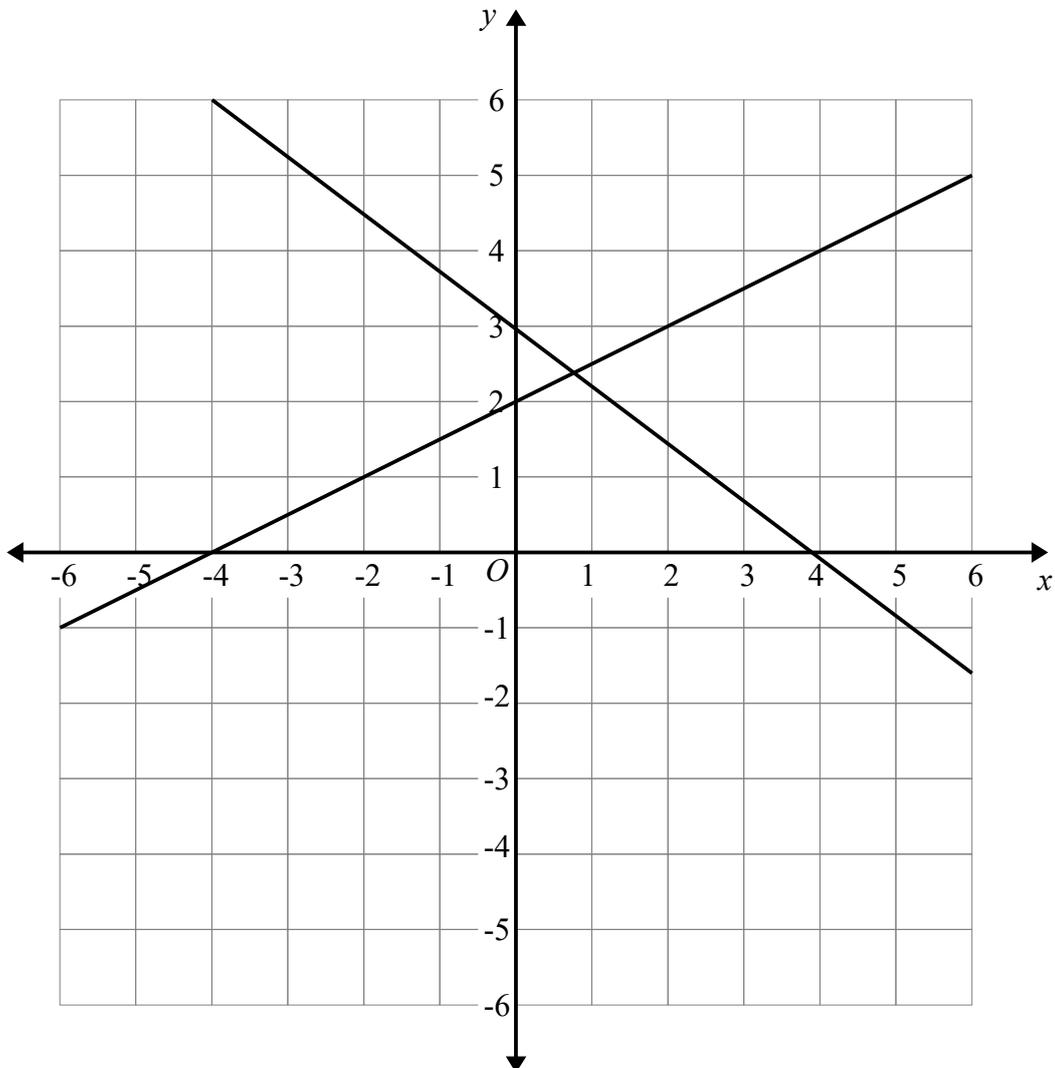
x and *y* are both integers.

Mark with a cross (×) all of the points that satisfies all the inequalities

$$2y > x + 4 \qquad 4y + 3x < 12 \qquad x > -3$$

(Total for Question 8 is 2 marks)

9 The times, in seconds, of 15 students running a race are recorded below.

53 54 57 58 58 60 61 65 67 67 68 70 71 71 78

Draw a box plot for this information.

Time (s)
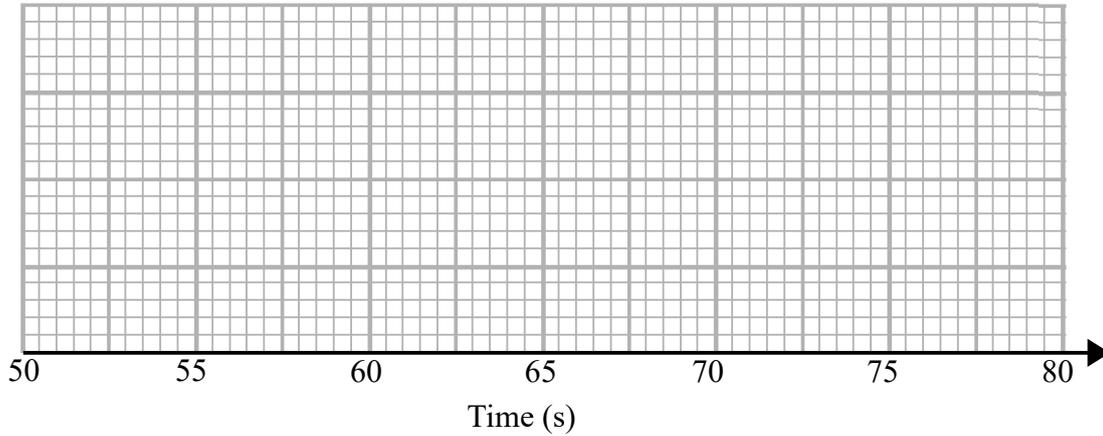
(Total for Question 9 is 2 marks)

10 Line A passes through the points (2, -6) and (12, -1)
Find the equation of the line perpendicular to A that passes through (2,5)

....

(Total for Question 10 is 2 marks)