Name: _____

Maths Genie Stage 11

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 frequency table shows the speeds of 100 cars.

Speed (km/h)	Frequency
$0 < s \leqslant 20$	10
$20 < s \leqslant 40$	17
$40 < s \leqslant 60$	23
$60 < s \leqslant 80$	27
$80 < s \leqslant 100$	18
$100 < s \leqslant 120$	5

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

Cumulative frequency

Speed (s) in km/h

(2)
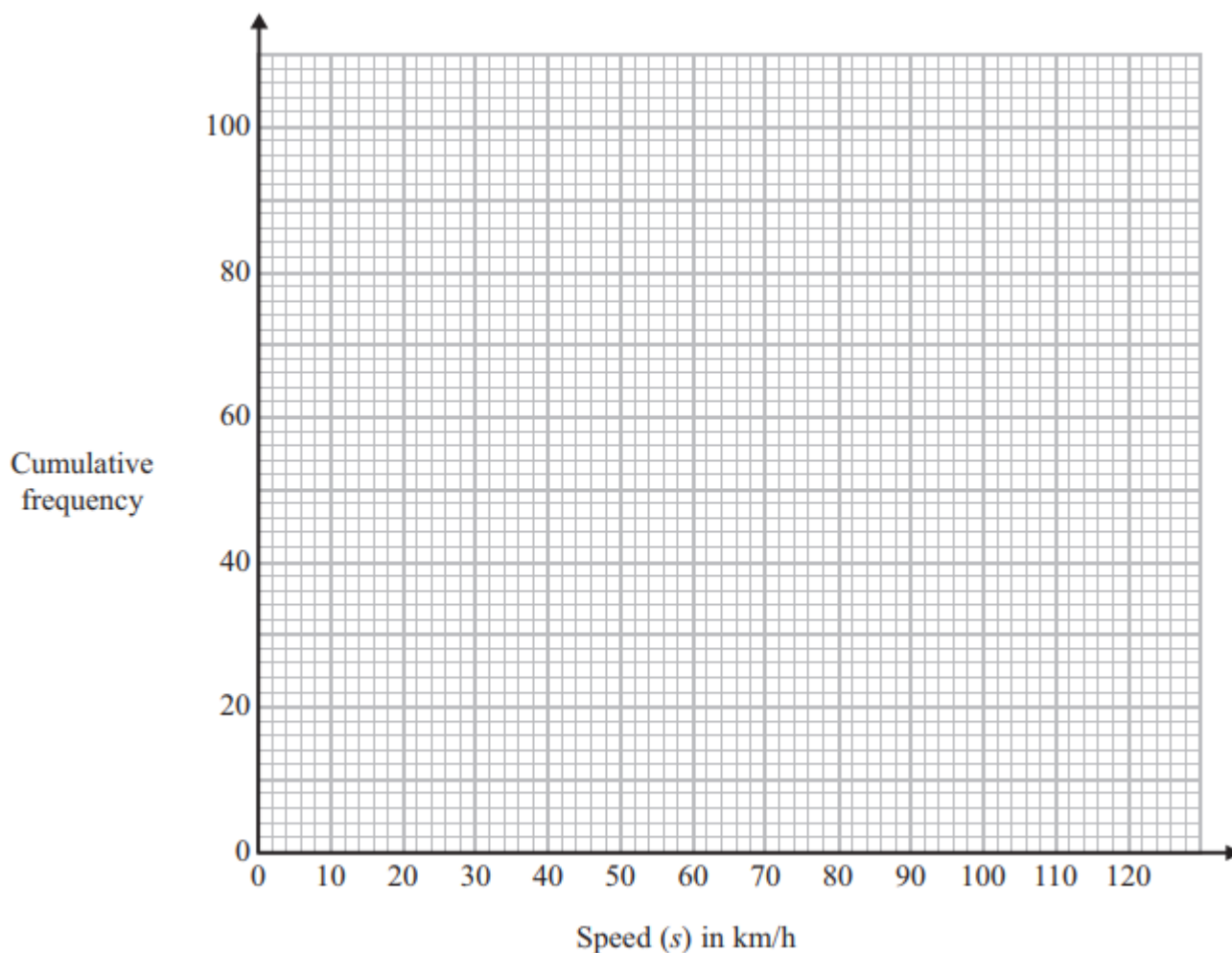
(b) Find an estimate for the number of cars travelling over 90 km/h.

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(1)

(Total for Question 1 is 3 marks)

2 Expand and Simplify $(x + 2)(2x + 3)(3x + 1)$

…..…........................

(Total for Question 2 is 3 marks)

3 The weights of 11 pigs, in kg, are recorded below.

49   52   56   62   66   66   69   71   77   78   91

Draw a box plot for this information.

Weight (kg)
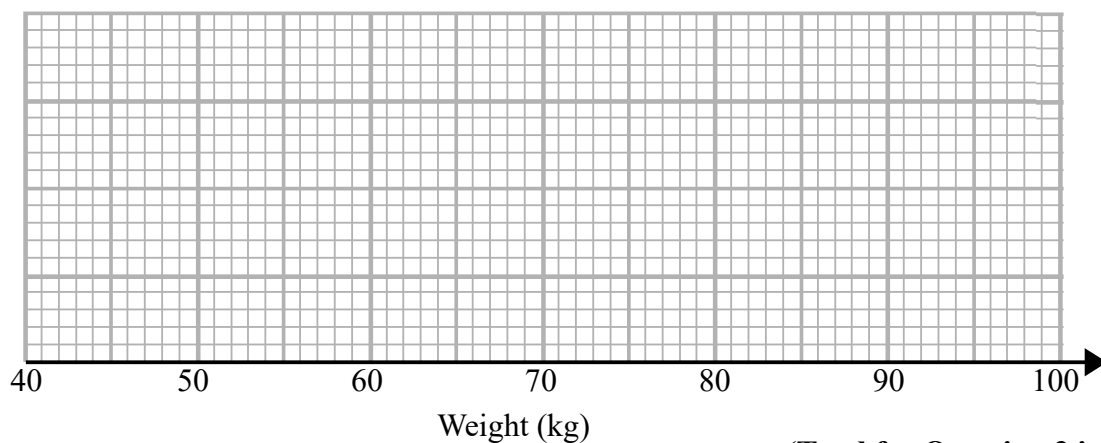
(Total for Question 3 is 2 marks)

4 Write $5\sqrt{75}$ in the form $k\sqrt{3}$, where k is an integer.

…..........................

(Total for Question 4 is 2 marks)

5 Find the value of $\left(\dfrac{27}{125}\right)^{-\frac{2}{3}}$

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(Total for Question 5 is 2 marks)

6 Make x the subject of the formula $ax + y = 4x - 2b$

…...

(Total for Question 6 is 3 marks)

7
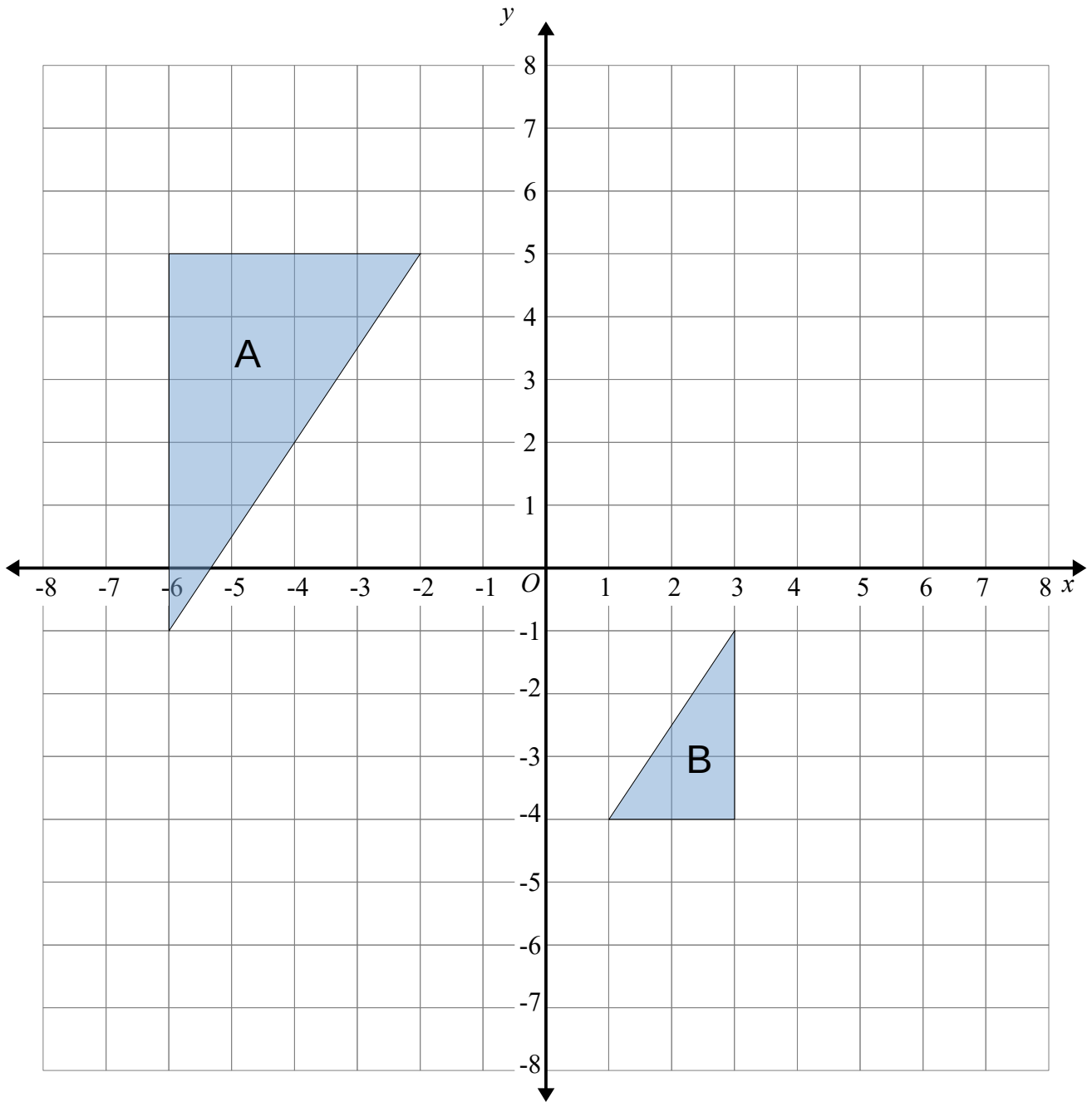
Describe fully the single transformation which maps triangle A onto triangle B.

…...

…...

…...

(Total for Question 7 is 2 marks)

8   On the grid shade the region that satisfies all these inequalities

$$x + y < 5 \qquad\qquad y > x + 1 \qquad\qquad y > 1$$

Label the region **R**.
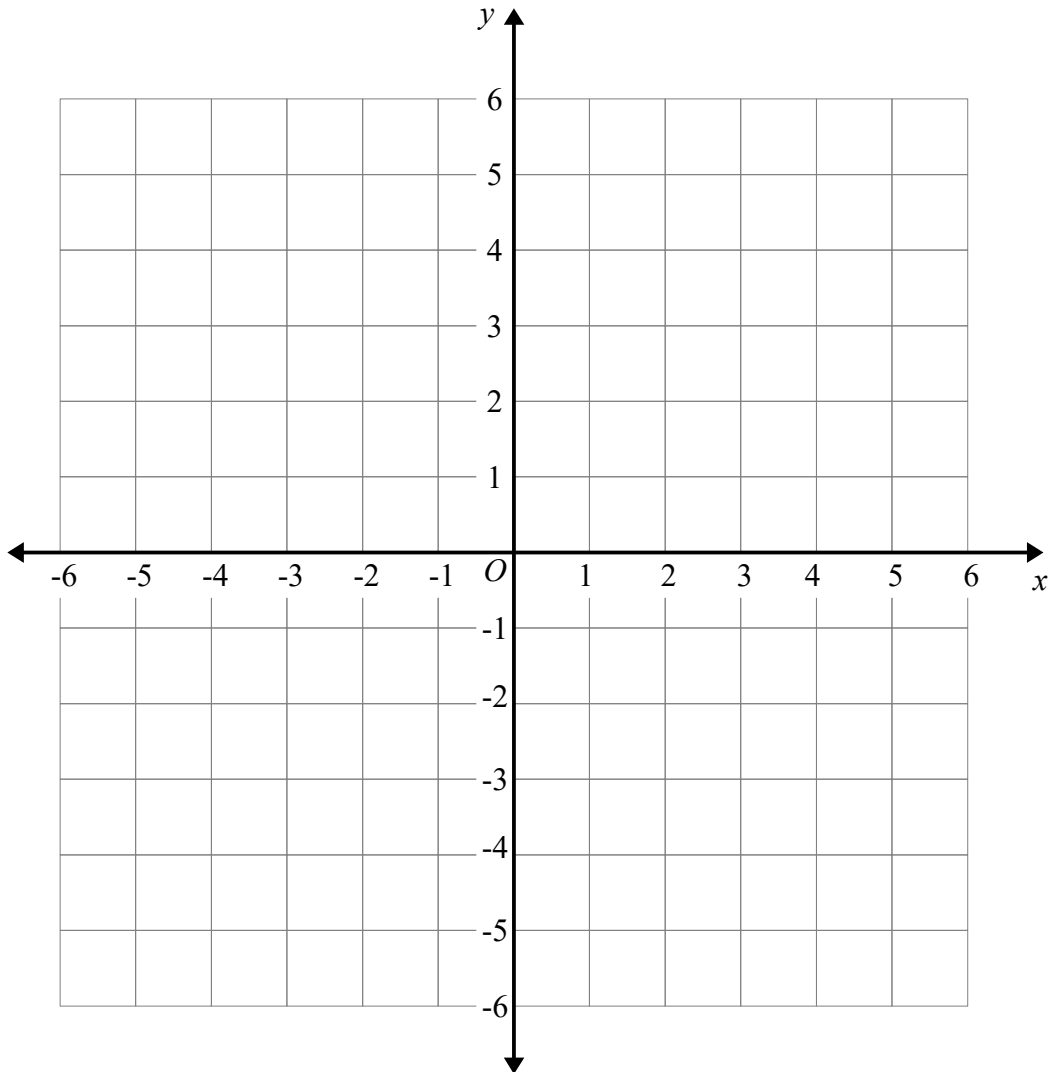
9 Write $0.4\dot{5}$ as a fraction in its simplest form.

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

10 Line *A* passes through the points (2, 1) and (8, 10)
Line *B* passes through the points (1, 7) and (-3, 1)
Show that Line *A* and Line *B* are parallel.

(Total for Question 10 is 3 marks)