Name: _____

Maths Genie Stage 4

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 (a) Write the ratio 72 : 120 in its simplest form.

36 : 60
18 : 30
9 : 15
3 : 5

3 : 5

(1)

(b) In February, it rained on $\frac{4}{7}$ of days

Write the ratio of the days it rained to the number of days it did not rain.

$\frac{4}{7} : \frac{3}{7}$

4 : 3

4 : 3

(1)

(Total for Question 1 is 2 marks)

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2 Find 21% of £160

$\frac{160}{10} = 16$ (10%) $2 \times 16 = 32$ (20%)

$\frac{160}{100} = 1.6$ (1%) $32 + 1.6 = £33.60$

1 mark for correct method

£ 33.60

(Total for Question 2 is 2 marks)

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3 Work out $\frac{5}{6}$ of 42

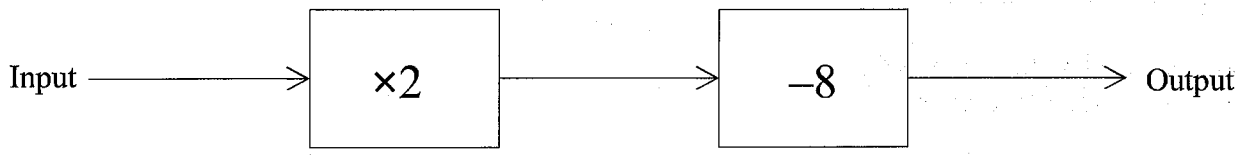
$\frac{42}{6} = 7$ 1 mark for 42/6 or 7

$7 \times 5 = 35$

35

(Total for Question 3 is 2 marks)

4 Here is a number machine.



(a) What is the **output** when the **input** is -5?

$-5 \times 2 = -10$

$-10 - 8 = -18$

Answer: −18

(1)

(b) What is the **input** when the **output** is 20?

$20 + 8 = 28$

$28 \div 2 = 14$

Answer: 14

(1)

(c) Show that there is a value of the input for which the input and the output have the same value.

$8 \times 2 = 16$

$16 - 8 = 8$

1 mark for attempts to find value

(2)

(Total for Question 4 is 4 marks)

5 A model car has the length of 12.5 cm.

The scale of the model is 1:40

Work out the length of the real car.
Give your answer in metres.

12.5×40

$125 \times 4 = 500$ cm

$= 5$m

1 mark for 12.5 x 40 or 500cm

5 .....m

(Total for Question 5 is 2 marks)

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6 (a) Work out $\frac{5}{9} \div \frac{3}{7}$

Give your answer as a mixed number in its simplest form.

$\frac{5}{9} \times \frac{7}{3} = \frac{35}{27} = 1\frac{8}{27}$

1 mark of 35/27 or equivalent

$1\frac{8}{27}$

(2)

(b) Work out $1\frac{4}{5} \times \frac{3}{8}$

$\frac{9}{5} \times \frac{3}{8} = \frac{27}{40}$

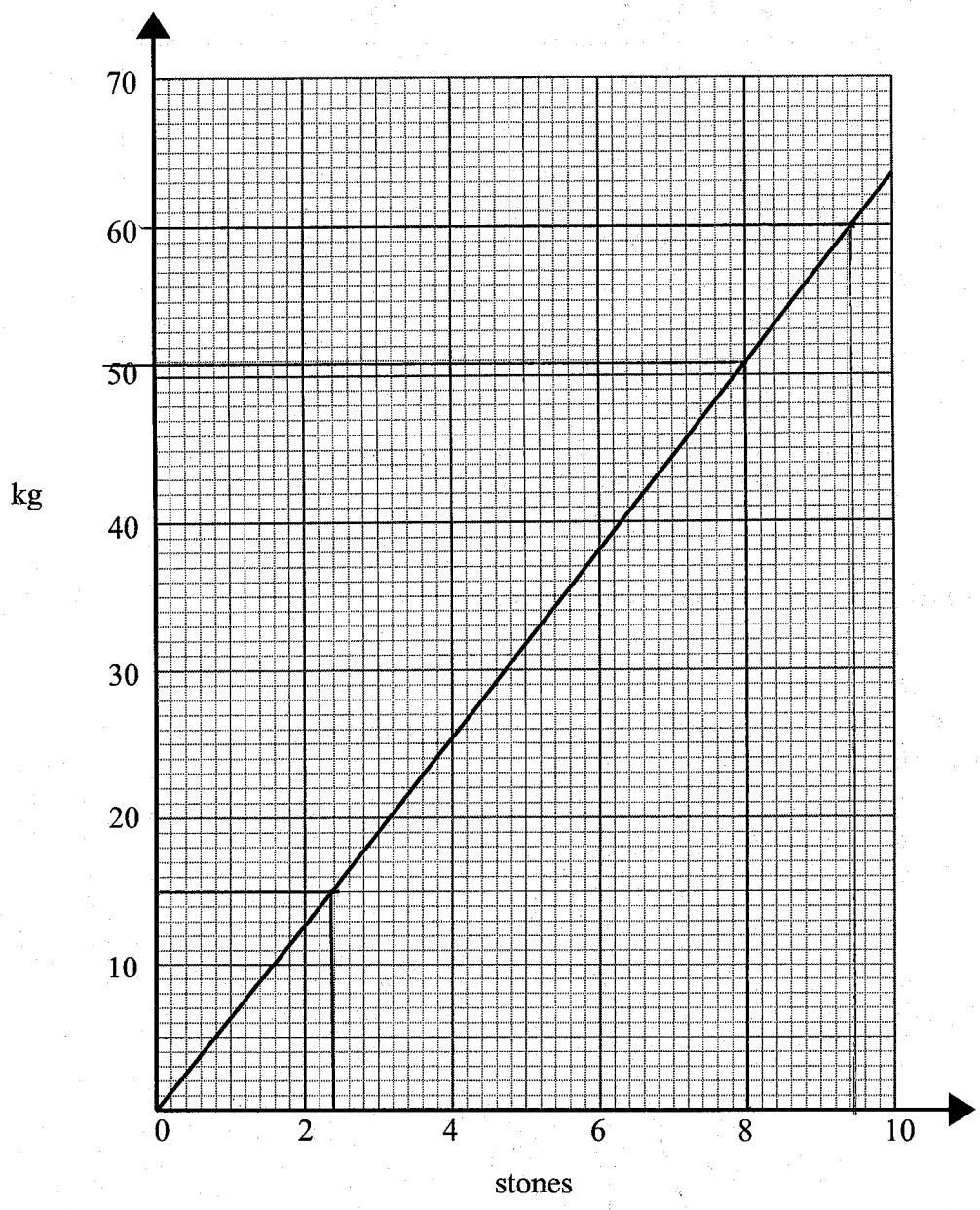
1 mark for 9/5

$\frac{27}{40}$

(2)

(Total for Question 6 is 4 marks)

7 You can use this graph to change between stones and kilograms.



(a) Change 8 stones to kilograms.

51 kg

(1)

(b) Change 75 kilograms to stones.

15kg = 2.4 stone

60kg = 9.6 stone

75kg = ~~12~~ 11.8 stone

ok 2.4 x 5 = 12

1 mark for any correct method

12 stones

[11.6 to 12] (2)

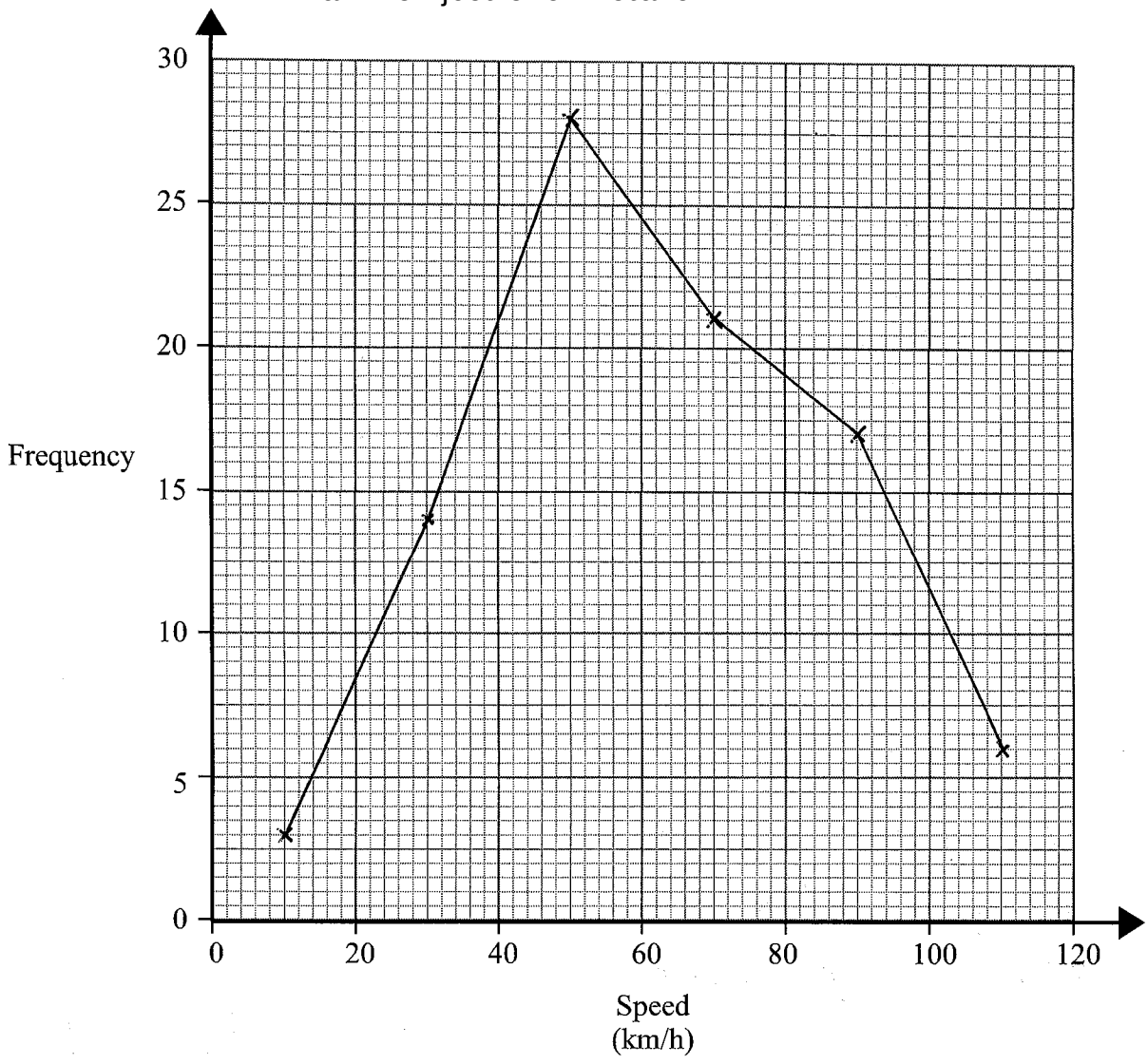
(Total for Question 7 is 3 marks)

8 The frequency table shows the speeds of 100 cars.

Speed (km/h)	Frequency
$0 < s \leqslant 20$	3
$20 < s \leqslant 40$	14
$40 < s \leqslant 60$	28
$60 < s \leqslant 80$	21
$80 < s \leqslant 100$	17
$100 < s \leqslant 120$	6

Draw a frequency polygon to show this information.

1 mark for just one mistake



(Total for Question 8 is 2 marks)

9 (a) Complete the table of values for $y = 6x - 2$

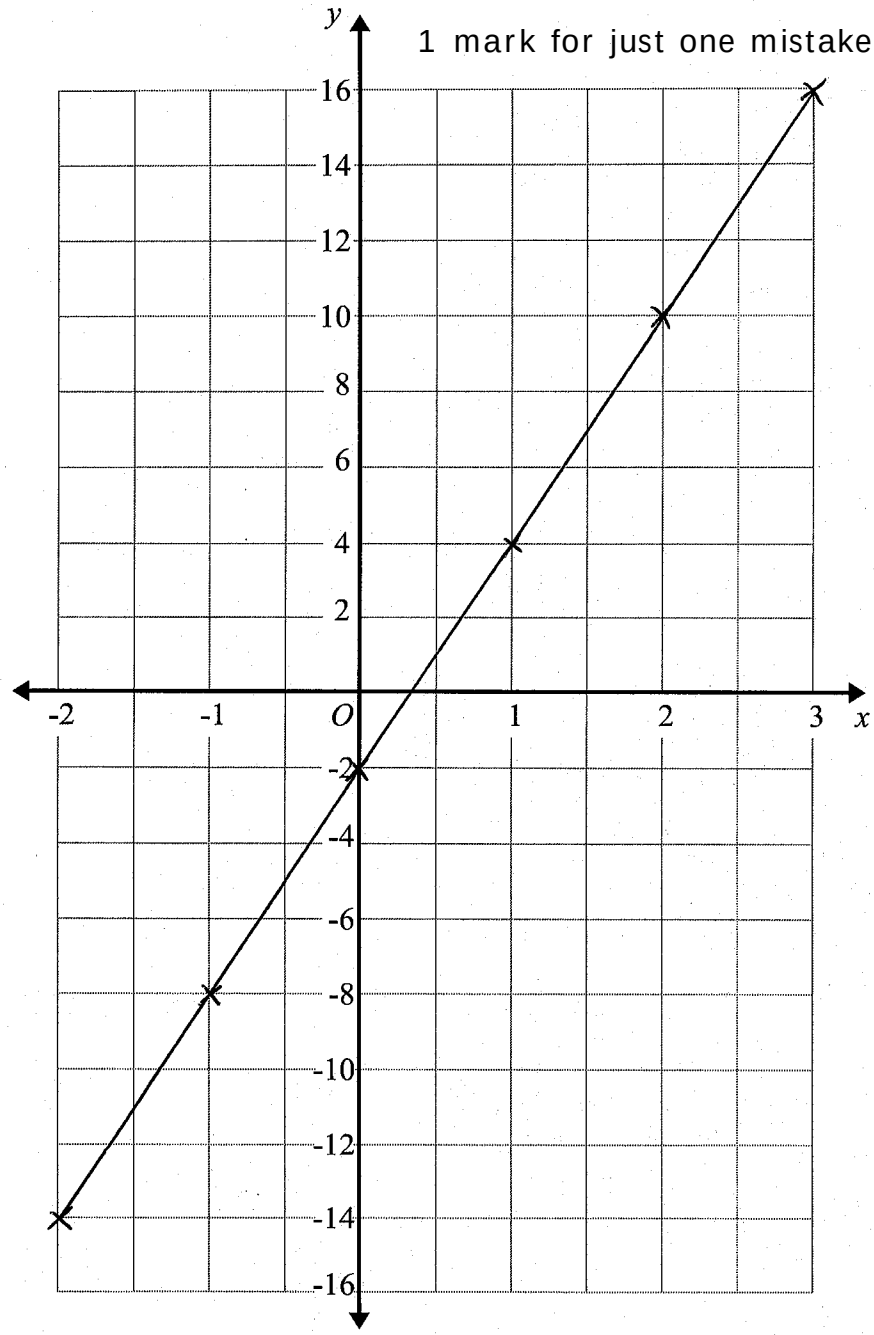
x	-2	-1	0	1	2	3
y	-14	-8	-2	4	10	16

1 mark for just one mistake

(2)

(b) On the grid, draw the graph of $y = 6x - 2$ for values of x from -2 to 3

1 mark for just one mistake



(2)

(Total for Question 9 is 4 marks)