Name: _____

Maths Genie Stage 4

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   You can use this graph to change between inches and centimetres.
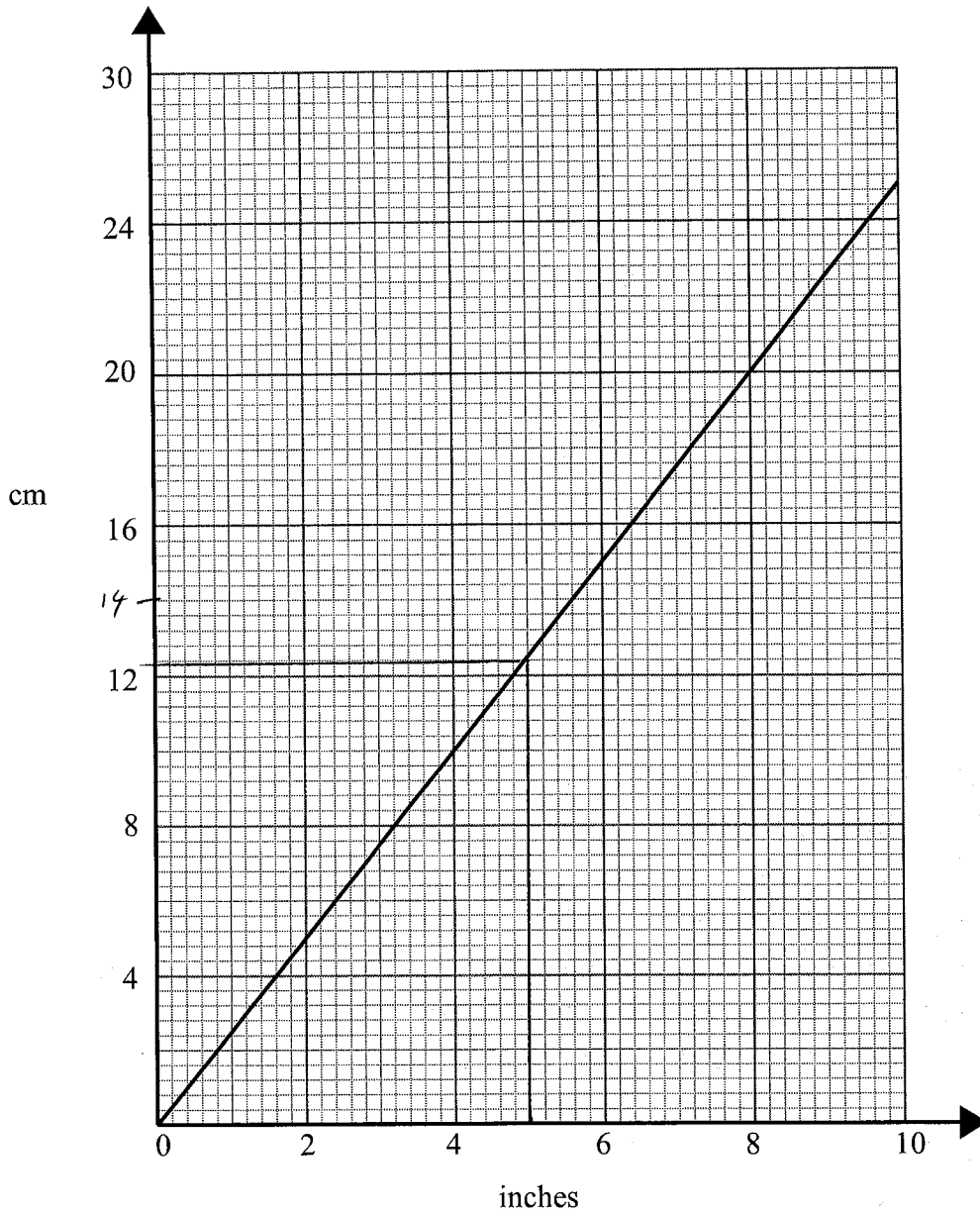
(a) Change 5 inches to cm.

.... 12.4 .... cm

(1)

(b) Change 45 cm to inches

20 cm = 8 inches

10 cm = 4 inches

5 cm = 2 inches

8 + 8 + 2 = 18

1 for any correct method

.... 18 .... inches

(2)

(Total for Question 1 is 3 marks)

2 Here is a number machine.

input → | × 3 | → | + 11 | → output
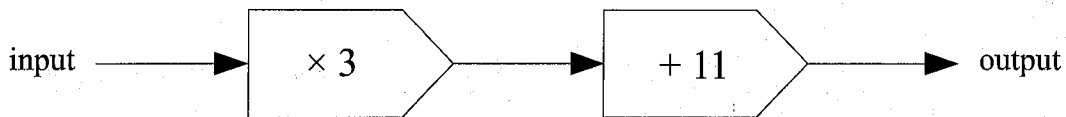
(a) Find the output when the input is 5

$$5 \times 3 = 15$$
$$15 + 11 = 26$$

............26............

(1)

(b) Find the output when the input is –2

$$-2 \times 3 = -6$$
$$-6 + 11 = 5$$

............5............

(1)

(c) Find the input when the output is 32

$$32 - 11 = 21$$ 1 mark for 32-11 or 21

$$21 \div 3 = 7$$

............7............

(2)

(Total for Question 2 is 4 marks)

3 A model plane has the length of 20cm.

The scale of the model is 1:360

Work out the length of the real plane.
Give your answer in metres.   1 mark for 20 x 360 or 7200

$$20 \times 360 = 7200 \text{ cm}$$
$$= 72 \text{ m}$$

............72............m

(Total for Question 3 is 2 marks)

4   Work out 184% of 140.

$$\frac{140}{10} = 14 \quad (10\%)$$

$$\frac{140}{100} = 1.4 \quad (1\%)$$

$$1.4 \times 4 = 5.6 \quad (4\%)$$

$$14 \times 3 = 42 \quad (30\%)$$

$$\frac{140}{2} = 70 \quad (50\%)$$

$$\begin{array}{r} 140 \\ 70 \\ 42 \\ 5.6 \\ \hline 257.6 \end{array}$$

1 mark for correct method

.... 257.6

(Total for Question 4 is 2 marks)

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5   There are only blue counters, red counters and yellow counters in a bag.

There are twice as many blue counters as yellow counters.
There are three times as many red counters as yellow counters.

Write down the ratio of blue counters to red counters to yellow counters.

$$B : Y : R$$
$$2 : 1 : 3$$

1 mark for any correct use of ratio

$$B : R : Y$$

$$B$$
$$2 : 3 : 1$$

.... 2 : 3 : 1

(Total for Question 5 is 2 marks)

6 (a) Work out $\frac{2}{3} - \frac{1}{4}$

$$\begin{array}{c} \times 4 \\ \times 4 \end{array} \frac{2}{3} - \frac{1}{4} \begin{array}{c} \times 3 \\ \times 3 \end{array}$$

$$\frac{8}{12} - \frac{3}{12} = \frac{5}{12}$$

1 mark for making denominators the same

$\frac{5}{12}$

(2)

(b) Work out $\frac{3}{4} \times \frac{4}{9}$

Give your answer as a fraction in its simplest form.

$$\frac{\cancel{3}^{1}}{\cancel{4}_{1}} \times \frac{\cancel{4}^{1}}{\cancel{9}_{3}} = \frac{1}{3}$$

1 mark of any 12/36 or any equivalent

$\frac{1}{3}$

(2)

(Total for Question 6 is 4 marks)

7 Work out the difference between $\frac{2}{5}$ of 45 and $\frac{3}{7}$ of 35

$$\frac{45}{5} = 9 \qquad\qquad \frac{35}{7} = 5$$

$$9 \times 2 = \underline{\underline{18}} \qquad\qquad 5 \times 3 = \underline{\underline{15}}$$

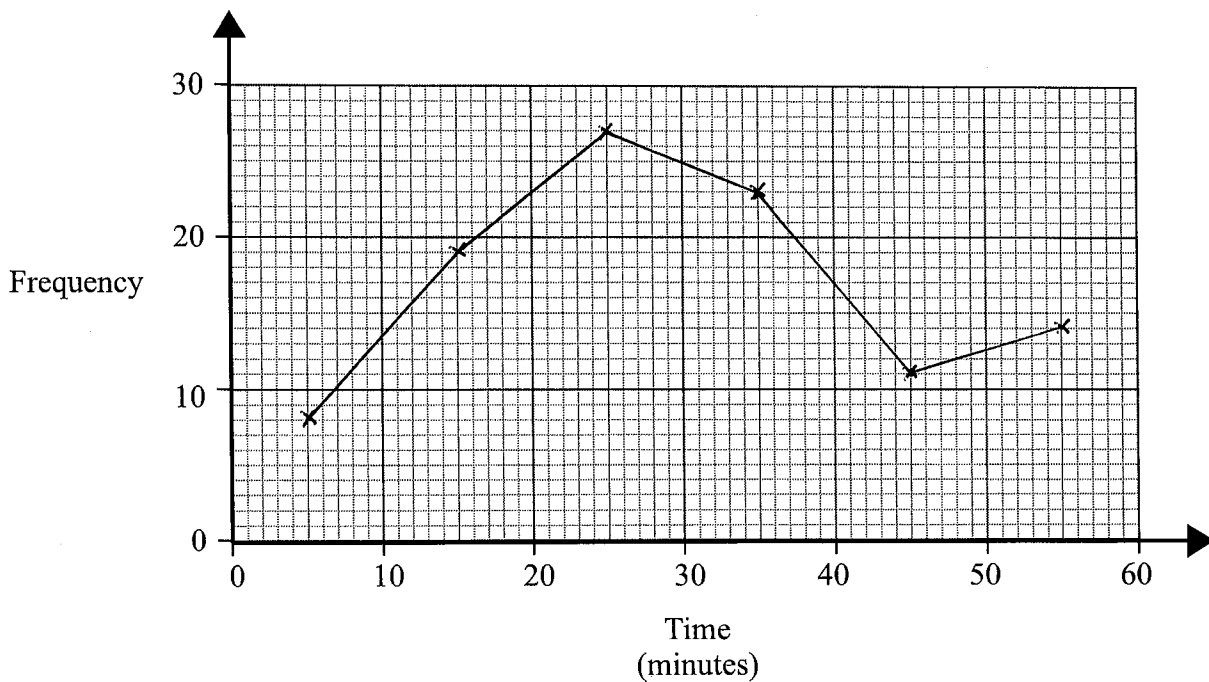1 mark for 18   1 mark for 15

$$18 - 15 = 3$$

3

(Total for Question 7 is 3 marks)

8 The frequency table shows the time taken for 100 people to travel to an event.

Time (minutes)	Frequency
$0 < t \leqslant 10$	8
$10 < t \leqslant 20$	19
$20 < t \leqslant 30$	27
$30 < t \leqslant 40$	23
$40 < t \leqslant 50$	11
$50 < t \leqslant 60$	14

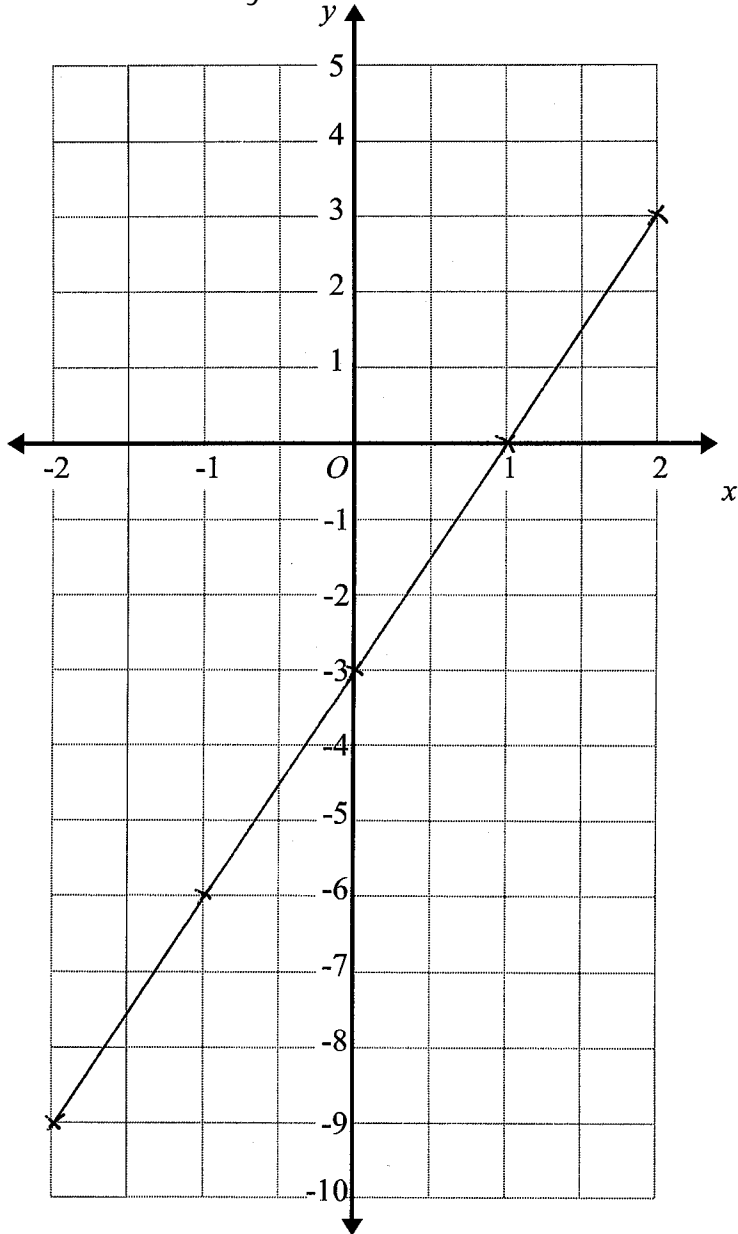Draw a frequency polygon to show this information.

1 mark for just one mistake

(Total for Question 8 is 2 marks)

9 On the grid, draw the graph of $y = 3x - 3$ for values of x from -2 to 2

x	-2	-1	0	1	2
y	-9	-6	-3	0	3

1 mark for any correct coordinates/table

1 mark for just one mistake

(Total for Question 9 is 3 marks)