UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

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| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | |

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**MATHEMATICS** **0580/12**

Paper 1 (Core) **October/November 2013**

**1 hour**

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For $\pi$, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 56.

This document consists of **11** printed pages and **1** blank page.


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**1** Put one pair of brackets into this equation to make it correct.

$$3 + 5 \times 4 - 2 = 13$$

[1]

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**2** $\mathbf{p} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

Work out $\mathbf{p} + \mathbf{q}$.

*Answer* $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

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**3** Zingon make light bulbs.

The probability that a Zingon light bulb is faulty is $\frac{1}{20}$.

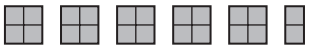
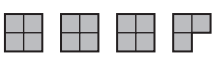
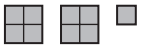
Gina tests 240 of these light bulbs.

How many of them would she expect to be faulty?

*Answer* ..... [1]

---

**4** The pictogram shows information about the numbers of different drinks sold in a café in one hour.

| | |
|---|---|
| Coffee |  |
| Tea |  |
| Hot chocolate | |
| Juice |  |

Key:  represents 4 cups

**(a)** In this hour, 14 cups of hot chocolate were sold.
Complete the pictogram using this information. [1]

**(b)** How many more cups of coffee than cups of tea were sold?

*Answer(b)* ..... [1]

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**5** Write the following in order of size, smallest first.

$$19\% \qquad \frac{1}{5} \qquad \sqrt{0.038} \qquad \sin 11.4° \qquad 0.719^5$$

*Answer* ..... < ..... < ..... < ..... < ..... [2]

---

**6** Use a calculator to work out the following.

**(a)** $3\,(-4 \times 6^2 - 5)$

*Answer(a)* ..... [1]

**(b)** $\sqrt{3} \times \tan 30° + \sqrt{2} \times \sin 45°$

*Answer(b)* ..... [1]

---

**7** Find the circumference of a circle of radius 2.5 cm.

*Answer* ..... cm [2]

---

**8** Bruce plays a game of golf.
His scores for each of the 18 holes are shown below.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | 3 | 4 | 5 | 4 | 6 | 2 | 3 | 4 |
| 4 | 5 | 3 | 4 | 3 | 5 | 4 | 4 | 4 |

The information is to be shown in a pie chart.

Calculate the sector angle for the score of 4.

*Answer* ..... [2]

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**[Turn over**

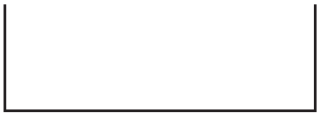
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**9** **(a)** Add **one** line to the diagram so that it has two lines of symmetry.



[1]

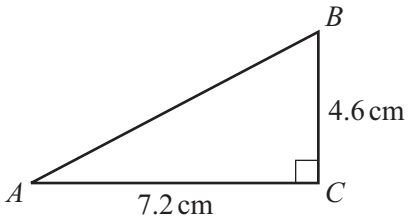
**(b)** Add **two** lines to the diagram so that it has rotational symmetry of order 2.



[1]

---

**10**




NOT TO SCALE

Calculate *AB*.

*Answer* ..... cm [2]

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**11** The table shows how the dollar to euro conversion rate changed during one day.

| Time | 10 00 | 11 00 | 12 00 | 13 00 | 14 00 | 15 00 | 16 00 |
|---|---|---|---|---|---|---|---|
| $1 | €1.3311 | €1.3362 | €1.3207 | €1.3199 | €1.3200 | €1.3352 | €1.3401 |

Khalil changed $500 into euros (€).

How many more euros did Khalil receive if he changed his money at the highest rate compared to the lowest rate?

*Answer* € ..... [3]

---

**12** Pam wins the student of the year award in New Zealand.
She sends three photographs of the award ceremony by post to her relatives.

- one of size 13 cm by 23 cm to her uncle in Australia
- one of size 15 cm by 23 cm to her sister in China
- one of size 23 cm by 35 cm to her mother in the UK

| Maximum lengths | Australia | Rest of the world |
|---|---|---|
| 13 cm by 23.5 cm | $1.90 | $2.50 |
| 15.5 cm by 23.5 cm | $2.40 | $2.90 |
| 23 cm by 32.5 cm | $2.80 | $3.40 |
| 26 cm by 38.5 cm | $3.60 | $5.20 |

The cost of postage is shown in the table above.
Use this information to calculate the total cost.

*Answer* $ ..... [3]

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**[Turn over**

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**13** **(a)** Complete the following statement.

The two common factors of 15 and 20 are 1 and ..... . [1]

**(b)** Write down the next square number that is greater than 169.

*Answer(b)* ..... [1]

**(c)** Write down a prime number between 90 and 100.

*Answer(c)* ..... [1]

---

**14** The straight line, $L$, has the equation $y = 5 - 2x$ .

Write down

**(a)** the co-ordinates of the point where the line crosses the $y$-axis,

*Answer(a)* (..... , .....) [1]

**(b)** the gradient of the line,

*Answer(b)* ..... [1]

**(c)** the equation of a line parallel to $L$.
Give your answer in the form $y = mx + c$.

*Answer(c)* $y =$ ..... [1]

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**15** $c = 10d + 3$

**(a)** Find the value of $c$ when $d = 2.3$ .

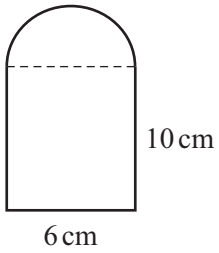
*Answer(a)* $c =$ ..... [1]

**(b)** Make $d$ the subject of the formula.

*Answer(b)* $d =$ ..... [2]

---

**16**




NOT TO SCALE

This shape is made from a rectangle and a semicircle.
The rectangle measures 10 cm by 6 cm.

Work out the area of the shape.

*Answer* ..... $cm^2$ [3]

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**17** Solve the simultaneous equations.

$$2x + 5y = 26$$
$$4x + 3y = 24$$

*Answer* $x =$ .....

$y =$ ..... [3]

---

**18** Simplify the following.

**(a)** $x^5 \times x^2$

*Answer(a)* ..... [1]

**(b)** $20y^4 \div 4y^{-2}$

*Answer(b)* ..... [2]

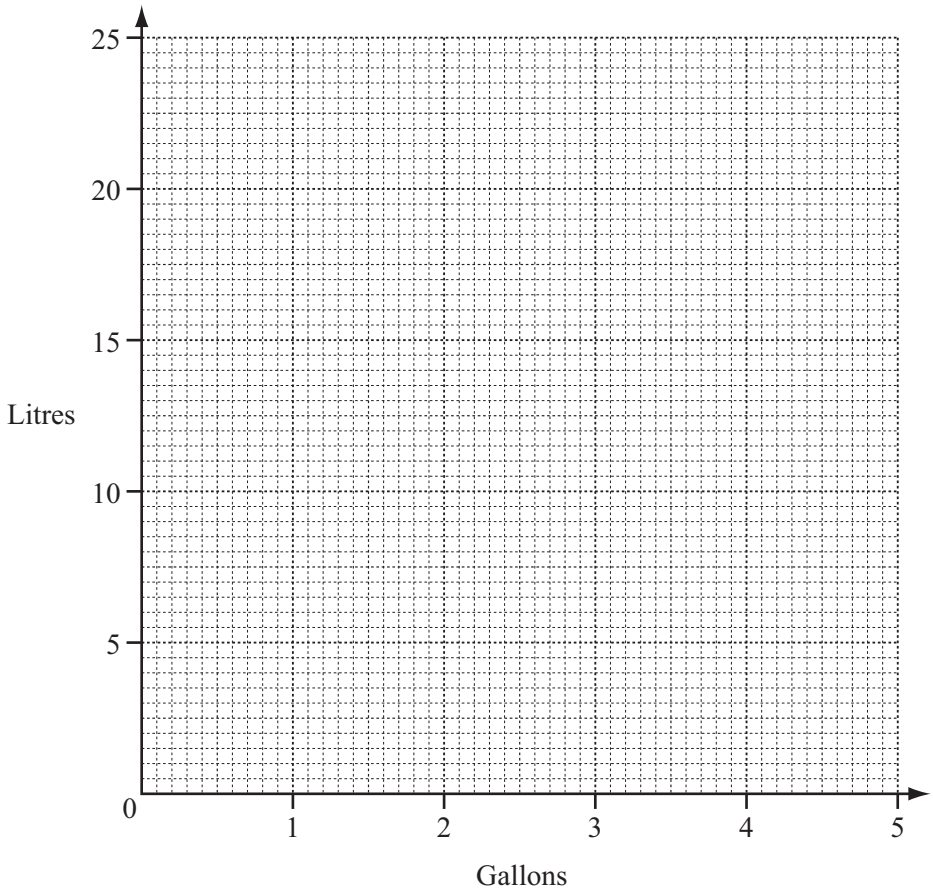
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**19** Mario says that 5 gallons = 22.5 litres.

**(a)** On the grid, draw a straight line to show the conversion rate that Mario uses.




[2]

**(b)** Use your graph to find

**(i)** the number of litres equivalent to 4 gallons,

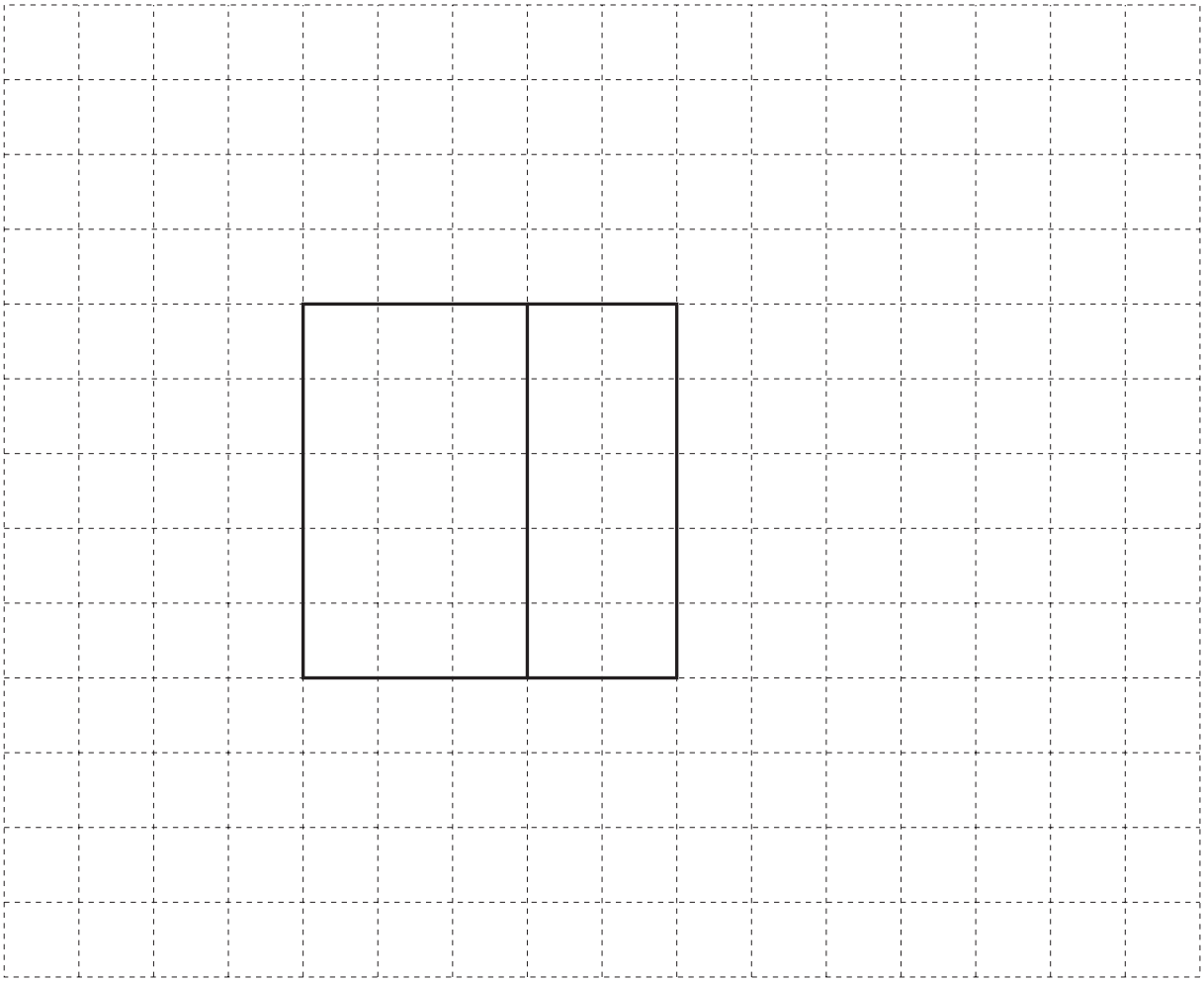
*Answer(b)*(i) ..... litres [1]

**(ii)** the number of gallons equivalent to 15 litres.

*Answer(b)*(ii) ..... gallons [1]

**20**

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The diagram shows part of the net of a cuboid.
It is drawn full size.

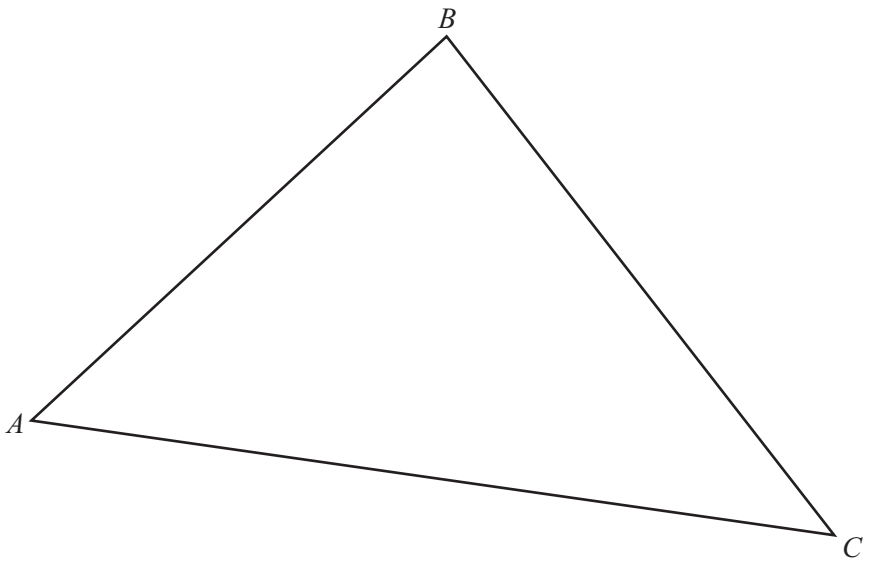
**(a)** Complete the net of the cuboid. [2]

**(b)** Work out the volume of the cuboid.
Write down the units of your answer.

*Answer(b)* ..... ..... [3]

*For Examiner's Use*

**21 Use a straight edge and compasses only for the constructions in parts (a) and (b). Leave in all your construction arcs.**




**(a)** Construct the bisector of angle $ABC$. [2]

**(b)** Construct the perpendicular bisector of $AB$. [2]

**(c)** Shade the region inside triangle $ABC$ containing points that are

- less than 7 cm from $C$

**and**

- closer to $A$ than to $B$. [2]

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