UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

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| CANDIDATE NAME | |
| CENTER NUMBER | CANDIDATE NUMBER |

**CAMBRIDGE IGCSE MATHEMATICS (US)** **0444/01**

Paper 1 (Core) **For examination from 2012**

SPECIMEN PAPER

**1 hour**

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

**READ THESE INSTRUCTIONS FIRST**

Write your Center 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.
**CALCULATORS MUST NOT BE USED IN THIS PAPER.**
All answers should be given in their simplest form.
If work is needed for any question it must be shown in the space provided.

The number of points is given in parentheses [ ] at the end of each question or part question.
The total of the points for this paper is 56.

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This document consists of **12** printed pages.



UNIVERSITY of CAMBRIDGE International Examinations

**[Turn over**

## Formula List

| | |
|---|---|
| Area, $A$, of triangle, base $b$, height $h$. | $A = \frac{1}{2}bh$ |
| Area, $A$, of circle, radius $r$. | $A = \pi r^2$ |
| Circumference, $C$, of circle, radius $r$. | $C = 2\pi r$ |
| Lateral surface area, $A$, of cylinder of radius $r$, height $h$. | $A = 2\pi rh$ |
| Surface area, $A$, of sphere of radius $r$. | $A = 4\pi r^2$ |
| Volume, $V$, of prism, cross-sectional area $A$, length $l$. | $V = Al$ |
| Volume, $V$, of cylinder of radius $r$, height $h$. | $V = \pi r^2 h$ |
| Volume, $V$, of sphere of radius $r$. | $V = \frac{4}{3}\pi r^3$ |

**1** Write down the value of

**(a)** $2^3$,

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

**(b)** $2^0$.

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

---

**2** Simplify $\dfrac{4+8}{4\times 8}$.

Give your answer as a fraction in its lowest terms.

*Answer* ..... [2]

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**3** $p = 2 \times 10^5$

Find the value of $6p$, giving your answer in scientific notation.

*Answer* ..... [2]

---

**4** **(a)** Simplify $5p^2 \times 3p^3$.

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

**(b)** Factor completely $2x^2 + 6xy$.

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

---

**5**

| | | | | |
|---|---|---|---|---|
| City center | 11:15 | 12:30 | 13:10 | 13:40 |
| Heatherton | 11:25 | 12:40 | 13:20 | 13:50 |
| Rykneld | 11:29 | 12:44 | 13:24 | 13:54 |

The table above is part of a bus timetable.

**(a)** The 11:15 bus left the City center on time and arrived at Rykneld 2 minutes early.
How many minutes did it take to reach Rykneld?

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

**(b)** Paulo walked to the bus stop at Heatherton and arrived at 12:56.
The next bus arrived on time.
How many minutes did Paulo wait for the bus?

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

---

**6** An integer $n$ is such that $60 \leqslant n \leqslant 70$.
Write down a value of $n$ which is

**(a)** a prime number,

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

**(b)** a multiple of 9,

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

**(c)** a square number.

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

---

**7** Expand the parentheses and simplify

$$3x^2 - x(x - 3y).$$

*Answer* ..... [2]

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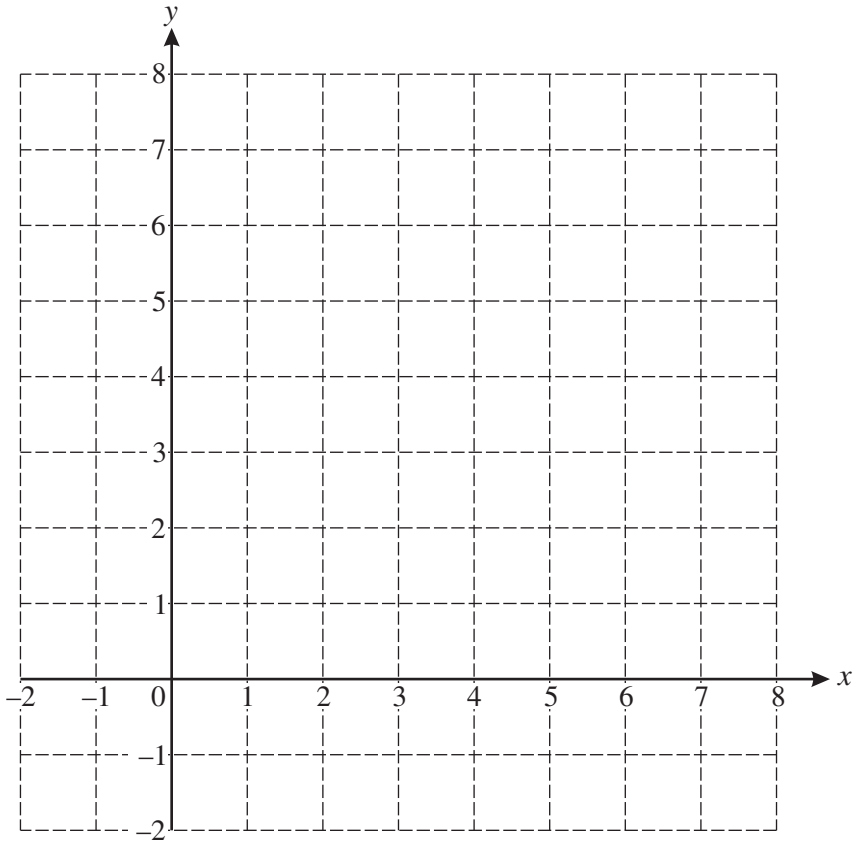
**8** **(a)** Plot the points $A\,(-1,\ 5)$ and $B\,(3,\ 7)$ on the grid.



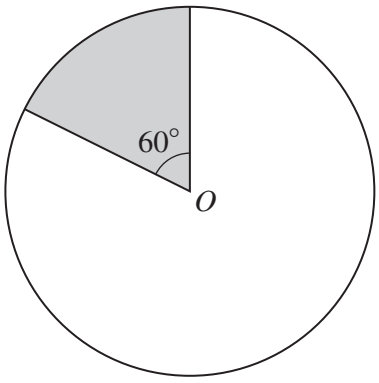

[2]

**(b)** Write down the coordinates of the midpoint of the line joining $A$ and $B$.

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

---

**9**




NOT TO SCALE

A circle, center $O$, has an area of $600\ \text{cm}^2$.

Find the area of the shaded sector.

*Answer* ..... $\text{cm}^2$ [2]

---

**10** **(a)** Find the least common multiple of 7 and 9.

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

**(b)** Work out $\frac{8}{9} - \frac{5}{7}$.

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

---

**11** = < >

Choose one of the symbols given above to complete each of the following statements.

When $x = 6$ and $y = -7$, then

**(a)** $x$ ..... $y$ [1]

**(b)** $x^2$ ..... $y^2$ [1]

**(c)** $y - x$ ..... $x - y$ [1]

---

**12** $z = 2x - y$

**(a)** Find $z$ when $x = -3$ and $y = 7$.

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

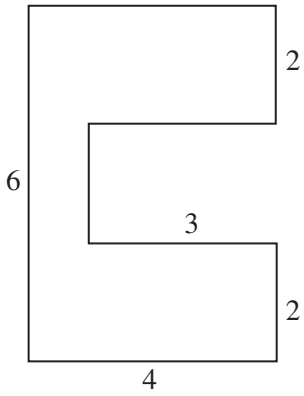
**(b)** Make $x$ the subject of the formula.

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

---

**13** All measurements in this question are in centimeters.

Three rectangles are placed together to form the shape below.

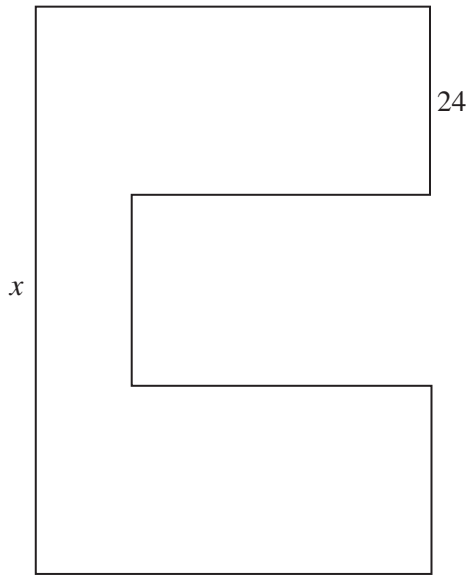



NOT TO SCALE

**(a)** Calculate the area of this shape.

*Answer (a)* ..... $cm^2$ [2]

**(b)** The shape is projected onto a screen and the enlargement is shown below.

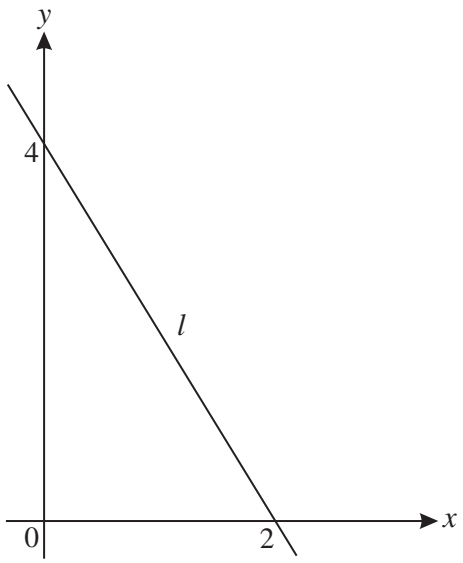



NOT TO SCALE

Find the value of $x$.

*Answer (b)* $x$ = ..... cm [2]

**14**




NOT TO SCALE

A straight line, $l$, crosses the $x$-axis at (2, 0) and the $y$-axis at (0, 4).

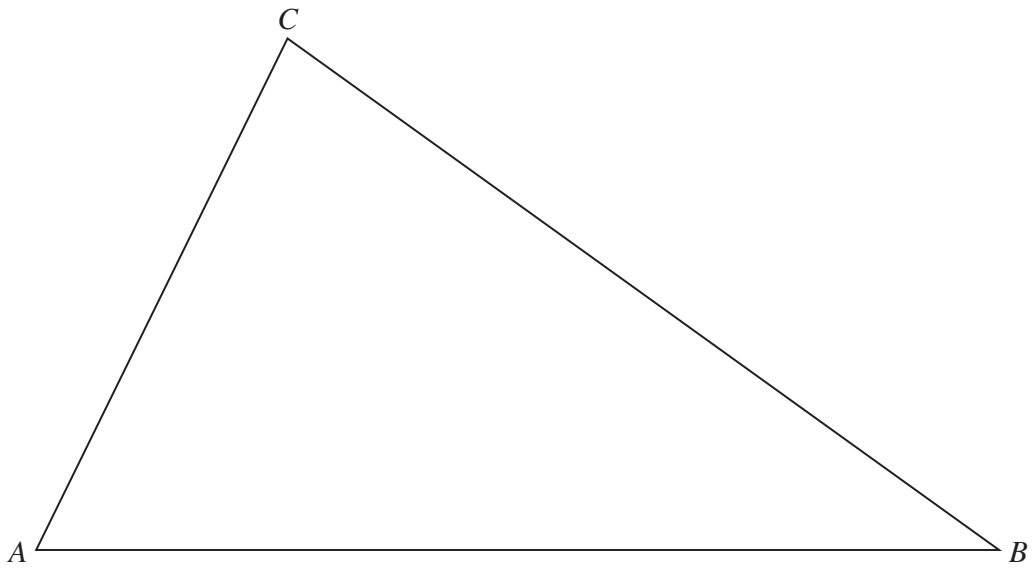
**(a)** Work out the slope of the line $l$.

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

**(b)** Write down the equation of the line $l$, in the form $y = mx + b$.

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

**15** The diagram shows an accurate drawing of a triangular field.
1 centimeter represents 15 meters.
Florentina walks along a straight path from $A$ to the side $BC$.
The path is always the same distance from $AB$ and $AC$.




**(a)** **Using a straight edge and compasses only**, construct the bisector of angle $A$, that represents the line of the path.
You must show your construction arcs clearly.

[2]

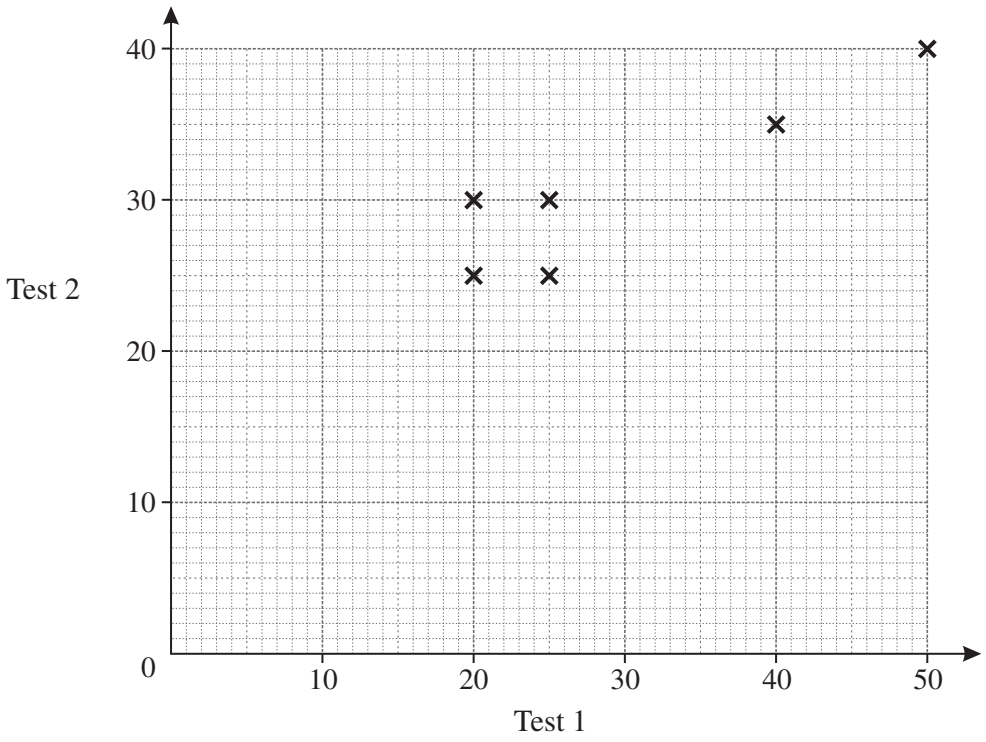
**(b)** The path meets $BC$ at $D$.
How far, in meters, is Florentina from $B$ when she reaches $D$?

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

**16**

| Student | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| Test 1 | 25 | 20 | 40 | 25 | 50 | 20 | 30 | 40 |
| Test 2 | 30 | 25 | 35 | 25 | 40 | 30 | 35 | 40 |

The table shows the scores of 8 students in two mathematics tests.
The scores for students A to F are shown on the scatter diagram below.




**(a)** On the diagram, plot the scores for students G and H. [1]

**(b)** The mean for Test 1 is 31.25.

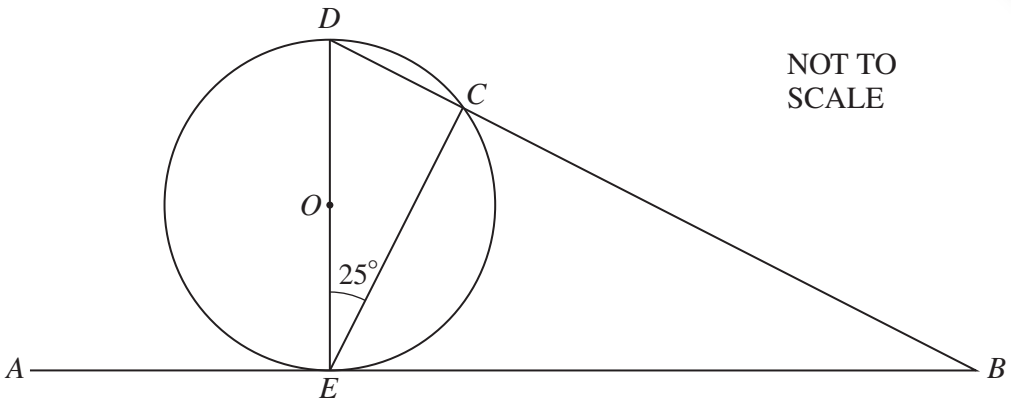
Calculate the mean for Test 2.

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

**(c)** Plot the mean point on the scatter diagram. [1]

**(d)** Draw the line of best fit on the scatter diagram. [1]

**17**




In the diagram, $DE$ is a diameter of the circle, center $O$.
$AEB$ is the tangent at the point $E$. The line $DCB$ cuts the circle at $C$.
Angle $DEC = 25°$.

**(a)** Write down the size of angle $DCE$.

*Answer (a)* Angle $DCE$ = ..... [1]

**(b)** Calculate the size of angle $CDE$.

*Answer (b)* Angle $CDE$ = ..... [2]

**(c)** Calculate the size of angle $DBE$.

*Answer (c)* Angle $DBE$ = ..... [2]

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**Question 18 is printed on the next page**

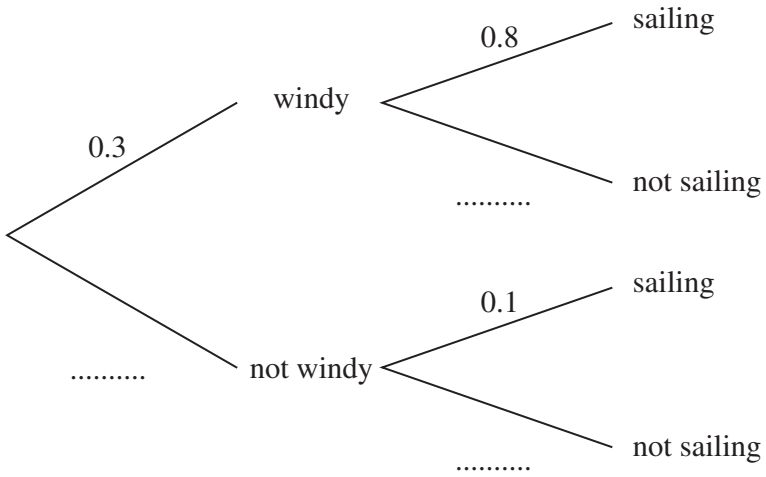
**18** The probability that it is windy is 0.3.

**(a)** Write down the probability that it is not windy.

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

**(b)** Anita plans to go sailing.
If it is windy, the probability that she will go sailing is 0.8.
If it is not windy, the probability that she will go sailing is 0.1.

**(i)** Complete the tree diagram.




[2]

**(ii)** Find the probability that it is windy and Anita goes sailing.

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