UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

5523010966

MATHEMATICS **0580/12**

Paper 1 (Core) **May/June 2011**

1 hour

Candidates answer on the Question Paper.

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

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 π, 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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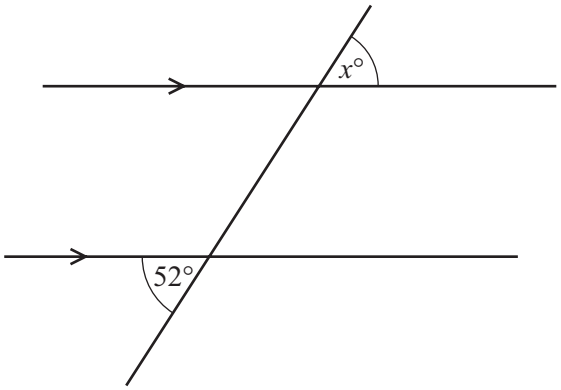
For Examiner's Use

1 One square number between 50 and 100 is also a cube number.

Write down this number.

Answer ..... [1]

2



NOT TO SCALE

A straight line intersects two parallel lines as shown in the diagram.

Find the value of x.

Answer $x =$ ..... [1]

---

3 A letter is chosen at random from the following word.

S T A T I S T I C S

Write down the probability that the letter is

(a) **A** or **I**,

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

(b) **E**.

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

---

4 Ingrid throws a javelin a distance of 58.3 metres, correct to 1 decimal place.

Complete the statement about the distance, d metres, the javelin is thrown.

Answer ..... $\leqslant d <$ ..... [2]

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5 Show that $1\frac{5}{9} \div 1\frac{7}{9} = \frac{7}{8}$.

Write down all the steps in your working.

Answer

[2]

---

6 $$\frac{3}{5} < p < \frac{2}{3}$$

Which of the following could be a value of p?

$$\frac{16}{27} \qquad 0.67 \qquad 60\% \qquad (0.8)^2 \qquad \sqrt{\frac{4}{9}}$$

Answer ..... [2]

---

7 Calculate 324×17.

Give your answer in standard form, correct to 3 significant figures.

Answer ..... [2]

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8 A meal on a boat costs 6 euros (€) or 11.5 Brunei dollars ($).

In which currency does the meal cost less, on a day when the exchange rate is €1 = $1.9037? Write down all the steps in your working.

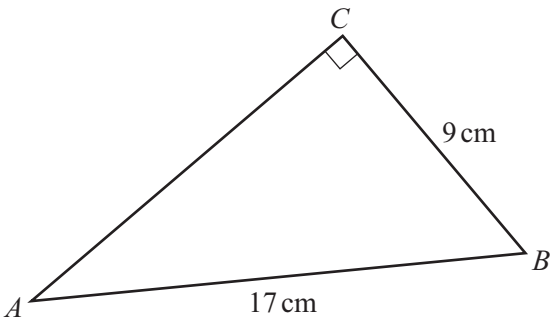
Answer ..... [2]

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9 Simplify $32x^8 \div 8x^{32}$.

Answer ..... [2]

10



NOT TO SCALE

In the triangle ABC, $AB = 17$ cm, $BC = 9$ cm and angle $ACB = 90°$.

Calculate AC.

Answer $AC =$ ..... cm [3]

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11 The table shows the opening and closing times of a café.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Opening time	0600	0600	0600	0600	0600	(a)	0800
Closing time	2200	2200	2200	2200	2200	2200	1300

(a) The café is open for a total of 100 hours each week.
Work out the opening time on Saturday.

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

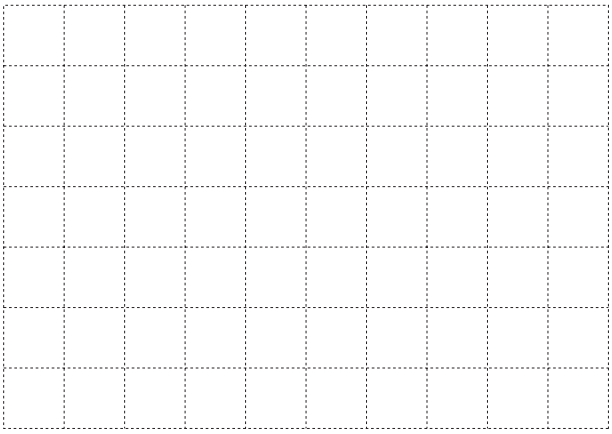
(b) The owner decides to close the café at a later time on Sunday. This increases the **total** number of hours the café is open by 4%.
Work out the new closing time on Sunday.

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

---

12 $\overrightarrow{AB} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ and $\overrightarrow{BC} = \begin{pmatrix} -5 \\ 4 \end{pmatrix}$

(a) Find $\overrightarrow{AC}$. You may use the grid below to help if you wish.



Answer(a) $\overrightarrow{AC} = \begin{pmatrix} \\ \end{pmatrix}$ [2]

(b) Work out $\overrightarrow{CA}$.

Answer(b) $\overrightarrow{CA} = \begin{pmatrix} \\ \end{pmatrix}$ [1]

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13 **(a)** Rewrite this calculation with all the numbers rounded to 1 significant figure.

$$\frac{77.8}{21.9 - 3.8 \times 4.3}$$

Answer(a) [1]

(b) Use your answer to **part (a)** to work out an estimate for the calculation.

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

(c) Use your calculator to find the **actual** answer to the calculation in **part (a)**.
Give your answer correct to 1 decimal place.

Answer(c) ..... [2]

---

14 **(a)** Complete the list to show all the factors of 18.

1, 2, ... , ... , ... , 18 [2]

(b) Write down the prime factors of 18.

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

(c) Write down all the multiples of 18 between 50 and 100.

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

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15 **(a)** Expand the brackets and simplify.

$$3(2x - 5y) - 4(x - y)$$

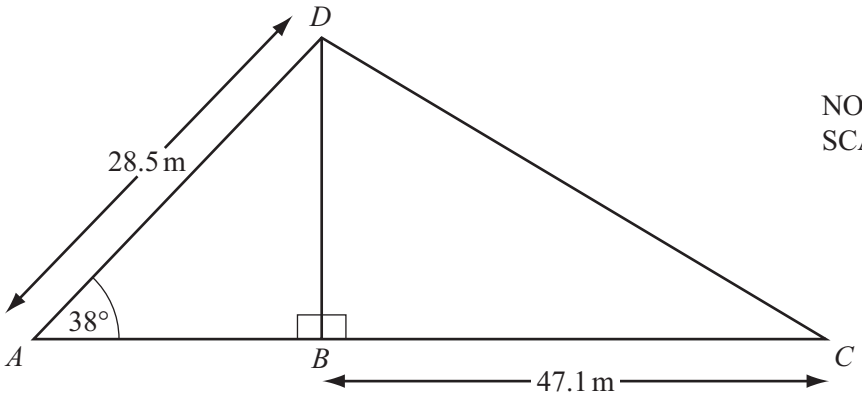
Answer(a) ..... [2]

(b) Factorise completely.

$$6x^2 - 9xy$$

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

16



A flagpole, *BD*, is attached to level horizontal ground by ropes, *AD* and *CD*.

AD = 28.5 m, *BC* = 47.1 m and angle *DAB* = 38°.

Calculate

(a) *BD*, the height of the flagpole,

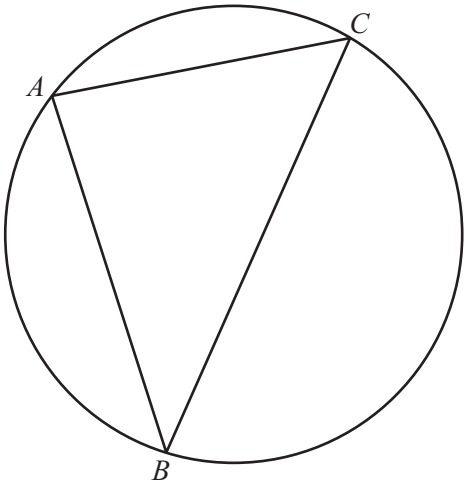
Answer(a) BD = ... m [2]

(b) angle *BCD*.

Answer(b) Angle *BCD =* ..... [2]

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17 (a)



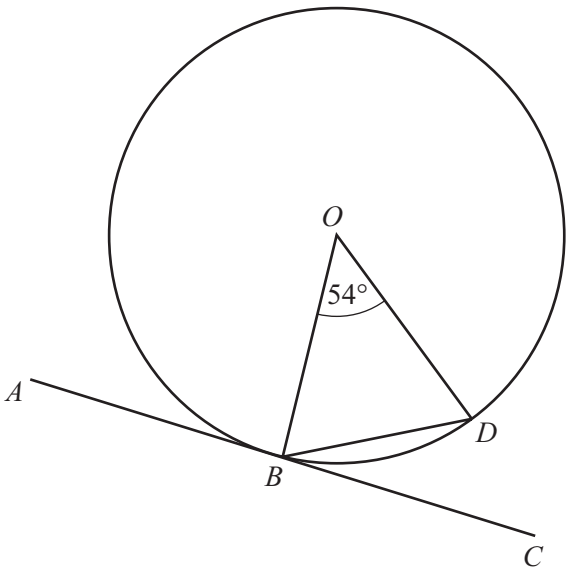
NOT TO SCALE

Points A, B and C lie on the circumference of the circle shown above.

When angle BAC is 90° write down a statement about the line BC.

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

(b)



NOT TO SCALE

O is the centre of a circle and the line ABC is a tangent to the circle at B.
D is a point on the circumference and angle BOD = 54°.

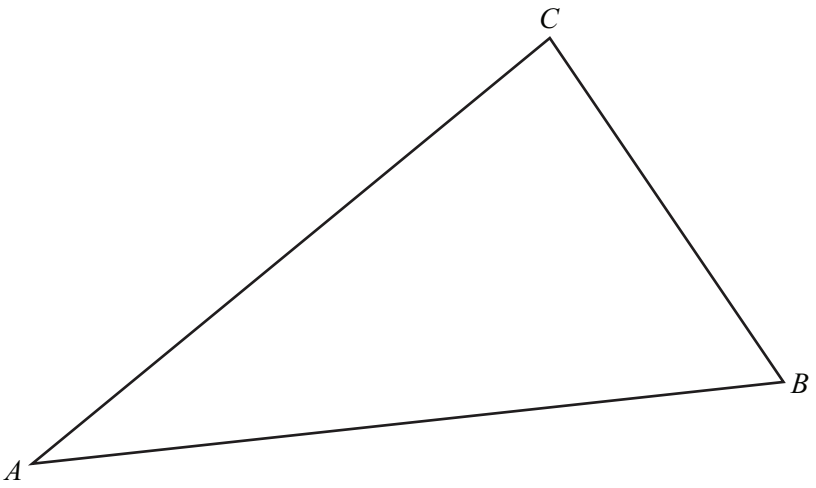
Calculate angle DBC.

Answer(b) Angle DBC = ... [3]

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(a) On the diagram above, **using a straight edge and compasses only**, construct

(i) the bisector of angle ABC, [2]

(ii) the locus of points which are equidistant from A and from B. [2]

(b) Shade the region inside the triangle which is nearer to A than to B **and** nearer to AB than to BC. [1]

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19 **(a)** The travel graph on the opposite page shows Joel's journey to his school.
He walks to the bus stop and waits for the bus, which takes him to the school.

(i) How long did Joel wait for the bus?

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

(ii) Find the distance from the bus stop to the school.

Answer(a)(ii) ..... km [1]

(b) Joel's sister, Samantha, leaves home 14 minutes later than Joel to cycle to the same school.
She cycles at a constant speed and arrives at the school at 08 16.

(i) On the grid, show her journey. [1]

(ii) At what time did the bus pass Samantha?

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

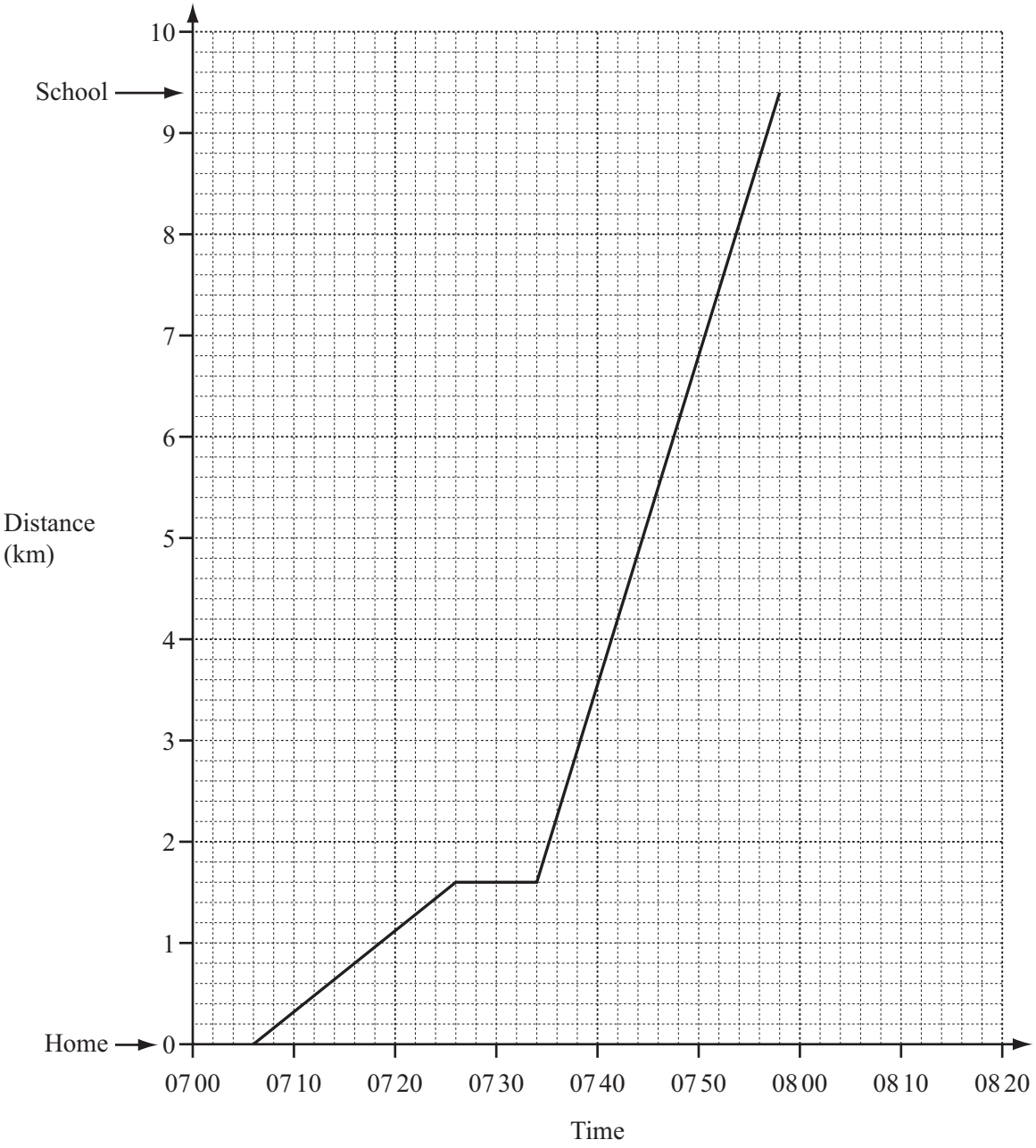
(iii) How far from the school was she when the bus passed her?

Answer(b)(iii) ..... km [1]

(iv) How many minutes after Joel did Samantha arrive at the school?

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

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