UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

8270368766

MATHEMATICS **0580/11**

Paper 1 (Core) **October/November 2012**

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.

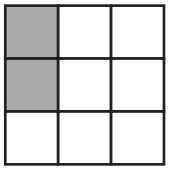
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[Turn over

For Examiner's Use

1 Shade two more squares so that this pattern has rotational symmetry of order 2.



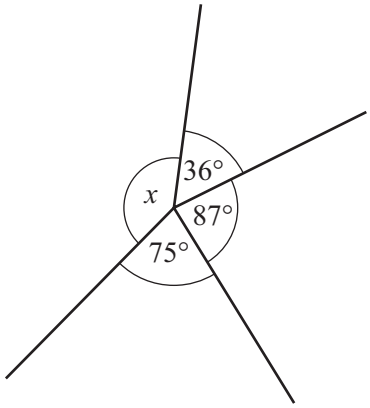
[1]

---

2 Write three hundredths as a decimal.

Answer ..... [1]

3



NOT TO SCALE

(a) Find angle x.

Answer(a) Angle x = ... [1]

(b) What type of angle is x?

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

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4 A football ground seats 28 750 people when it is full.

(a) Write 28 750 correct to the nearest thousand.

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

(b) One day 17 250 people attended a football match.

Work out 17 250 as a percentage of 28 750.

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

---

5 Solve the following equations.

(a) $x + 9 = 16$

Answer(a) $x =$ ..... [1]

(b) $6y = 27$

Answer(b) $y =$ ..... [1]

---

6 On a mountain, the temperature decreases by 6.5 °C for every 1000 metres increase in height. At 2000 metres the temperature is 10 °C.

Find the temperature at 6000 metres.

Answer ..... °C [2]

For Examiner's Use

7 Simplify the following expression.

$$3j - 4k - 2 + 5j + k - 6$$

Answer ..... [2]

---

8 The train fare from Bangkok to Chiang Mai is 768 baht.
The exchange rate is £1 = 48 baht.

Calculate the train fare in pounds (£).

Answer £ ..... [2]

---

9 Use your calculator to find the value of

$$\frac{8.1^2 + 6.2^2 - 4.3^2}{2 \times 8.1 \times 6.2}.$$

Answer ..... [2]

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10 **(a)** Write 230 000 in standard form.

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

(b) Write 4.8×10^{-4} as an ordinary number.

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

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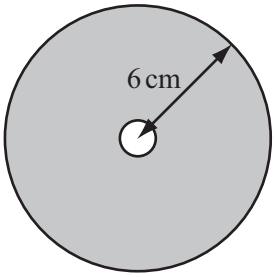
11 Write down all your working to show that the following statement is correct.

$$\frac{1+\frac{8}{9}}{2+\frac{1}{2}} = \frac{34}{45}$$

Answer

[2]

12



NOT TO SCALE

The diagram shows a circular disc with radius 6 cm.
In the centre of the disc there is a circular hole with radius 0.5 cm.

Calculate the area of the shaded section.

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

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13 **(a)** Factorise $9y + 12$.

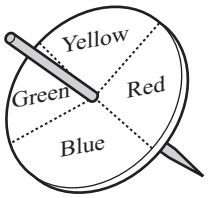
Answer(a) ..... [1]

(b) Expand $a(a^2 - 7)$.

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

---

14 Ying spins a spinner 75 times.
The table shows her results.



Colour	Red	Blue	Green	Yellow
Frequency	17	24	20	14

(a) Write down the relative frequency of the spinner stopping on blue.

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

(b) Tony spins the **same** spinner 450 times.

Find the expected number of times the spinner stops on yellow.

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

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15 The table shows how 45 students each travel to college.

Method of travel	Walk	Bus	Cycle
Frequency	20	18	7

This information can be displayed in a pie chart.

(a) Show that the sector angle for students who walk is 160°.

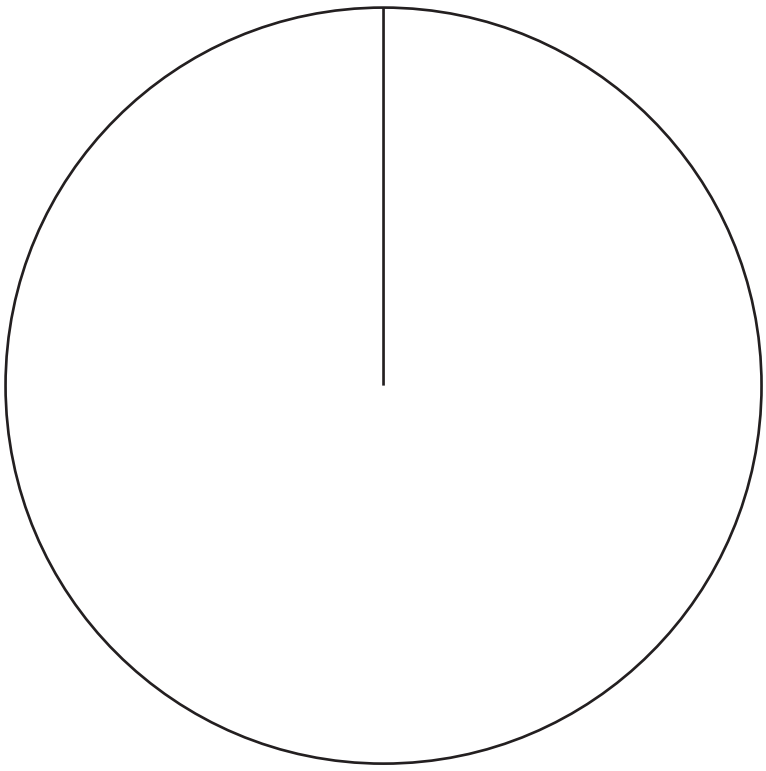
Answer(a)

[1]

(b) Calculate the sector angle for students who travel by bus.

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

(c) Complete the pie chart and label the sectors.



[2]

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16 $\mathbf{p} = \begin{pmatrix} 0 \\ 9 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} 3 \\ -5 \end{pmatrix}$ $\mathbf{r} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}$

Calculate

(a) $7\mathbf{p}$,

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

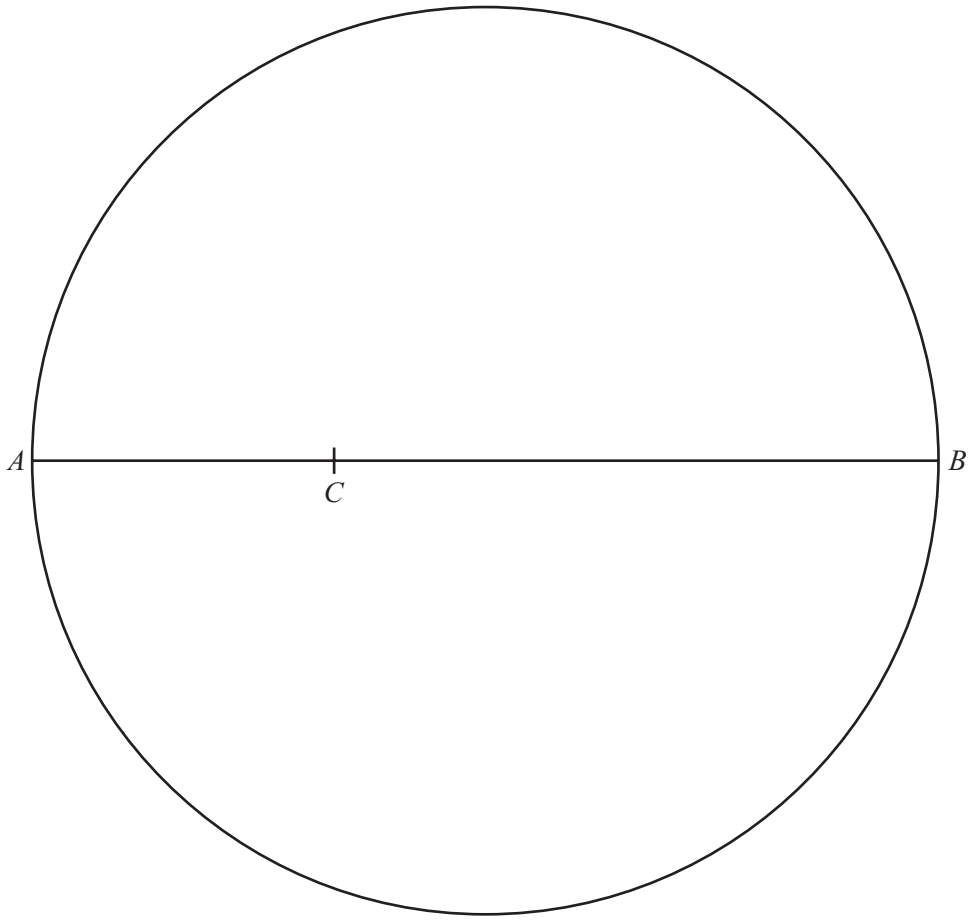
(b) $\mathbf{q} - \mathbf{r}$.

Answer(b) $\begin{pmatrix} \\ \\ \end{pmatrix}$ [2]

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AB is the diameter of a circle.
C is a point on AB such that $AC = 4$ cm.

(a) Using a straight edge and compasses only, construct

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

(ii) the locus of points which are 4 cm from C. [1]

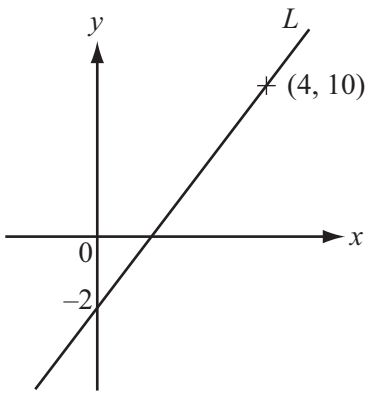
(b) Shade the region in the diagram which is

- nearer to B than to A

and

- less than 4 cm from C. [1]

18



NOT TO SCALE

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Line L passes through the point (4, 10).

(a) Find the gradient of line L.

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

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

Answer(b) $y =$ ..... [1]

(c) Line P passes through the point (0, 0).
Line P is parallel to line L.

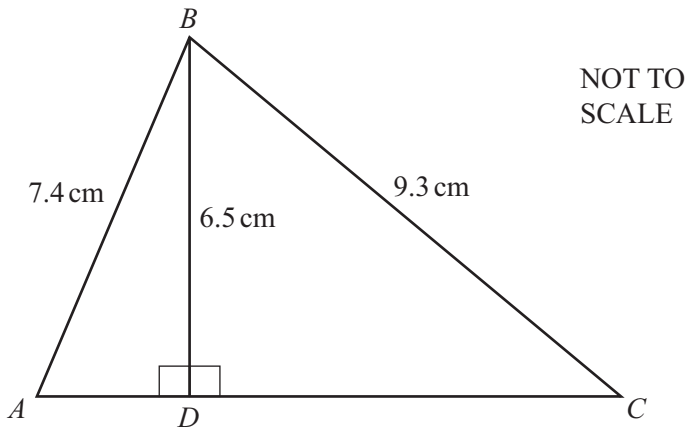
Write down the equation of line P.

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

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(a) Calculate *AD*.

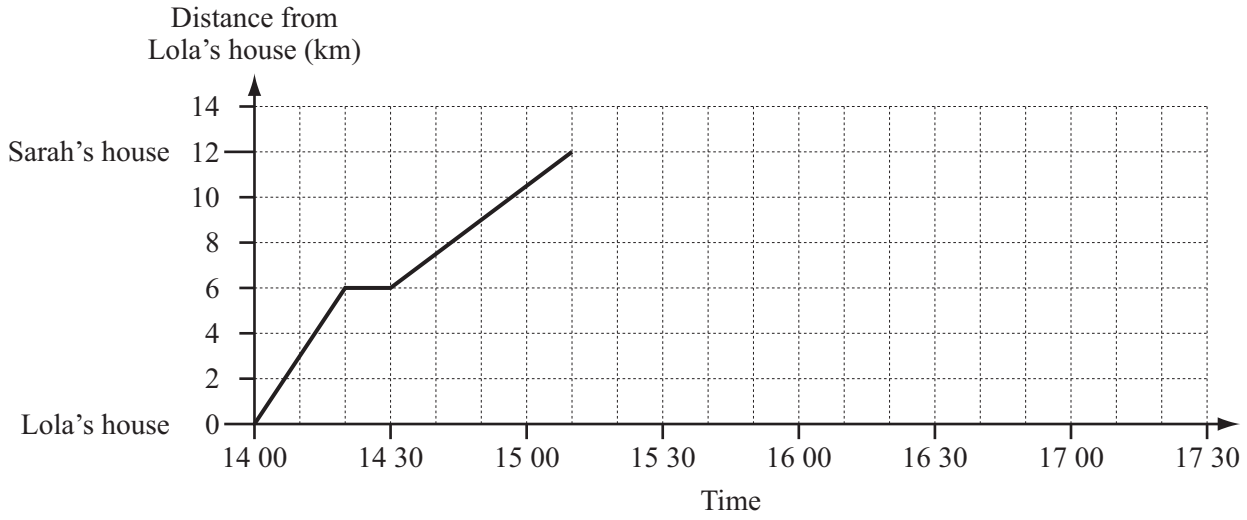
Answer(a) AD = ... cm [3]

(b) Use trigonometry to calculate angle *BCD*.

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

Question 20 is printed on the next page.

20



The travel graph shows Lola's journey from her house to Sarah's house.

(a) Lola stopped at a shop on the way to Sarah's house.

For how many minutes did she stop?

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

(b) Write down the time she arrived at Sarah's house.

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

(c) Calculate Lola's average speed from leaving the **shop** to arriving at Sarah's house.
Give your answer in kilometres per hour.

Answer(c) ..... km/h [2]

(d) Lola stayed at Sarah's house for 1 hour 20 minutes.
She then cycled home without stopping.
Her journey took 50 minutes.

Complete the travel graph. [2]

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