

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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

MATHEMATICS 0580/11

Paper 1 (Core) October/November 2012

1 hour

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator Geometrical instruments

Mathematical tables (optional)

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.

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

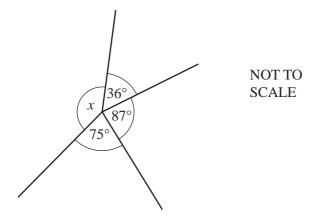


[1]

2 Write three hundredths as a decimal.

| Answer | [1] |
|--------|---------|
| | L . |

3



(a) Find angle x.

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

(b) What type of angle is x?

| 1 (1) | Г17 |
|--|-------|
| Answer(b) | |
| 11111111111111111111111111111111111111 | 1 1 1 |
| | |

| MMN. P. O. | Pacamo | For iner's |
|------------|--------|---------------|
| | [1] | On |

- 4 A football ground seats 28 750 people when it is full.
 - (a) Write 28 750 correct to the nearest thousand.

| 4 () | E 1 1 |
|-----------|---------|
| Answer(a) | [1] |

(b) One day 17250 people attended a football match.

Work out 17250 as a percentage of 28750.

| 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 $6.5\,^{\circ}\text{C}$ for every 1000 metres increase in height. At 2000 metres the temperature is $10\,^{\circ}\text{C}$.

Find the temperature at 6000 metres.

Answer °C [2

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

| 4 | W. Pape | | | |
|---|---------|-----|------------|-----|
| 1 | 2.D | | | |
| | 10 | 2 | ,, | |
| | | and | For ine | r's |
| | | | 1000 | 1 |

| Answer | [2] |
|--------|---------|
| 11.15 | L-1 |

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 (£).

9 Use your calculator to find the value of

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

| | www.Pak | For iner's |
|-----------|---------|------------|
| Answer(a) | | [1] wer's |

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

| Answer(b) | [1] |
|------------|-----------|
| inswer (b) | [T] |

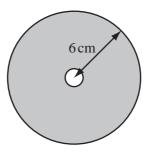
Write down all your working to show that the following statement is correct.

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

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.

| 13 | (a) | Factorise | 9y + 12. |
|----|-----|-------------|----------|
| | () | 1 000001100 | -, |

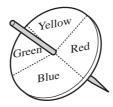
| 16 | | oler ! | , |
|----|----|--------|---|
| A. | 0 | | |
| | 30 | 0 | |
| 7 | L. | | |

| Answer(a) | Γ1 |
|--------------|---------|
| 1113 WEI (U) | LI. |
| | |

(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] |
|------------|---------|
| 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] |
|-----------|---------|
| | |

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

| | | my | |
|------------------------|---------------------------|-----------------------------------|---|
| 7 each travel to colle | | | PARCS FOR |
| Walk | Bus | Cycle | iner's |
| 20 | 18 | 7 | S.COM |
| | each travel to colle Walk | each travel to college. Walk Bus | each travel to college. Walk Bus Cycle |

This information can be displayed in a pie chart.

| | Q1 .11 | | 0 . 1 . | | 44 . | 4 |
|-----|--------------------|--------------|----------------|------|---------|-------|
| (a) | Show that the | sector angle | for students | who | walk is | 160°. |
| (~) | Silo II tilat tilo | sector angre | TOT STUGGETTES | **** | Will ID | 100 |

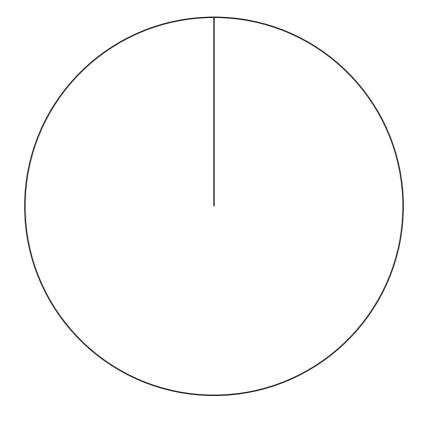
Answer(a)

[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]

$$\mathbf{p} = \begin{pmatrix} 0 \\ 9 \end{pmatrix}$$

$$\mathbf{q} = \begin{pmatrix} 3 \\ -5 \end{pmatrix}$$

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

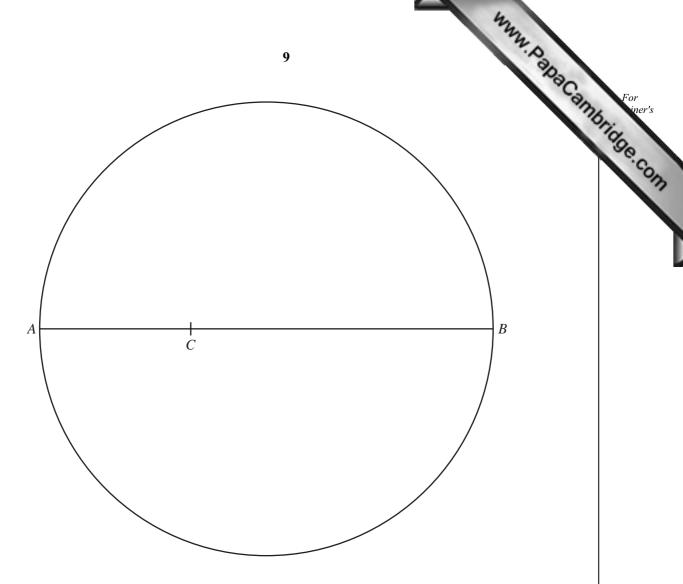
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Calculate

[2]

(b)
$$q-r$$
.

17



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

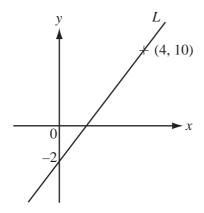
(a) Using a straight edge and compasses only, construct

- (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]



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

(a) Find the gradient of line L.

| Answer(a) | [2] |
|------------|---------|
| Answer (u) | L4. |

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

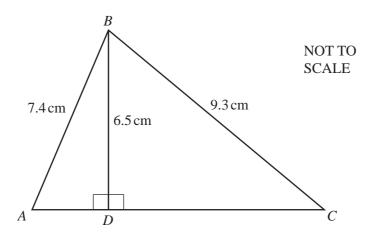
$$Answer(b) y =$$
 [1]

(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]

19



(a) Calculate AD.

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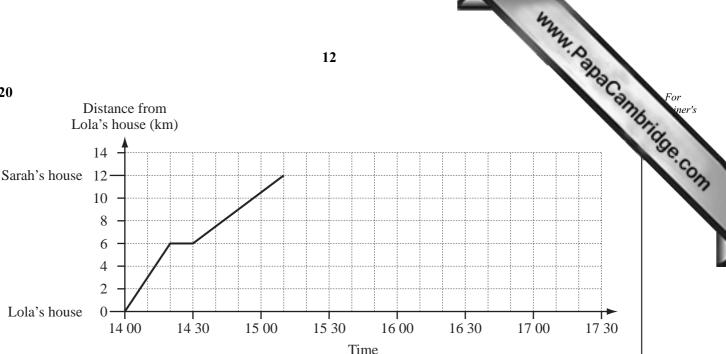
(b) Use trigonometry to calculate angle *BCD*.

$$Answer(b)$$
 Angle $BCD =$ [2]

Question 20 is printed on the next page.

20

Distance from Lola's house (km)



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 hou | se. | | |

Answer(b)

(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]

[1]

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