Cambridge IGCSE

**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

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| CANDIDATE NAME | | | | | | | | | |
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**MATHEMATICS** **0580/33**

Paper 3 (Core) **October/November 2018**

**2 hours**

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 an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, 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 104.

This document consists of **15** printed pages and **1** blank page.

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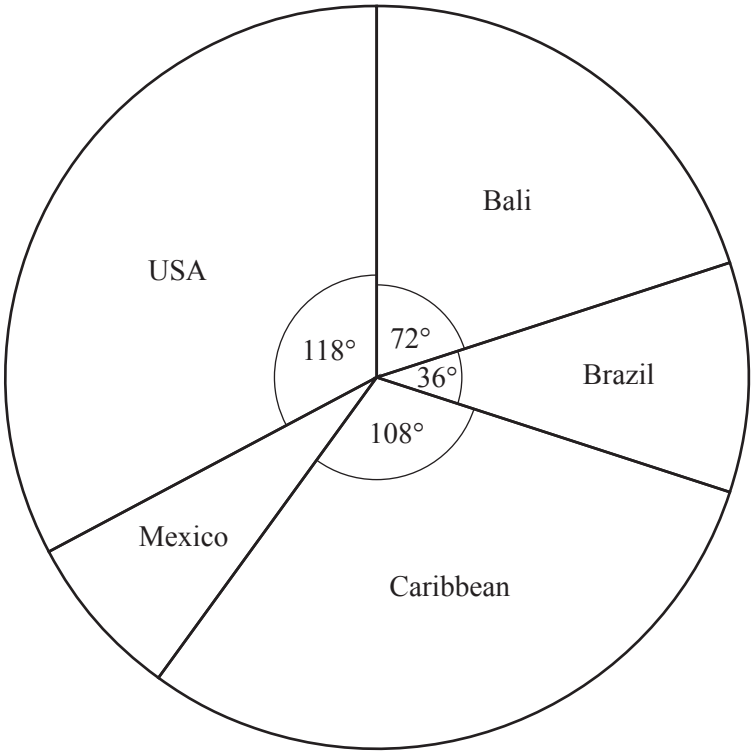
CAMBRIDGE International Examinations

**1** **(a)** Some people each recorded their favourite holiday destination.
The results are shown in the pie chart.

View solution




**(i)** Complete the statements about the pie chart.

The sector angle for Mexico is ..... degrees.

The most popular destination is .....

$\frac{1}{5}$ of the people chose .....

Three times as many people chose ..... as ..... [4]

**(ii)** 180 people chose Bali.

View solution

Find how many people were asked altogether.

..... [2]

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**(b)** Mr and Mrs Baker go on holiday with their three children.
They fly from Miami to Mexico City.

View solution

**(i)** The cost of each adult ticket is $450.
The cost of each child ticket is 70% of the cost of an adult ticket.

Calculate the total cost of the five tickets.

$ ..... [3]

**(ii)** The plane leaves Miami at 09 29.
It arrives in Mexico City 2 hours 11 minutes later.
The local time in Miami is 1 hour ahead of the local time in Mexico City.

View solution

Work out the time in Mexico City when the plane arrives.

..... [2]

**(iii)** The family travels 38 kilometres by taxi.
The journey costs $3.50 plus an extra $2.15 for each kilometre travelled.

View solution

Find the cost of the journey.

$ ..... [2]

**(iv)** At the end of the holiday Mr Baker changes 1335 pesos into dollars.
The exchange rate is $1 = 17.8 pesos.

View solution

Find how many dollars Mr Baker receives.

$ ..... [2]

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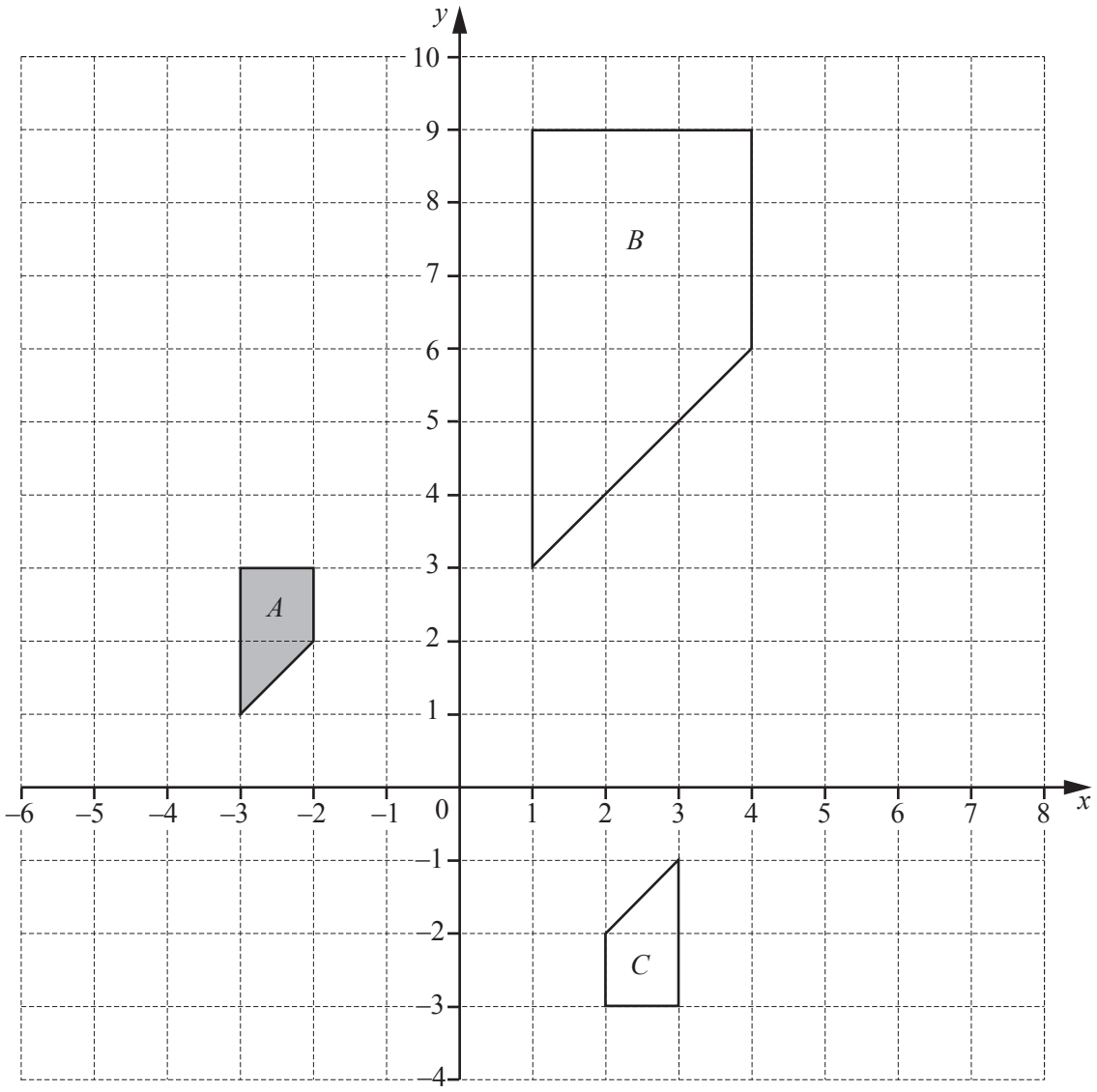
**2** Shapes $A$, $B$ and $C$ are shown on the $1\,cm^2$ grid.




View solution

**(a)** Shape $A$ is a special type of quadrilateral.

Write down the mathematical name for shape $A$.

..... [1]

**(b)** Describe fully the **single** transformation that maps

View solution

**(i)** shape $A$ onto shape $B$,

.....

..... [3]

**(ii)** shape $A$ onto shape $C$.

View solution

.....

..... [3]

**(c)** On the grid,

View solution

**(i)** translate shape $A$ by the vector $\begin{pmatrix} 8 \\ -4 \end{pmatrix}$, [2]

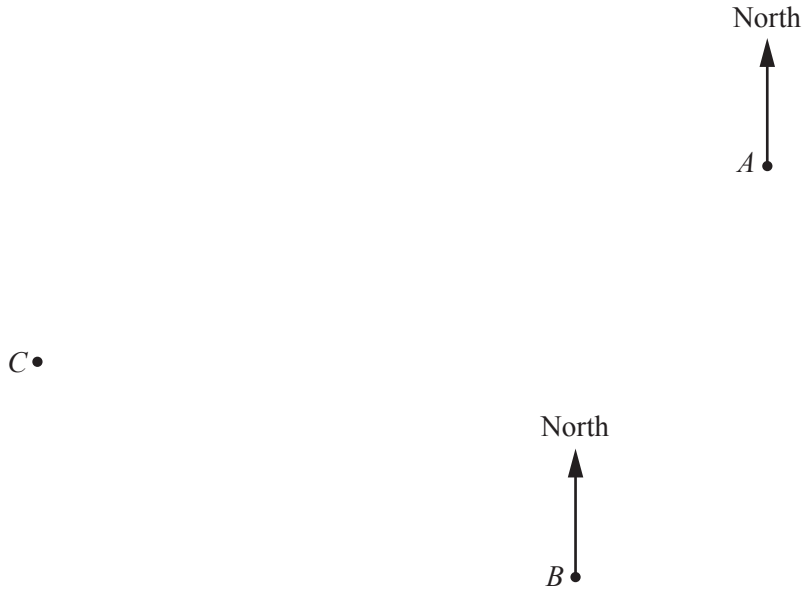
**(ii)** reflect shape $A$ in the line $x = 2$. [2]

**(d)** Find the area of **shape *B***.

View solution

..... $cm^2$ [1]

**3** The scale drawing shows the positions of three towns $A$, $B$ and $C$ on a map.
The scale is 1 centimetre represents 10 kilometres.




Scale : 1 cm to 10 km

**(a)** Work out the actual distance between town $A$ and town $B$.

View solution

..... km [2]

**(b)** **(i)** Measure the bearing of town $C$ from town $A$.

View solution

..... [1]

**(ii)** Show how to use your answer to **part (b)(i)** to find the bearing of town $A$ from town $C$.

View solution

..... [1]

**(c)** Town $D$ is 96 km from town $C$ on a bearing of 100°.

View solution

**(i)** Mark the position of town $D$ on the map. [2]

**(ii)** Jez drives from town $C$ to town $D$ in $1\frac{1}{2}$ hours.

Work out his average speed.

View solution

..... km/h [2]

**(iii)** Change 96 km into miles.
Assume that 8 km equals 5 miles.

View solution

..... miles [2]

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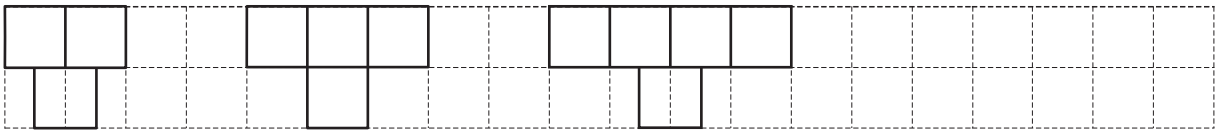
**4** **(a)** The diagram shows the first three patterns in a sequence.

View solution



Pattern 1 Pattern 2 Pattern 3 Pattern 4

On the grid, draw pattern 4. [1]

**(b)** These are the first four terms of another sequence.

View solution

41 35 29 23

**(i)** Write down the next two terms.

..... , ..... [2]

**(ii)** Write down the rule for continuing this sequence.

View solution

..... [1]

**(c)** These are the first four terms of a different sequence.

View solution

11 15 19 23

**(i)** Write down an expression for the $n$th term.

..... [2]

**(ii)** Is 129 a term in this sequence?
Show how you decide.

View solution

..... because ..... [2]

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**5** **(a)** Stef buys 3.5 kilograms of bananas.

View solution

**(i)** Bananas cost \$1.24 per kilogram.
Stef pays with a \$5 note.

Work out how much change she receives.

\$ ..... [2]

**(ii)** Write 3.5 kilograms in grams.

View solution

..... g [1]

**(b)** Oranges cost 85 cents each.
Leo has a \$10 note.

View solution

Work out the maximum number of oranges he can buy.

..... [2]

**(c)** 87% of the mass of a pineapple is water.
A pineapple has a mass of 700 g.

View solution

Work out the mass of water in this pineapple.

..... g [2]

**(d)** The number of melons sold in a shop each day for 7 days is shown below.

View solution

18 5 23 40 28 19 17

Work out the mean number of melons sold.

..... [2]

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**(e)** Rio and Chi go to a fruit shop.
Rio buys 4 apples and 2 plums for $1.96 .
Chi buys 7 apples and 3 plums for $3.24 .

View solution

Write down a pair of simultaneous equations and solve them to find the cost of 1 apple and the cost of 1 plum.
You must show all your working.

Apple $ .....

Plum $ ..... [6]

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**6** **(a)** Write the number 602 047 in words.

View solution

..... [1]

**(b)** Find

View solution

**(i)** a multiple of 14,

..... [1]

**(ii)** $56^2$,

View solution

..... [1]

**(iii)** $\sqrt[3]{103\,823}$,

View solution

..... [1]

**(iv)** $12^0$.

View solution

..... [1]

**(c)** Find the lowest common multiple (LCM) of 12 and 78.

View solution

..... [2]

**(d)** Find the highest common factor (HCF) of 12 and 78.

View solution

..... [2]

**(e)** Write 432 as a product of its prime factors.

View solution

..... [2]

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**7** **(a)** Complete the table of values for $y = \frac{6}{x}$.

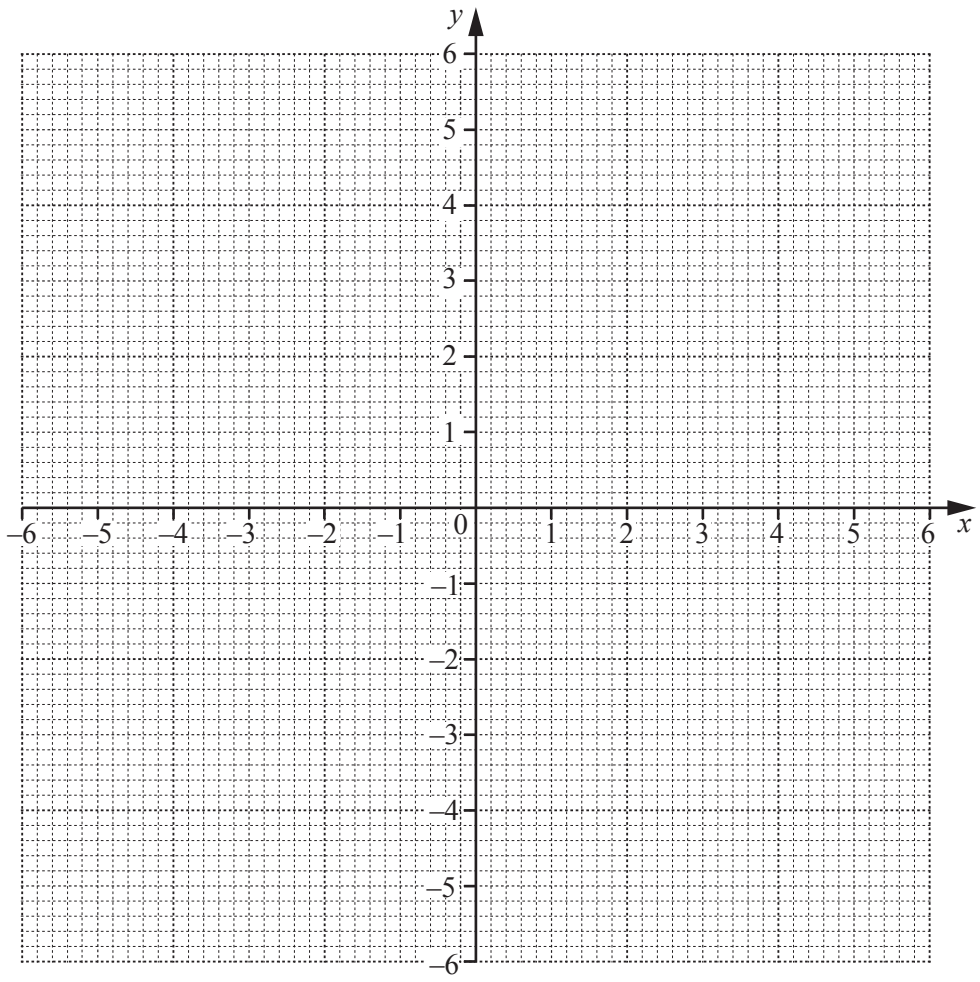
View solution

| $x$ | –6 | –5 | –4 | –3 | –2 | –1 | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $y$ | –1 | | | –2 | –3 | –6 | | 6 | 3 | 2 | | 1.2 | 1 |

[2]

**(b)** On the grid, draw the graph of $y = \frac{6}{x}$ for $-6 \leqslant x \leqslant -1$ and $1 \leqslant x \leqslant 6$.

View solution




[4]

**(c)** Use your graph to solve the equation $\frac{6}{x} = 4.5$.

View solution

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

**(d)** **(i)** On the grid, draw the line $y = x$. [1]

**(ii)** Write down the co-ordinates of the points of intersection of $y = \frac{6}{x}$ and $y = x$.

View solution

(..... , .....) and (..... , .....) [2]

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**8** **(a)** A bag contains 20 bulbs.
8 are yellow, 5 are red, 4 are white and 3 are pink.
Sam takes one bulb at random.

View solution

Find the probability that the bulb he takes is

**(i)** white,

..... [1]

**(ii)** blue,

View solution

..... [1]

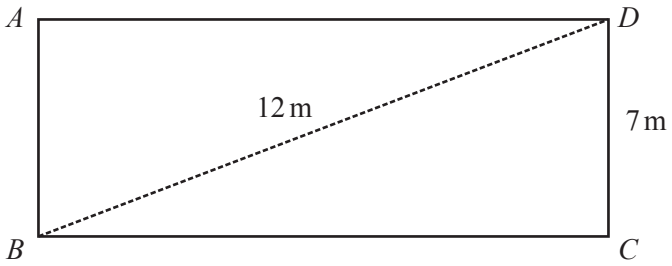
**(iii)** not pink.

View solution

..... [1]

**(b)** Sam has a rectangular pond, *ABCD*.

View solution




NOT TO SCALE

**(i)** Calculate *BC*.

*BC* = ..... m [3]

**(ii)** He puts a fence around the edge of the pond.

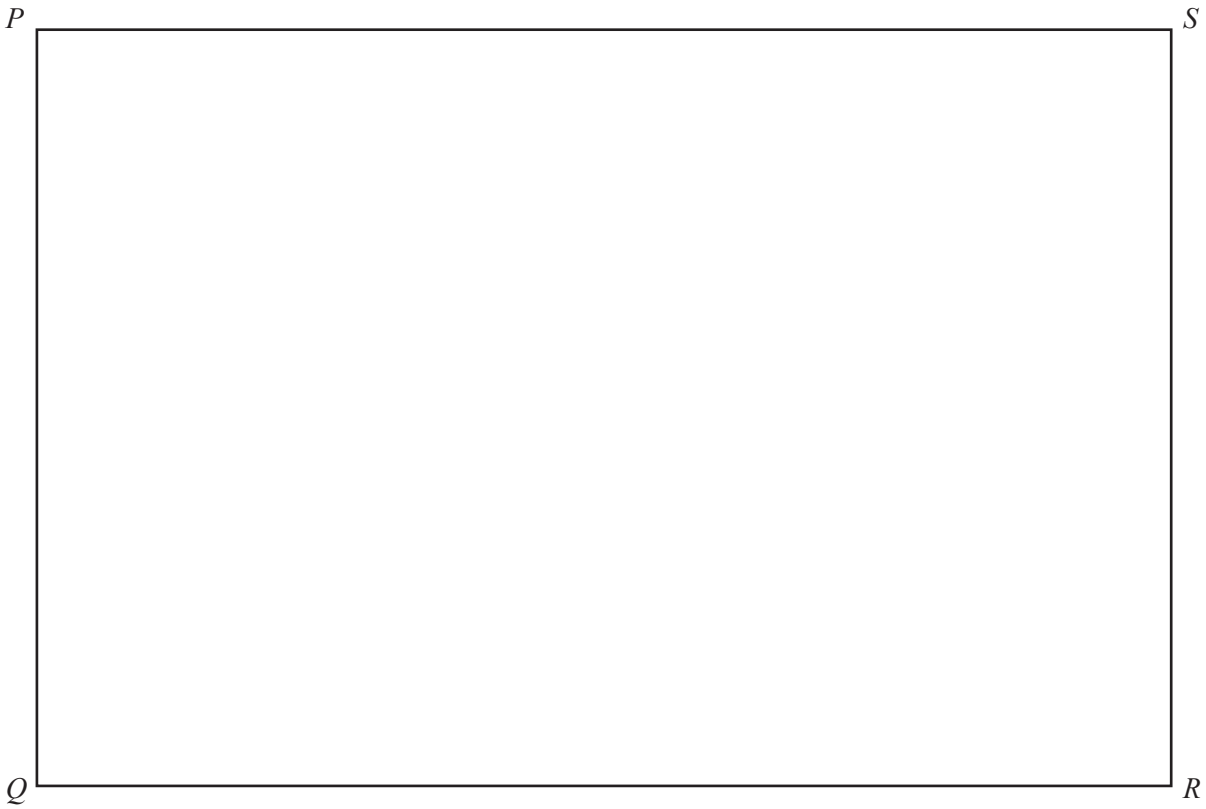
View solution

Calculate the length of the fence.

..... m [1]

**(c)** A scale drawing of Sam's garden, *PQRS*, is shown below.
The scale is 1 centimetre represents 4 metres.

View solution




Scale : 1 cm to 4 m

Sam plants some bulbs so that they are

- less than 30 metres from *P*

and

- nearer to *PQ* than to *PS*.

**Using a ruler and compasses only,** construct and shade the region where he plants the bulbs. [5]

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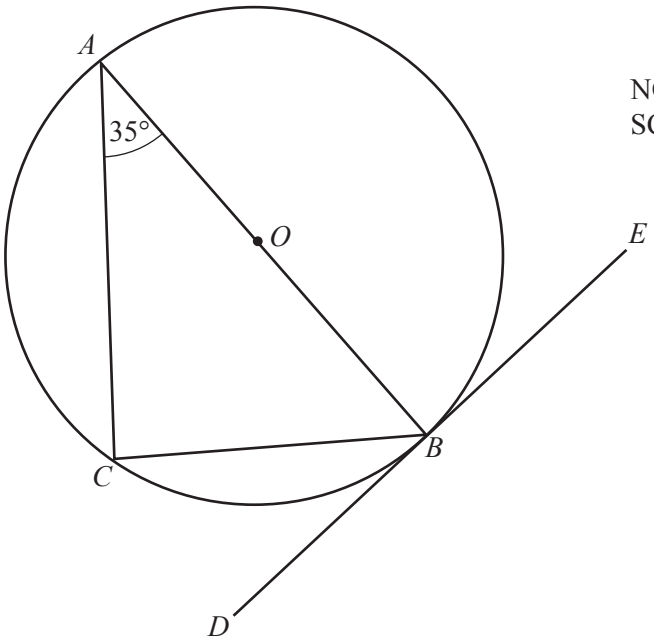
**9**




NOT TO SCALE

*A*, *B* and *C* are points on the circumference of the circle, centre *O*.
The straight line *DE* touches the circle at *B*.

**(a)** Write down the mathematical name for the line *DE*.

View solution

..... [1]

View solution

**(b)** On the circle, draw a radius. [1]

**(c)** Complete the following statements.

View solution

**(i)** Angle *ABD* = ..... because .....

..... [2]

**(ii)** Angle *ACB* = ..... because .....

..... [2]

View solution

**(d)** $AB = 9\,\text{cm}$.

View solution

**(i)** Calculate the area of the circle.
Give the units of your answer.

..... ..... [3]

**(ii)** Calculate $BC$.

View solution

$BC =$ ..... cm [2]

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