UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

5726780475

MATHEMATICS **0580/13**

Paper 1 (Core) **May/June 2013**

1 hour

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 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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1 The table shows the distances by road, in kilometres, between some towns in New Zealand.

	Auckland	Hamilton	Napier	New Plymouth	Rotorua
Wellington	657	531	332	356	460
Rotorua	235	109	229	319	
New Plymouth	368	242	415		
Napier	426	300			
Hamilton	126				

Write down the distance between Rotorua and Hamilton.

Answer ..... km [1]

---

2 Find the value of 1.47^3.
Give your answer correct to 3 decimal places.

Answer ..... [2]

---

3 The time in Lisbon is the same as the time in Funchal.
A plane left Lisbon at 08 30 and arrived in Funchal at 10 20.
It then left Funchal at 12 55 and returned to Lisbon.
The return journey took 15 minutes more.

What time did the plane arrive in Lisbon?

Answer ..... [2]

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4 The Ocean View Hotel has 300 rooms numbered from 100 to 399.
A room is chosen at random.

Find the probability that the room number ends in zero.

Answer ..... [2]

---

5 Solve the equation $3x - 5 = 16$.

Answer $x =$ ..... [2]

---

6 A television screen size, S cm, is 80 cm correct to the nearest centimetre.

Complete the statement for S in the answer space.

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

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7 Sheila can pay her hotel bill in Euros (€) or Pounds (£).
The bill was €425 or £365 when the exchange rate was £1 = €1.14 .

In which currency was the bill cheaper?
Show all your working.

Answer ..... [2]

---

8 Without using a calculator, show that $3\frac{3}{5} \div 2\frac{1}{4} = 1\frac{3}{5}$.

You must show each step of your working.

Answer

[2]

---

9 Factorise completely.

$6xy^2 - 8y$

Answer ..... [2]

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10 Use a calculator to find

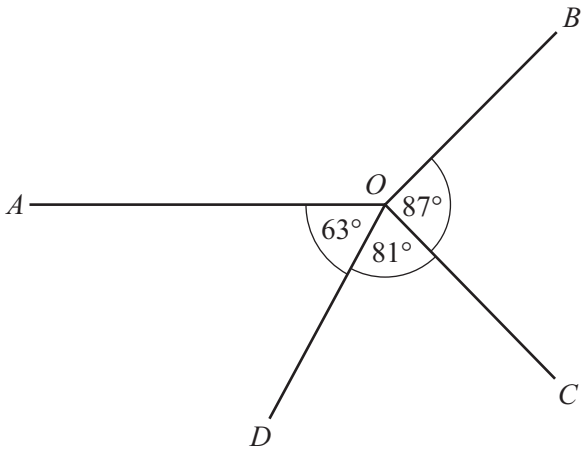
(a) $\sqrt{5\frac{5}{24}}$,

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

(b) $\frac{\cos 40°}{7}$.

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

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NOT TO SCALE

(a) Calculate the size of angle *AOB*.

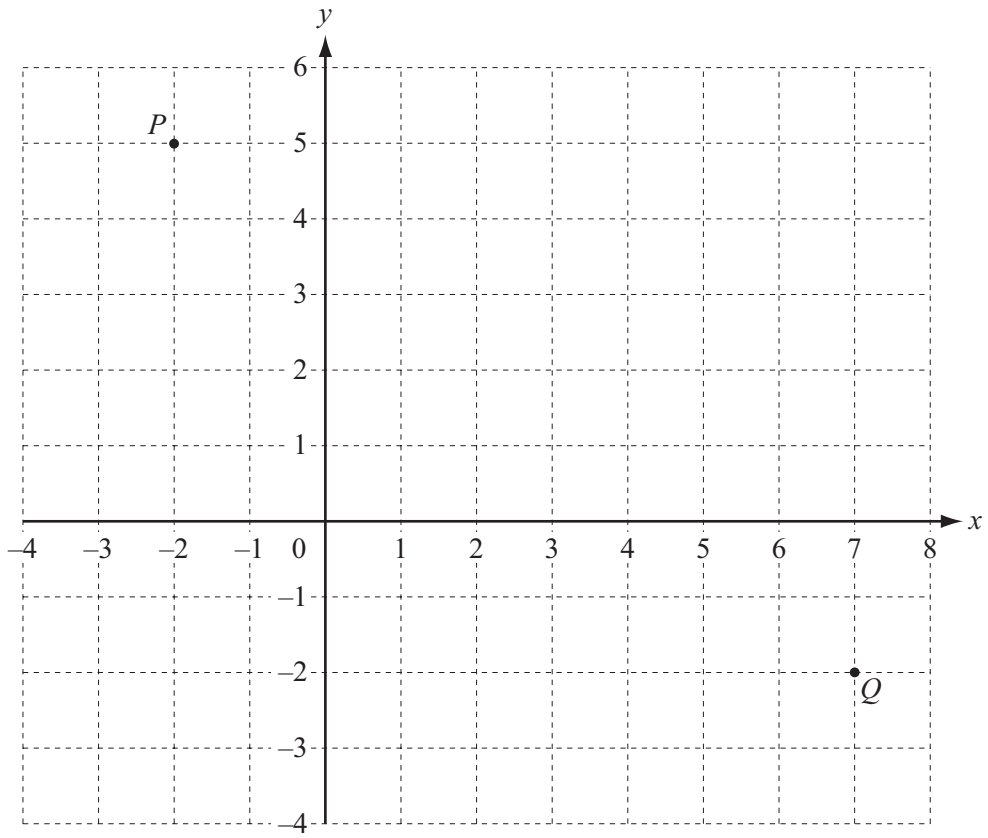
Answer(a) Angle *AOB* = ... [1]

(b) What type of angle is angle *AOB*?

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

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The points P and Q are marked on the grid.

(a) Work out the vector $\overrightarrow{PQ}$.

Answer(a) $\overrightarrow{PQ} = \begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) $\overrightarrow{QR} = \begin{pmatrix} -8 \\ -1 \end{pmatrix}$

Find the co-ordinates of the point R.

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

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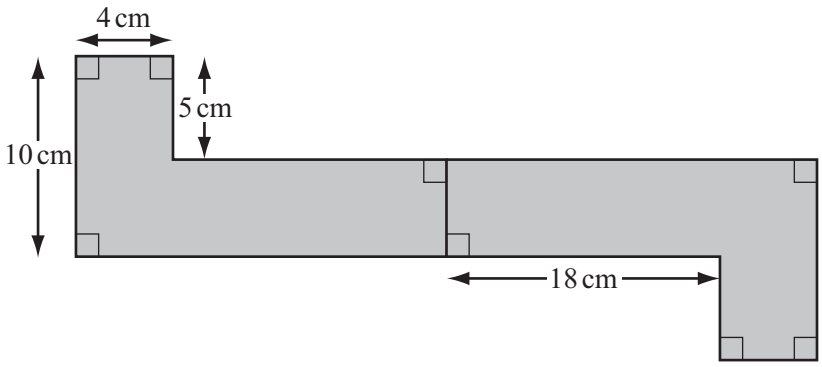
13 Huy borrowed \$4500 from a bank at a rate of 5% per year compound interest.
He paid back the money and interest at the end of 2 years.

How much **interest** did he pay?

Answer \$ ..... [3]

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NOT TO SCALE

The shaded shape has rotational symmetry of order 2.

Work out the shaded area.

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

---

15 **(a)** $5^x \times 5^3 = 5^{10}$

Find the value of x.

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

(b) Simplify.

$12h^3 \div 4h^{-2}$

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

---

16 Calculate, giving your answers in standard form,

(a) $2 \times (5.5 \times 10^4)$,

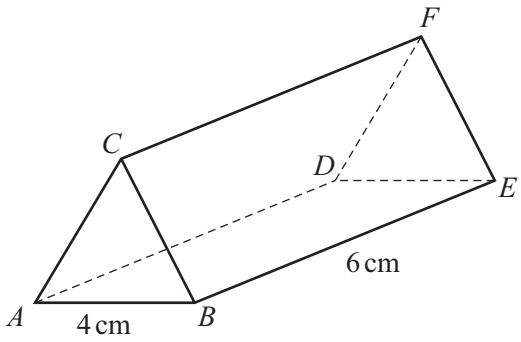
Answer(a) ..... [2]

(b) $(5.5 \times 10^4) - (5 \times 10^4)$.

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

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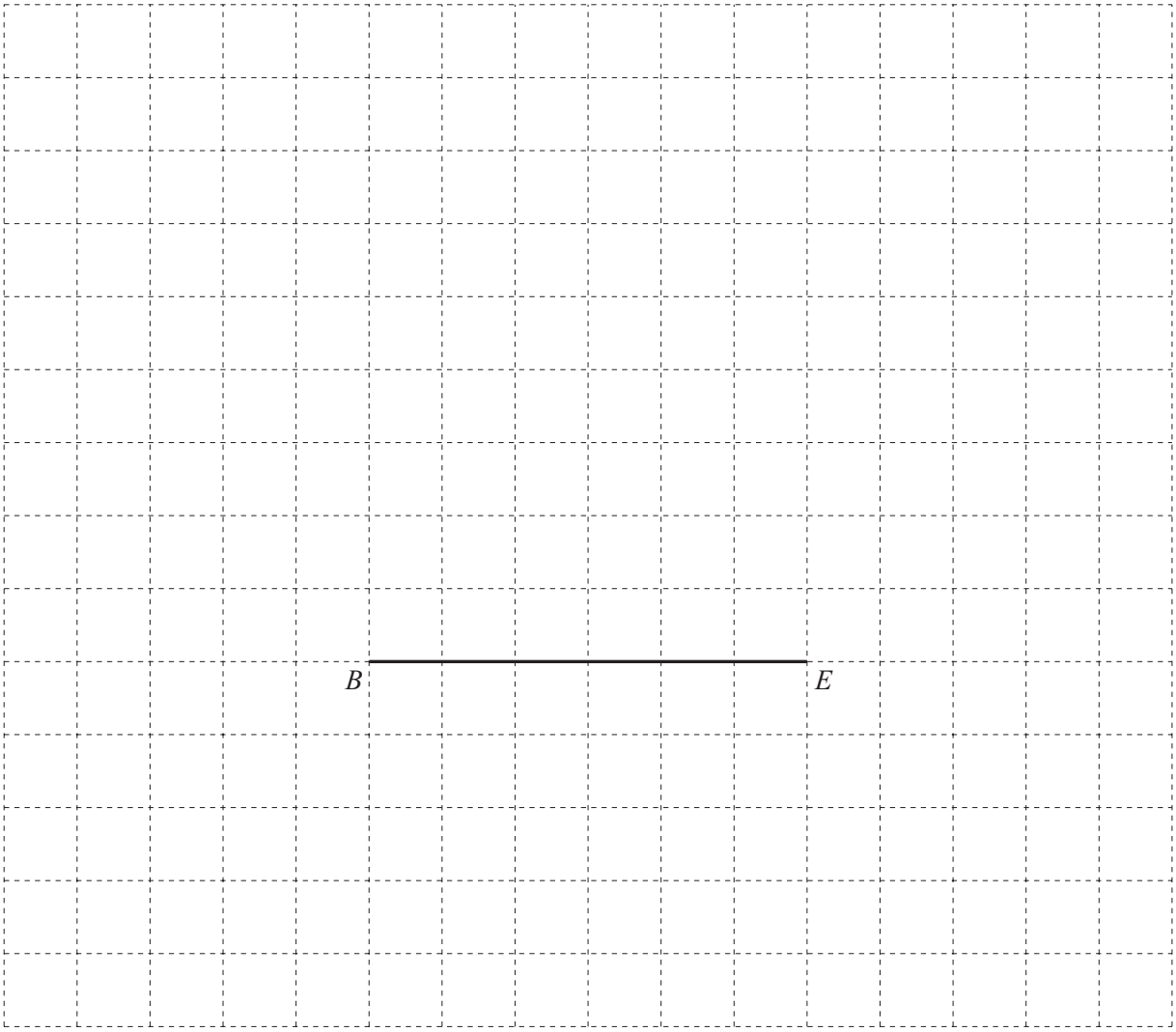
NOT TO SCALE

The diagram shows a triangular prism.
Triangle ABC is equilateral.
$AB = 4$ cm and $BE = 6$ cm.

(a) Write down the size of angle ABC.

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

(b) On the 1 cm^2 grid, draw an accurate net of the prism.
The line BE has been drawn for you.



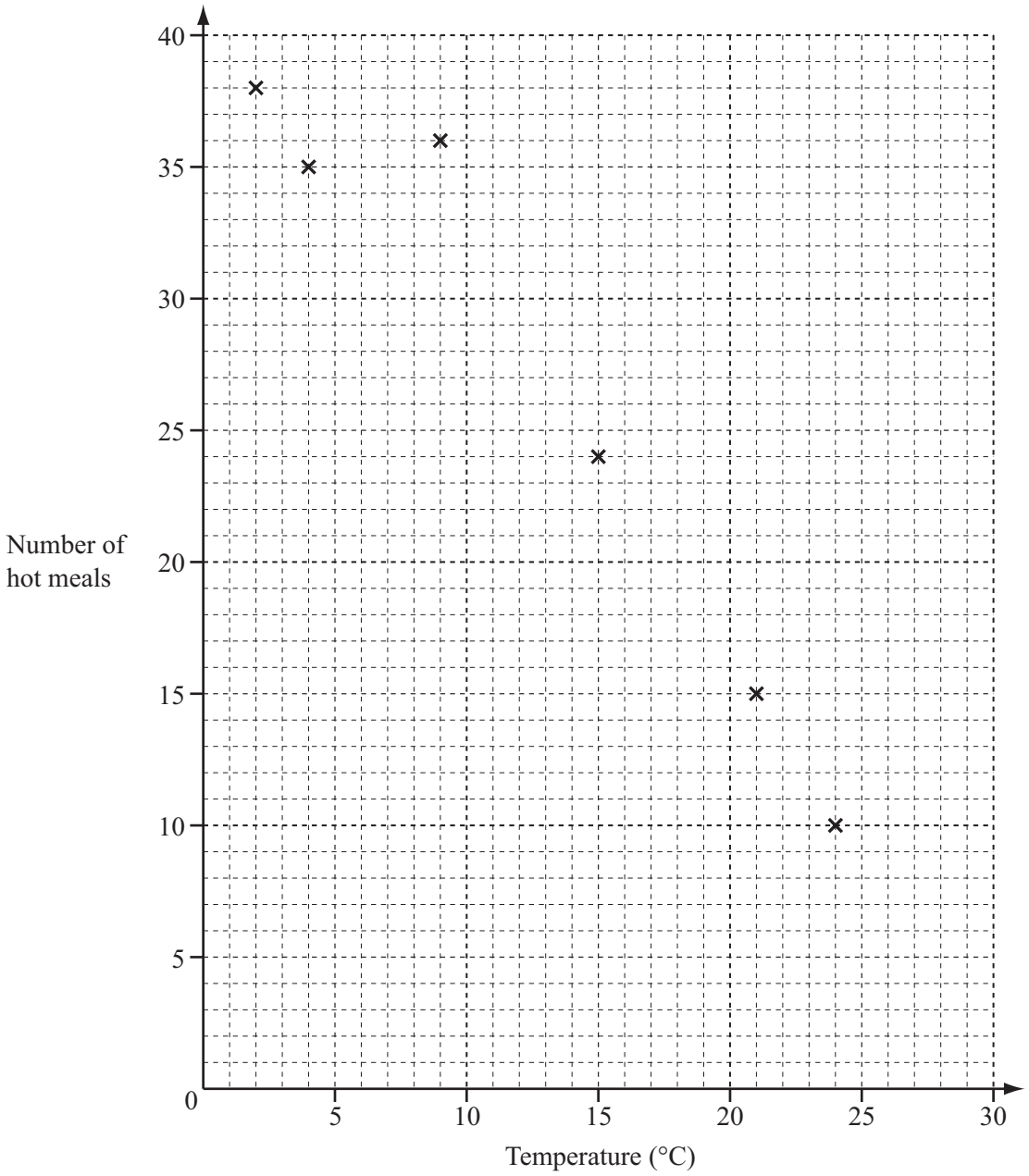
[3]

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18 On the first day of each month, a café owner records the midday temperature (°C) and the number of hot meals sold.

Month	J	F	M	A	M	J	J	A	S	O	N	D
Temperature (°C)	2	4	9	15	21	24	28	27	23	18	10	5
Number of hot meals	38	35	36	24	15	10	4	5	12	20	18	32

(a) Complete the scatter diagram.
The results for January to June have been plotted for you.



[2]

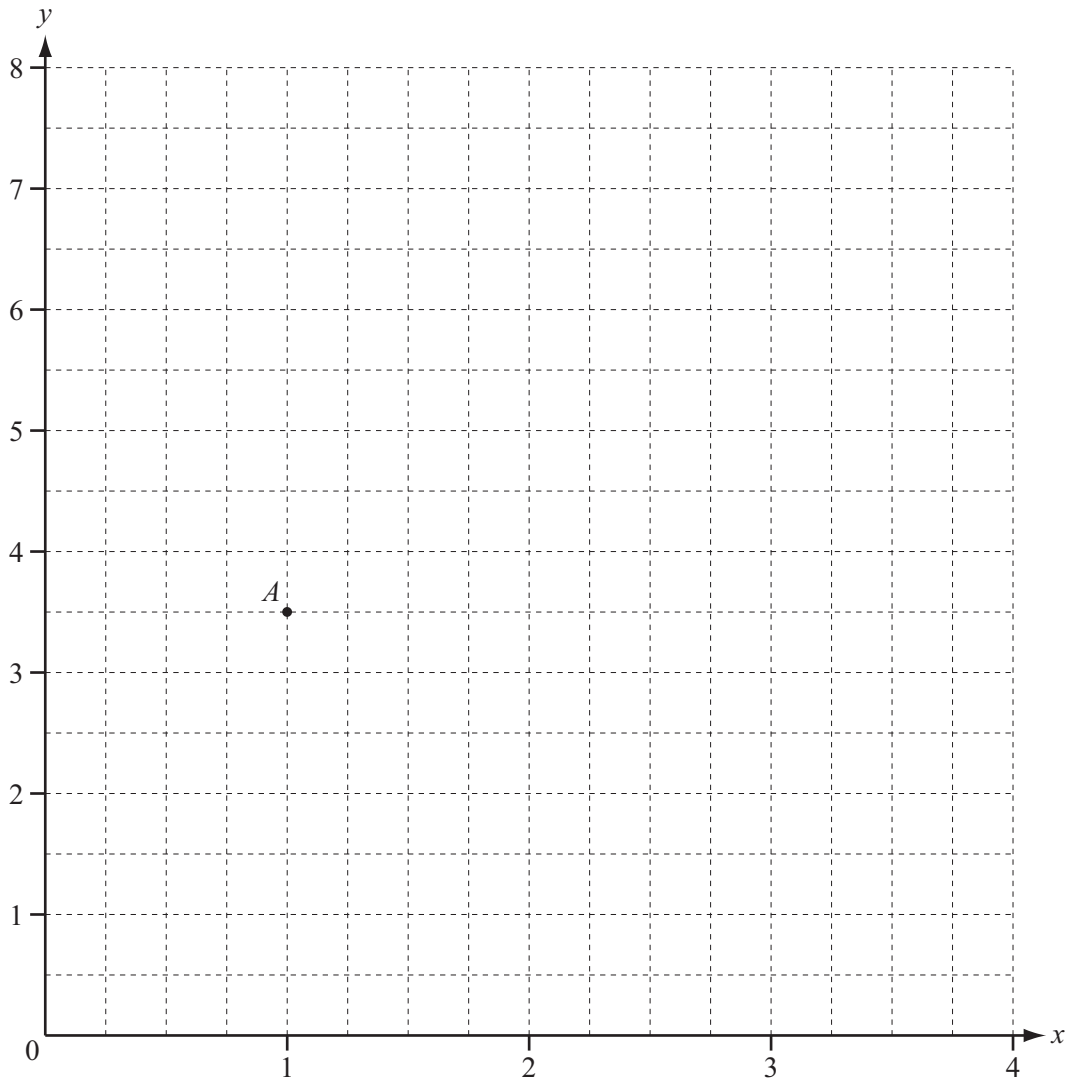
(b) On the grid, draw the line of best fit. [1]

(c) What type of correlation does this scatter diagram show?

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

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The point A (1, 3.5) is plotted on the grid.

(a) Plot the point B (3, 6.5) and draw the straight line through A and B. [1]

(b) (i) Find the gradient of the line in **part (a)**.

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

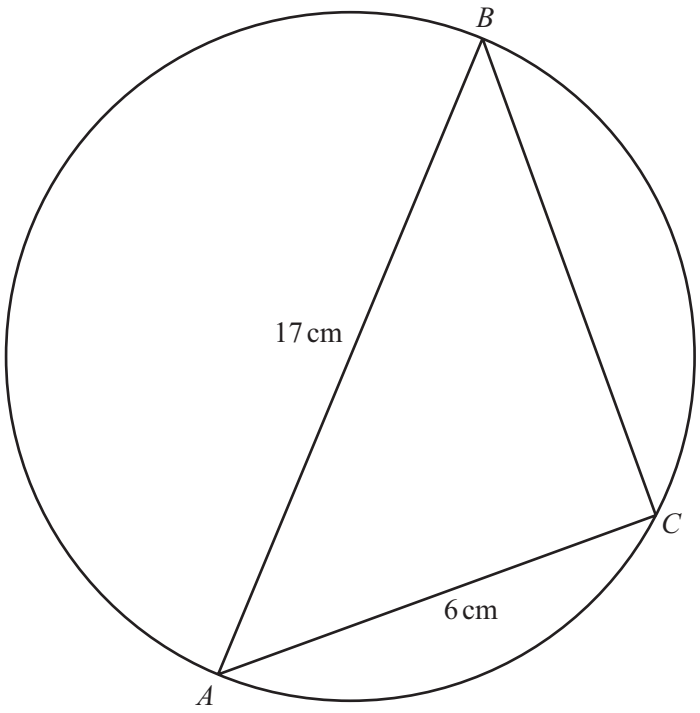
(ii) Write down the equation of the line in the form $y = mx + c$.

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

(c) On the grid, draw a line through the point (2, 5) that is perpendicular to the line in **part (a)**. [1]

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NOT TO SCALE

In the diagram, AB is a diameter of the circle and C is a point on the circumference.
$AB = 17$ cm and $AC = 6$ cm.

(a) Calculate the area of the circle.

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

(b) (i) Explain why angle $ACB = 90°$.

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

(ii) Calculate BC.

Answer(b)(ii) $BC =$ ..... cm [3]

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