UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

1387358591

MATHEMATICS **0581/12**

Paper 1 (Core) **October/November 2010**

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.

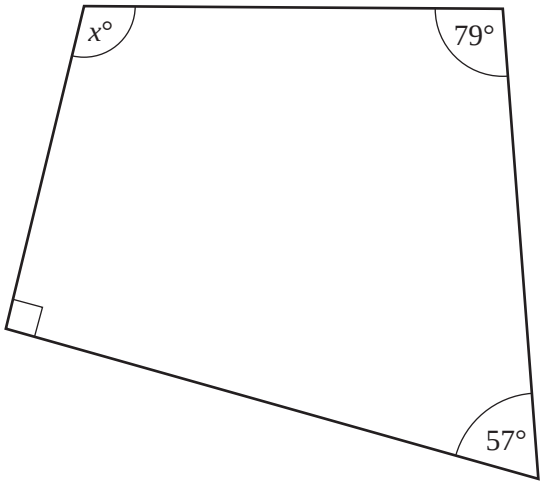
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 56.

This document consists of **12** printed pages.

UNIVERSITY of CAMBRIDGE International Examinations

For Examiner's Use

1



NOT TO SCALE

The diagram shows a quadrilateral.
Work out the value of x.

Answer x = ... [1]

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2 Caroline changed £200 into New Zealand dollars (NZ$).
The exchange rate was £1 = NZ$2.56 .

How many New Zealand dollars did she receive?

Answer NZ$ ..... [1]

For Examiner's Use

3 Francis recorded a temperature of −4°C on Sunday.
By Monday it had gone down by 3°C.

(a) Find the temperature on Monday.

Answer(a) ..... °C [1]

(b) On Tuesday the temperature was −1°C.

Find the change in temperature between Monday and Tuesday.

Answer(b) ..... °C [1]

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4 The distance from the Sun to the planet Saturn is 1 429 400 000 kilometres.

Write this distance in standard form, correct to 3 significant figures.

Answer ..... km [2]

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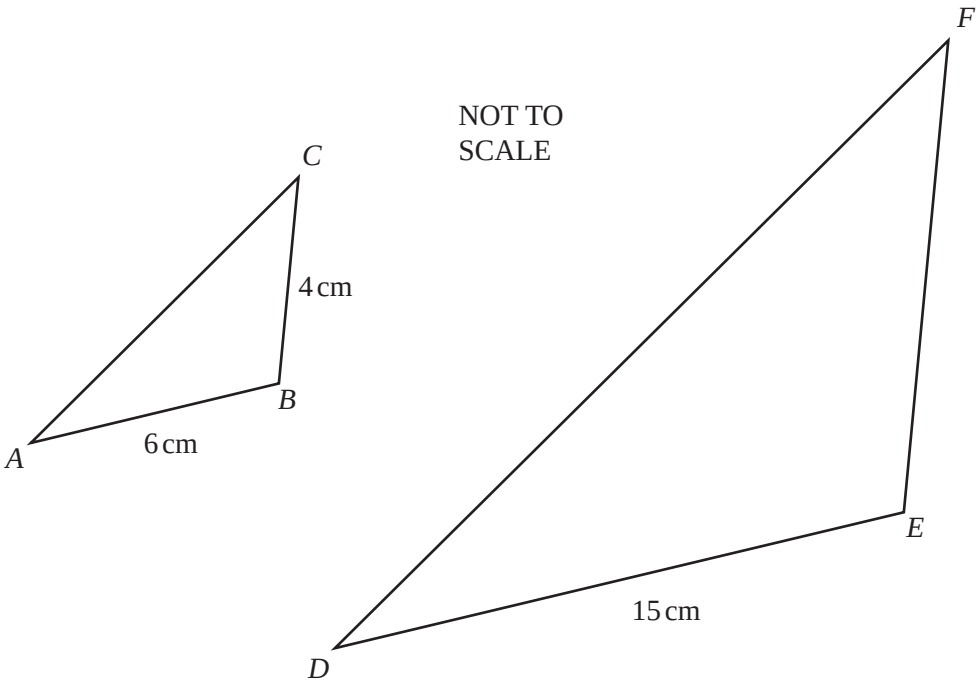
5 A factory makes doors that are each 900 millimetres wide, correct to the nearest millimetre.

Complete the statement about the width, w millimetres, of each door.

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

For Examiner's Use

6



The triangles *ABC* and *DEF* are similar.
AB = 6 cm, *BC* = 4 cm and *DE* = 15 cm.

Calculate *EF*.

Answer EF = ... cm [2]

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7 Maria puts $600 into a bank account for 3 years at a rate of 3.4% per year **compound** interest.

Calculate how much will be in the account at the end of the 3 years.

Answer $ ..... [3]

For Examiner's Use

8 **(a)** Factorise completely.

$$8pq + 12pr$$

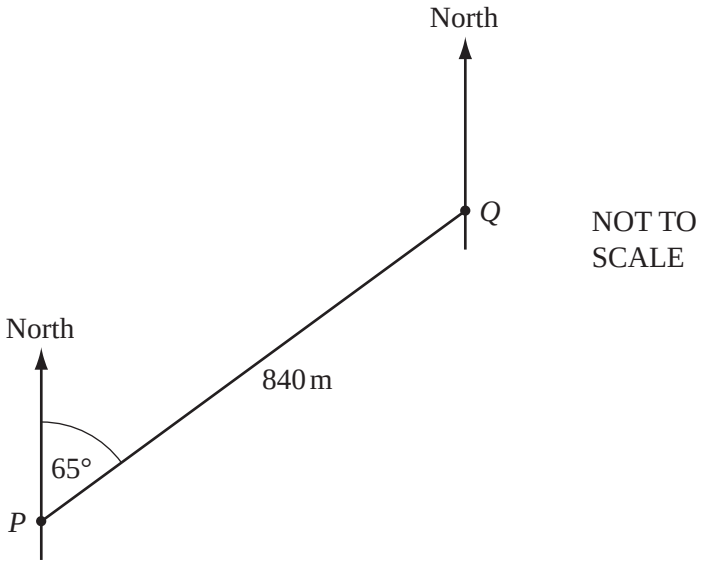
Answer(a) ..... [2]

(b) Use your answer to **part (a)** to make p the subject of the formula below.

$$s = 8pq + 12pr$$

Answer(b) $p =$ [1]

9



The diagram shows a straight road PQ.
PQ = 840m and the bearing of Q from P is 065°.

(a) Work out the bearing of P from Q.

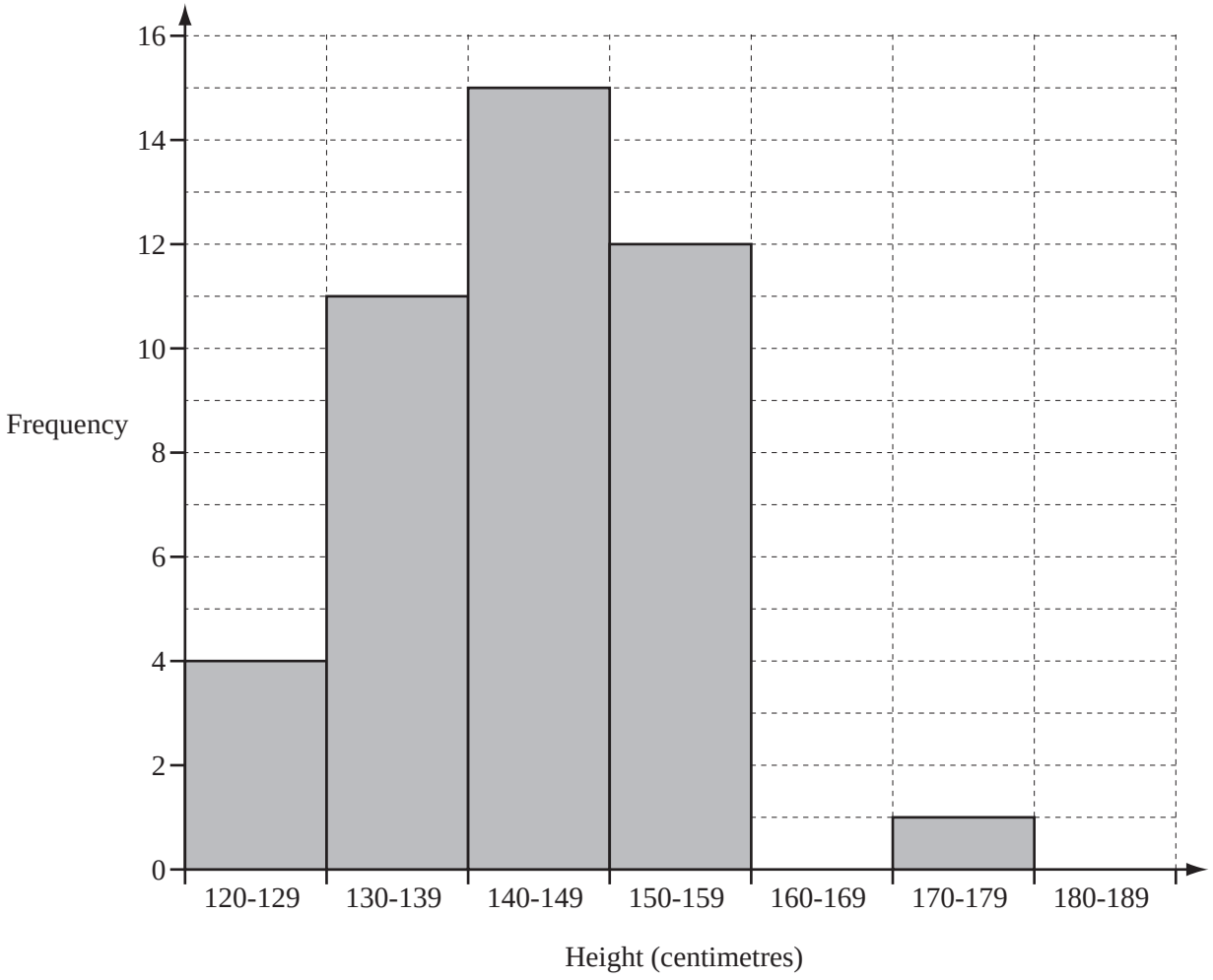
Answer(a) ..... [1]

(b) Calvin walks $\frac{4}{7}$ of the distance from P to Q.
How far is he **from Q**?

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

For Examiner's Use

10 The heights of 43 children are measured to the nearest centimetre.
Braima draws a bar chart from this information.



A child is chosen at random.
Write down, as a fraction, the probability that the child will be

(a) in the group 140 – 149 cm,

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

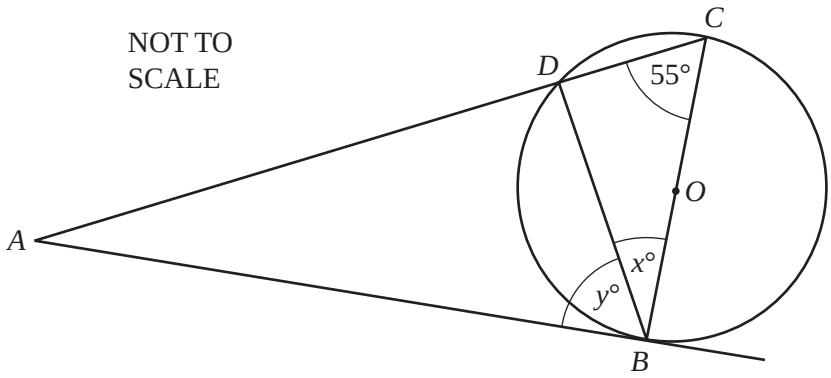
(b) less than 160 cm,

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

(c) in the group 160 – 169 cm.

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

11



The diagram shows a circle, centre O, with diameter BC.
AB is a tangent to the circle at B and angle $BCD = 55°$.
A straight line from A meets the circle at D and C.

Calculate the value of

(a) x,

Answer(a) $x =$ ..... [2]

(b) y.

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

---

12 **(a)** Write down the value of x when

(i) $5^x \div 5^2 = 5^4$,

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

(ii) $\frac{1}{49} = 7^x$.

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

(b) Write down the value of $3p^0$.

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

[Turn over

For Examiner's Use

13 Dominic, Esther, Flora and Galena shared a pizza.

(a) Dominic ate $\frac{1}{5}$ of the pizza and Esther ate $\frac{2}{7}$ of the pizza.

Show that $\frac{18}{35}$ of the pizza remained.

Do not use your calculator and show all your working.

Answer (a)

[2]

(b) Flora ate $\frac{2}{3}$ of the **pizza that remained.**

Find the fraction of the pizza that was left for Galena.

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

14

$$\frac{9.6 \times 7.8 - 0.53 \times 86}{4.95}$$

(a) (i) Rewrite this calculation with each number written correct to 1 significant figure.

Answer(a)(i)

[1]

(ii) Work out the answer to your calculation in **part(a)(i)**.
Do not use a calculator and show all your working.

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

(b) Use your calculator to work out the correct answer to the original calculation.

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

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15 Some children took part in a sponsored swim to raise money for charity.
The scatter diagram shows the results for 10 of the children.

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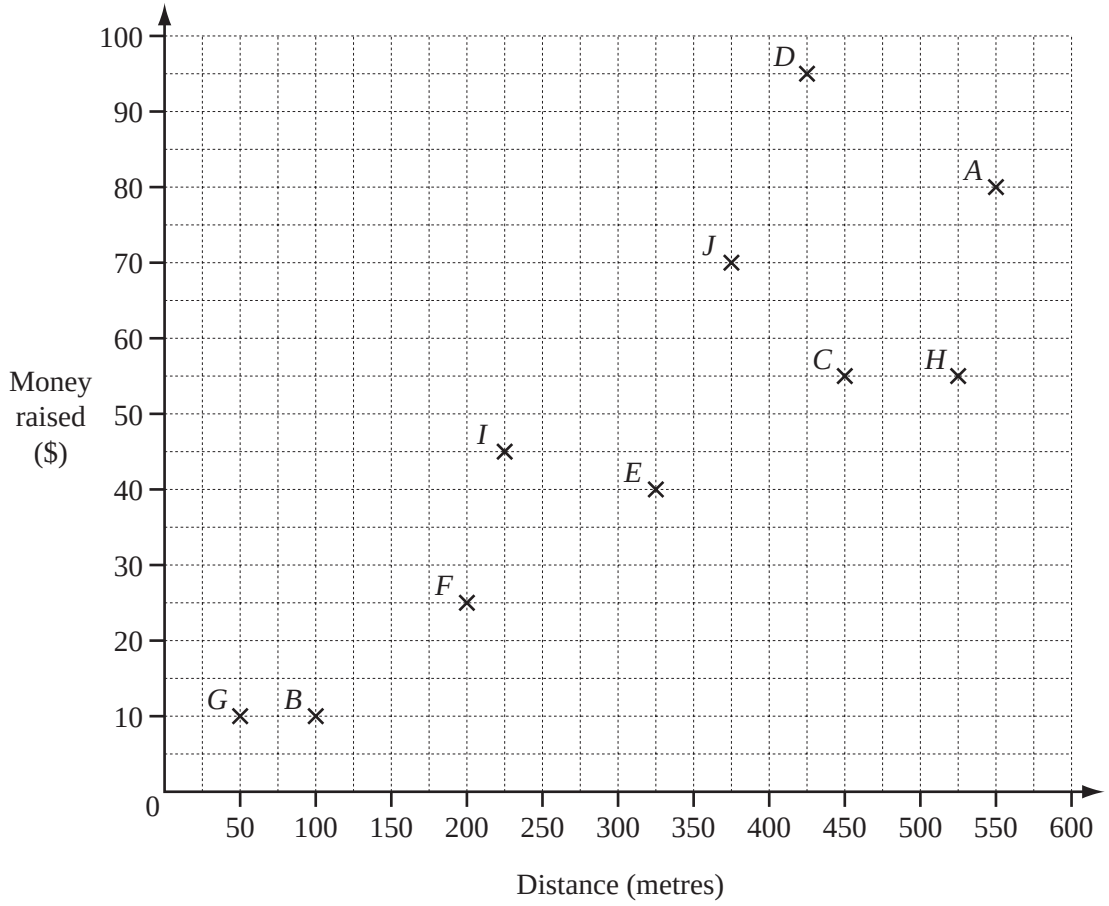


(a) (i) How much further did *A* swim than *J*?

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

(ii) How much more money did *D* raise than *F*?

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

(b) The results for 2 more children are given in the table below.

Child	Distance (m)	Money raised ($)
K	125	35
L	475	80

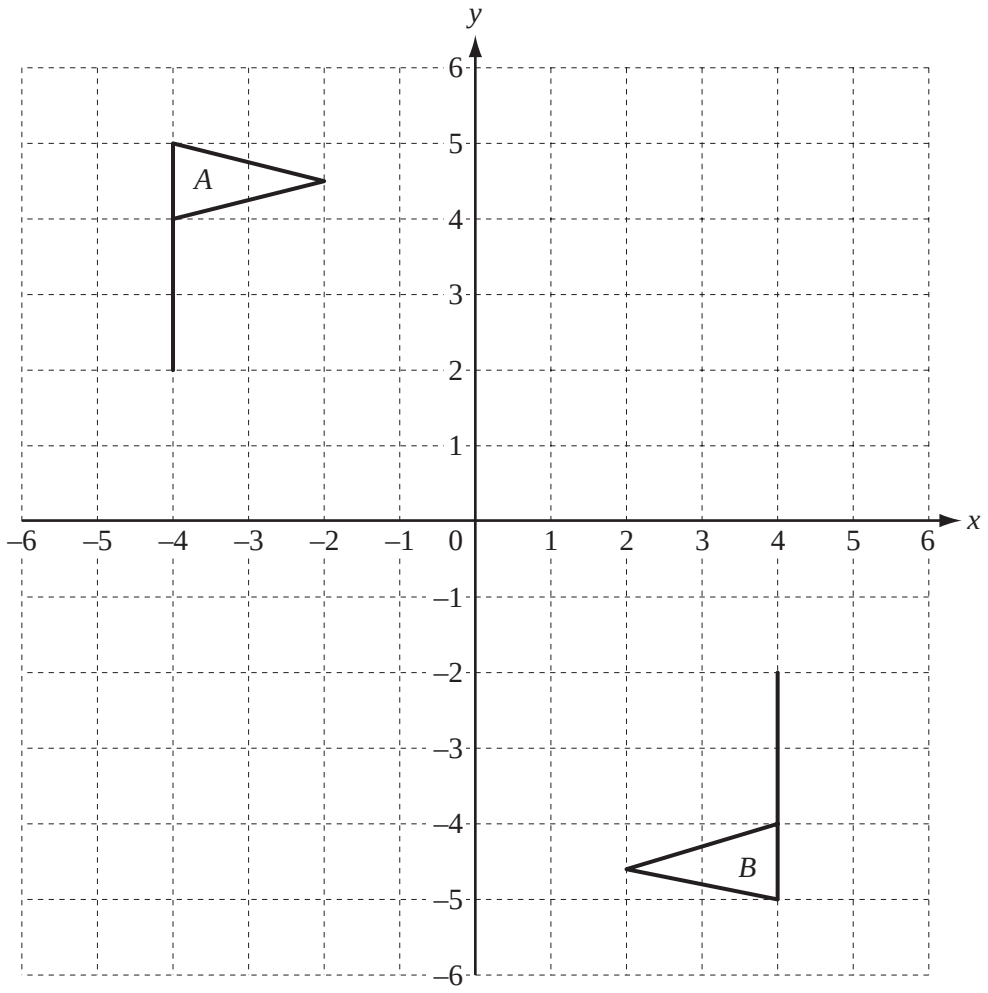
Plot the results for *K* and *L* on the scatter diagram. [1]

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

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

For Examiner's Use

16 Flags *A* and *B* are shown on the grid.



(a) Describe fully the **single** transformation which maps flag *A* onto flag *B*.

Answer(a) .....

..... [3]

(b) On the grid, draw the translation of flag *A* by the vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$. [2]

17

For Examiner's Use

$$\overrightarrow{AB} = \begin{pmatrix} 3 \\ -3 \end{pmatrix} \qquad \overrightarrow{AC} = \begin{pmatrix} -5 \\ 0 \end{pmatrix}$$

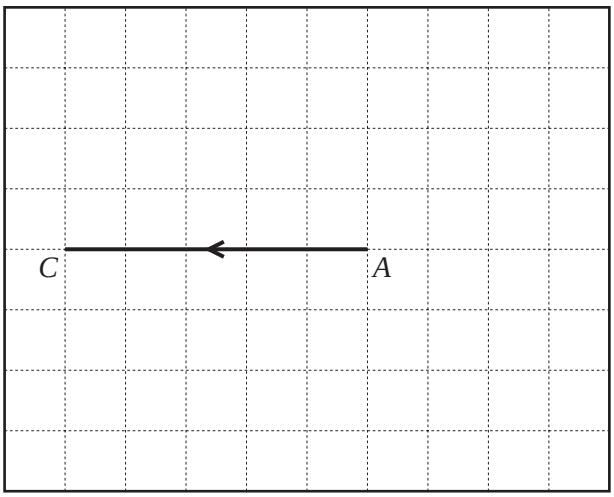
(a) Calculate $\overrightarrow{AB} + 3\overrightarrow{AC}$.

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

(b) Write down $\overrightarrow{BA}$.

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

(c) $\overrightarrow{AC}$ is drawn on the grid below.



(i) On the grid, draw $\overrightarrow{AB}$. [1]

(ii) Write down the obtuse angle between $\overrightarrow{AB}$ and $\overrightarrow{AC}$.

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

Question 18 is printed on the next page.

18

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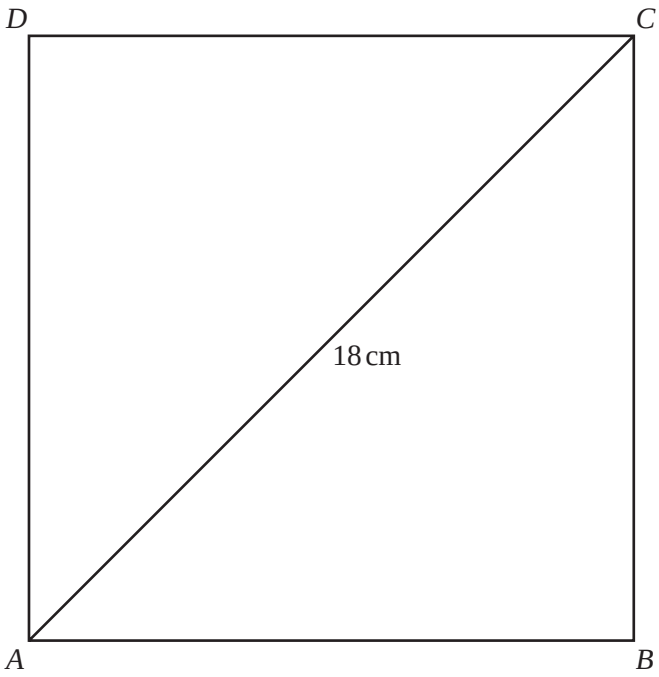

NOT TO SCALE

The diagram shows a square $ABCD$.
The length of the diagonal AC is 18 cm.

(a) Calculate

(i) the length of the side of the square,

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

(ii) the area of the square.

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

(b) A, B, C and D lie on a circle with diameter AC.

Calculate the area of this circle.

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