UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

5118361957

MATHEMATICS **0581/12**

Paper 1 (Core) **May/June 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.

This document consists of **11** printed pages and **1** blank page.

1 Work out the value of $\dfrac{48}{19.1 - 3.5 \times 4.6}$.

Answer ..... [1]

---

2 Write the following in order of size, starting with the smallest.

$0.83 \qquad \dfrac{5}{6} \qquad 82\% \qquad \dfrac{23}{28}$

Answer ..... < ..... < ..... < ..... [2]

---

3 The ferry from Helsinki to Travemunde leaves Helsinki at 17 30 on a Tuesday.
The journey takes 28 hours 45 minutes.

Work out the day and time that the ferry arrives in Travemunde.

Answer Day ..... Time ..... [2]

---

4 T R I G O N O M E T R Y

From the above word, write down the letters which have

(a) exactly two lines of symmetry,

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

(b) rotational symmetry of order 2.

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

---

5 The table shows the average monthly temperatures in Beijing.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temperature (°C)	–4.6	–2.2	4.5	13.1	19.8	24.0	25.8	24.4	19.4	12.4	4.1	–2.7

(a) Work out how many degrees higher the temperature is in December than in January.

Answer(a) ..... °C [1]

(b) Find the range.

Answer(b) ..... °C [1]

---

6 $\mathbf{a} = \begin{pmatrix} 5 \\ -3 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -2 \\ 7 \end{pmatrix}$

Work out $3\mathbf{a} + \mathbf{b}$.

Answer $\begin{pmatrix} \\ \\ \end{pmatrix}$ [2]

---

7 $$1\frac{1}{2} + \frac{1}{3} + \frac{1}{4} = \frac{p}{12}$$

Work out the value of p.

Show all your working.

Answer $p =$ ..... [2]

---

8 A lake has an area of 63 800 000 000 square metres.

Write this area in square kilometres, correct to 2 significant figures.

Answer ..... km^2 [2]

---

9 **(a)** Simplify $a^{-3} \times a^{8}$.

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

(b) Work out the value of 5^{-2}.

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

---

10 The number of people, n, who attended a concert was 12 600 to the nearest 100.

Complete the statement about n.

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

---

11 Keiko travels from Tokyo to London for the Olympic Games.
On the internet, a flight costs £767.

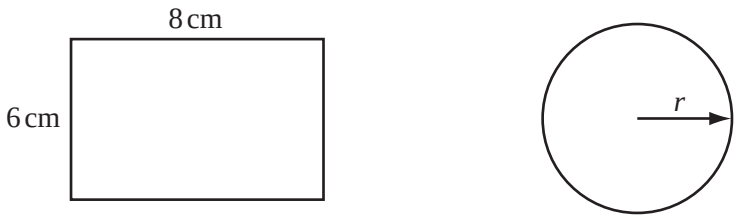
(a) Use the exchange rate £1 = 143 Japanese Yen to find the cost of the flight in Japanese Yen.

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

(b) Write your answer to **part (a)** in standard form.

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

12



The perimeter of the rectangle is the same length as the circumference of the circle.

Calculate the radius, r, of the circle.

Answer r = ... cm [3]

---

13 **(a)** Factorise $xy - y^2$.

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

(b) Solve $4x - 7 = 12$.

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

---

14 Scatter diagrams are drawn to compare sets of data from each team in a hockey league during

Write down the type of correlation you would expect to see when the data recorded is

(a) the number of games won and the total points scored,

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

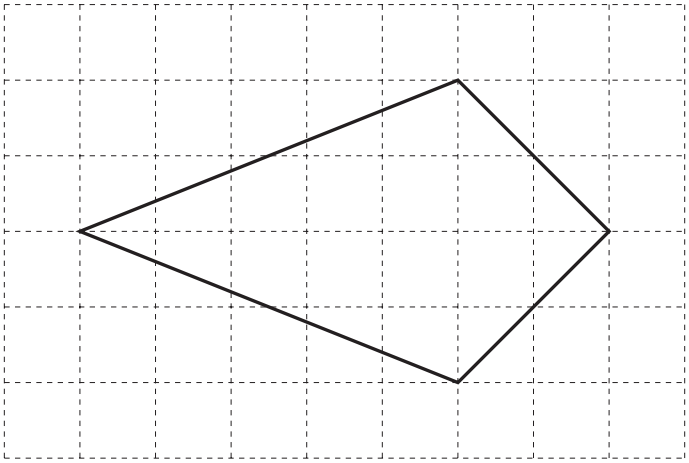
(b) the number of games drawn and the average height of the team,

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

(c) the number of goals scored and the final position in the league.

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

15



The diagram shows a quadrilateral drawn on a 1 cm square grid.

(a) Write down the mathematical name of the quadrilateral.

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

(b) Find the area of the quadrilateral and give the units.

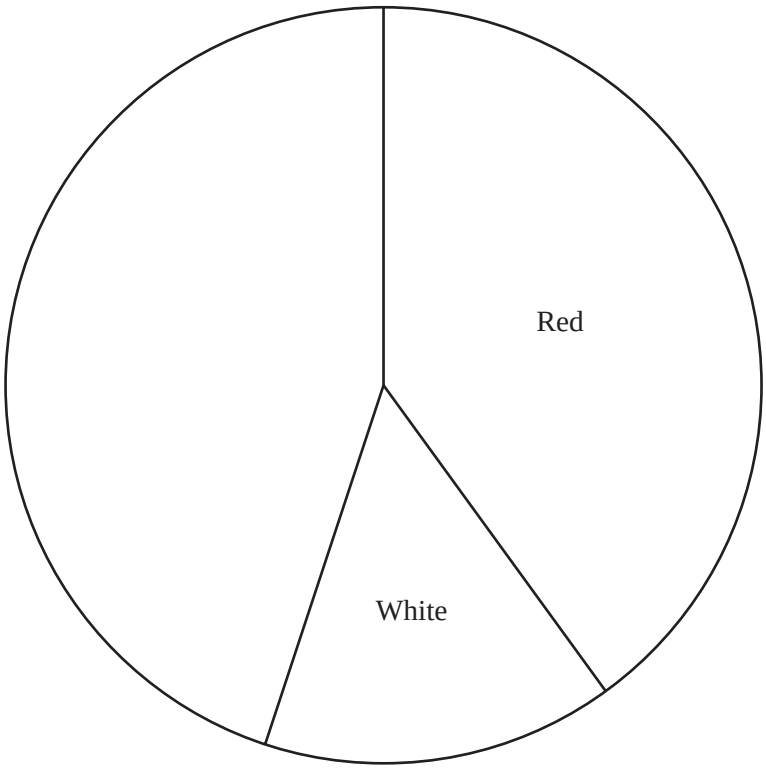
Answer(b) .... [2]

---

16 The shirt colour of the teams in a football league are shown in the following table.

Colour	Frequency
Red	8
White	3
Blue	7
Gold	2

The pie chart shows some of this information.
The sectors for red shirts and white shirts have been drawn.



(a) Calculate the angle of the sector for blue shirts.

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

(b) Complete the pie chart. [1]

17 Solve the simultaneous equations.

$$6x + 2y = 22$$
$$4x - y = 3$$

Answer $x =$ .....

$y =$ ..... [3]

---

18 The taxi fare in a city is \$3 **and** then \$0.40 for every kilometre travelled.

(a) A taxi fare is \$9.

How far has the taxi travelled?

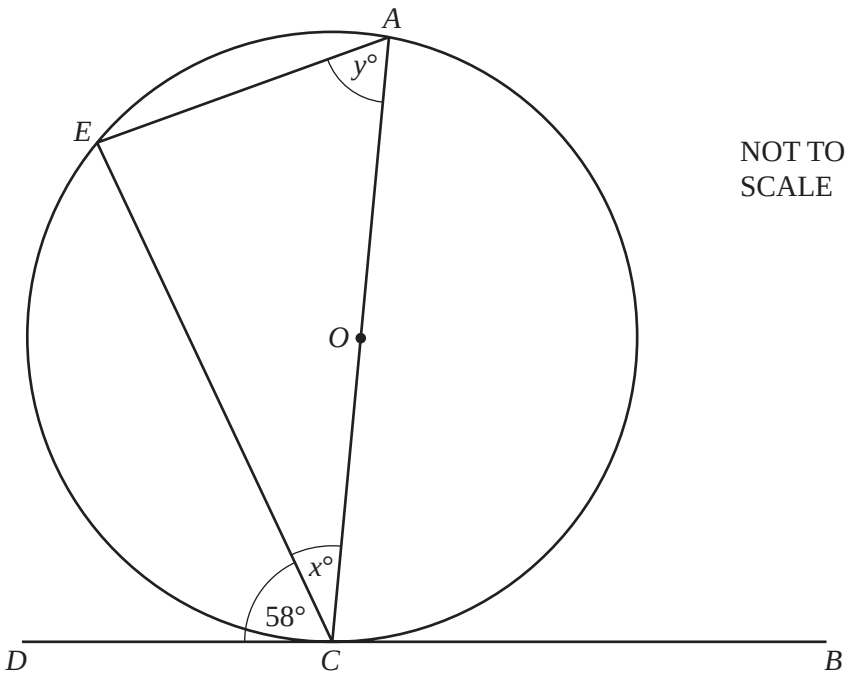
Answer(a) ..... km [2]

(b) Taxi fares cost 30% more at night.

How much does a \$9 daytime journey cost at night?

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

19



NOT TO SCALE

AC is a diameter of a circle, centre *O*.
BCD is a tangent to the circle and *E* is a point on the circumference.
Angle *ECD* = 58°.

Work out the value of

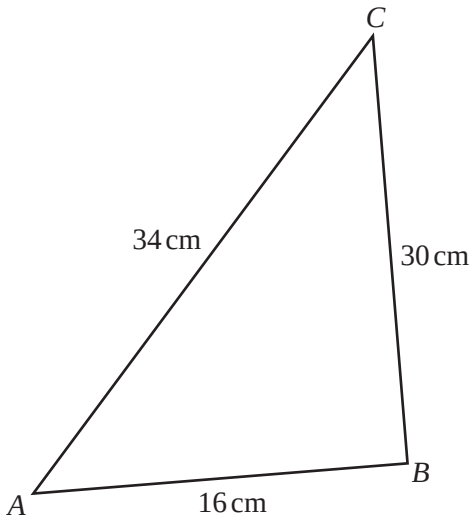
(a) *x*,

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

(b) *y*.

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

20



NOT TO SCALE

(a) Write down all your working to show that angle *ABC* is a right angle.

Answer(a)

[2]

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

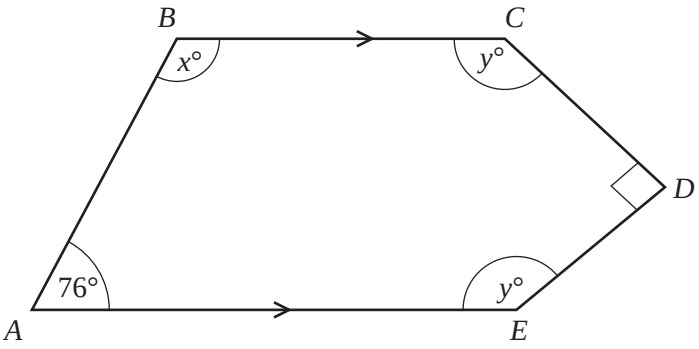
Answer(b) Angle *CAB* = ... [2]

21 **(a)** Show that the sum of the interior angles of a regular pentagon is 540°.

Answer(a)

[2]

(b)



NOT TO SCALE

The diagram shows a pentagon *ABCDE*.
BC is parallel to *AE* and angle *CDE* is a right angle.

Find the values of x and y.

Answer(b) x = ...

y = ... [3]

BLANK PAGE