UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

3398247741

MATHEMATICS **0581/11**

Paper 1 (Core) **May/June 2010**

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.

This document consists of **8** printed pages.

1 A ferry to Crete leaves at 07 30.
The journey takes 2 hours and 48 minutes.
Work out the time when the ferry arrives in Crete.

Answer ..... [1]

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2 **(a)** Write the following in order, starting with the smallest.

$0.43 \qquad \frac{4}{9} \qquad 41\%$

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

(b) Only **one** of the following statements is correct.

$\sin 30° \neq 0.5 \qquad 4^2 > 16 \qquad 0.3 < \frac{1}{3}$

Put a ring around the **correct** statement. [1]

---

3 In a group of 35 students, 14 go to school by bus.
Write down the probability that a student, chosen at random, does **not** go to school by bus.
Give your answer as a fraction in its lowest terms.

Answer ..... [2]

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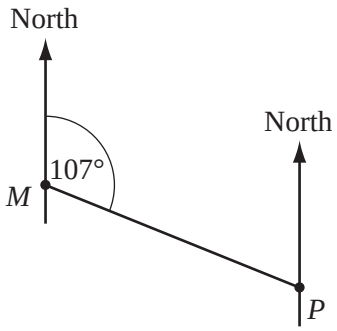
4 Write down the equation of the line, parallel to $y = 4x + 1$, which passes through the point $(0, -3)$.

Answer ..... [2]

5

NOT TO SCALE



The bearing of P from M is 107°.
Work out the bearing of M from P.

Answer ..... [2]

---

6 Martin recorded the outside temperature every three hours.
At 07 00 the temperature was – 2°C.

(a) This was 5°C higher than the temperature at 04 00.
Write down the temperature at 04 00.

Answer(a) ..... °C [1]

(b) At 10 00 the temperature was 11°C.
Write down the increase in temperature between 07 00 and 10 00.

Answer(b) ..... °C [1]

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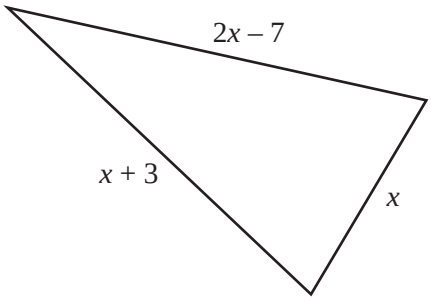
7 In a sale, the price of a car was reduced from $ 17 000 to $ 15 300.
Calculate the reduction as a percentage of the original price.

Answer ..... % [2]

8

NOT TO SCALE



The lengths, in centimetres, of the sides of a triangle are x, $x + 3$ and $2x - 7$.
The perimeter of the triangle is 52 cm.

(a) Use this information to write down an equation in x.

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

(b) Find the value of x.

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

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9 The area of a circle is 19.7 cm^2.
Calculate the radius of the circle.

Answer ..... cm [3]

---

10 Simplify

(a) $p^3 \times p^4$,

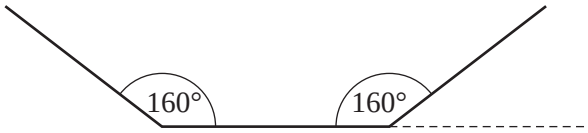
Answer(a) ..... [1]

(b) $12q^8 \div 3q^2$.

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

11

NOT TO SCALE



The diagram shows part of a regular polygon.
Each interior angle of the polygon is 160°.
Calculate the number of sides of the polygon.

Answer ..... [3]

---

12 Write down the value of

(a) 10^{-2},

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

(b) 4^0,

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

(c) $\sqrt[3]{343}$.

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

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13 Solve the simultaneous equations.

$$2x - y = 9$$

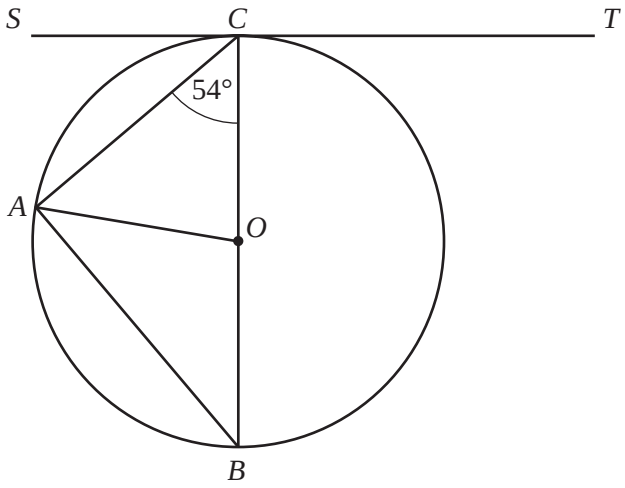
$$7x + 2y = 26$$

Answer $x =$ .....

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

14

NOT TO SCALE



A, *B* and *C* lie on a circle, centre *O*. *BC* is a diameter and *SCT* is a tangent at *C*. Angle *ACB* = 54°.

Find

(a) angle *BCT*,

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

(b) angle *COA*,

Answer(b) Angle *COA* = ... [1]

(c) angle *CAB*,

Answer(c) Angle *CAB* = ... [1]

(d) angle *ABC*.

Answer(d) Angle *ABC* = ... [1]

15

$\mathbf{d} = \begin{pmatrix} 3 \\ -5 \end{pmatrix}$ $\mathbf{e} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$ $\mathbf{f} = \begin{pmatrix} 0 \\ 7 \end{pmatrix}$

Calculate

(a) $\mathbf{d} - \mathbf{e}$,

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

(b) $4\mathbf{f}$.

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

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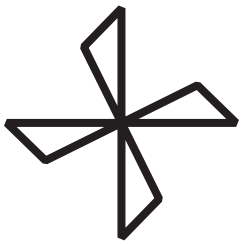
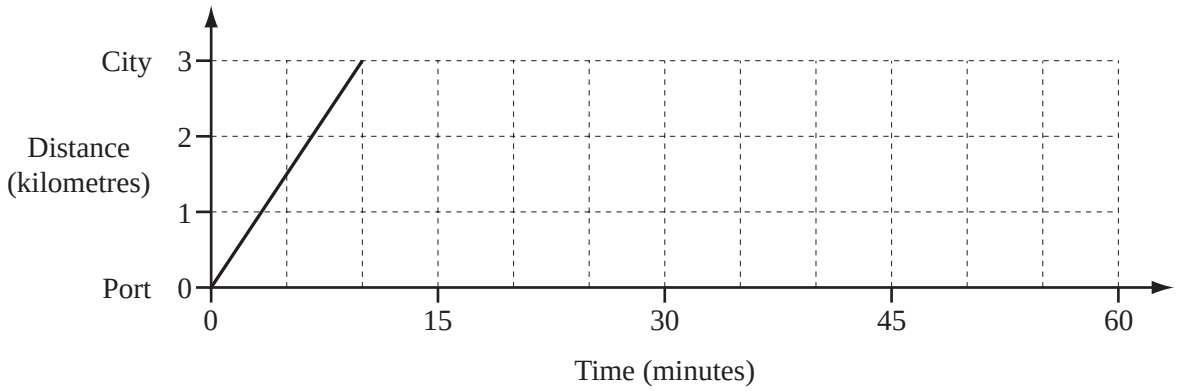
16 Complete the information about each shape.

Shape		
Number of lines of symmetry	.....	.....
Order of rotational symmetry	.....	.....

[4]

17



(a) The travel graph shows the journey of a bus from a port to a city.
Calculate the average speed of the bus

(i) in kilometres per minute,

Answer(a)(i) ..... km/min [1]

(ii) in kilometres per hour.

Answer(a)(ii) ..... km/h [1]

(b) The bus waits in the city for 20 minutes and then returns to the port at an average speed of 12 km/h.

Complete the travel graph. [2]

Questions 18 and 19 are printed on the next page.

18 **(a)** Factorise $3y^2 - 7xy$.

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

(b) Expand the brackets and simplify completely.

$$p\left(4p + 5r\right) + 2r\left(6p + r\right)$$

Answer(b) ..... [3]

---

19 Erica is tiling the floor of a rectangular room of length 3 metres and width 2.5 metres.
She uses square tiles of side 25 centimetres.

(a) Calculate

(i) how many tiles will fit along the length of the room,

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

(ii) how many tiles she will need altogether.

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

(b) Work out the area of **one tile**

(i) in square centimetres,

Answer(b)(i) ..... cm^2 [1]

(ii) in square metres.

Answer(b)(ii) ..... m^2 [1]