UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MATHEMATICS

Paper 1 (Core)

0580/01 0581/01

Candidates answer on the Question Paper.
Additional Materials: Electronic calculator
Geometrical instruments
Mathematical tables (optional)
Tracing paper (optional)

October/November 2005

1hour

Candidate Name

Centre Number

Candidate Number

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 in the spaces provided on the Question Paper.
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 THE BARCODE.
DO **NOT** WRITE IN THE GREY AREAS BETWEEN THE PAGES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 56.
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.

For Examiner's Use

This document consists of **9** printed pages and **3** blank pages.

For Examiner's Use

1 The distance from Buenos Aires to Wellington is approximately 10 100 kilometres.
Write this number in standard form.

Answer ..... km [1]

2 Factorise $3xy - 2x$.

Answer ..... [1]

3 The highest mountain in Argentina is Aconcagua.
Its height is 6960 metres, correct to the nearest **twenty** metres.
Write down the smallest possible height of Aconcagua.

Answer ..... m [1]

4 Which one of the numbers below is **not** a rational number?

$$7 \quad \tfrac{2}{3} \quad \sqrt{5} \quad -1\tfrac{1}{2} \quad \sqrt{81}$$

Answer ..... [1]

5 Solve the equation $5x - 7 = 8$.

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

6 A bottle of lemonade contains $1\frac{1}{2}$ litres.

A glass holds $\frac{1}{8}$ litre.

How many glasses can be filled from one bottle of lemonade?

Answer ..... [2]

For Examiner's Use

7 The table below shows the average monthly temperatures (°C) in the Islas Orcadas, Argentina.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	1	0.5	–1	–5	–8	–9	–8	–5	–3	–1	0.5

(a) Work out the difference between the highest and the lowest average monthly temperature.

Answer(a) .....°C [1]

(b) The highest recorded temperature for July is x °C.
This is 21 °C above the average for July shown in the table.
Work out the value of x.

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

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8 The formula for the perimeter, P, of a rectangle with length a and width b is

$$P = 2a + 2b.$$

Make a the subject of the formula.

Answer $a =$ ..... [2]

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9 0.072 72% 0.702 $\frac{7}{10}$ $\frac{7}{100}$ 7.2%

From the values listed above, write down

(a) the smallest,

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

(b) the largest,

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

(c) the two which are equal.

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

For Examiner's Use

10 An integer n is such that $60 \leqslant n \leqslant 70$.
Write down a value of n which is

(a) a prime number,

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

(b) a multiple of 9,

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

(c) a square number.

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

11

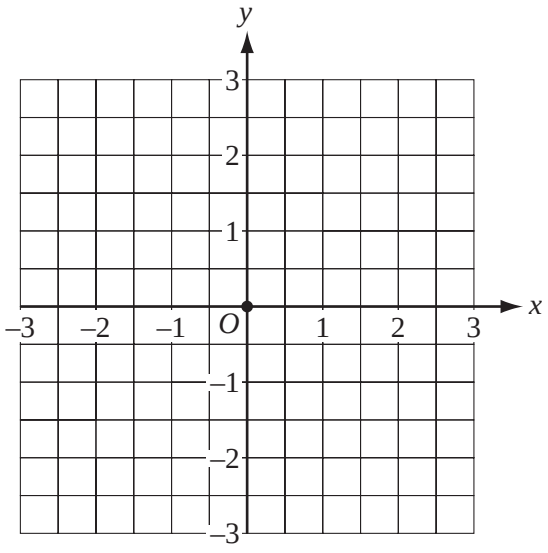
$$\mathbf{p} = \begin{pmatrix} 2 \\ -3 \end{pmatrix} \text{ and } \mathbf{q} = \begin{pmatrix} 3 \\ 1 \end{pmatrix}.$$

(a) Write $\mathbf{p} + \mathbf{q}$ as a column vector.

Answer (a) $\mathbf{p} + \mathbf{q} = \begin{pmatrix} \\ \\ \end{pmatrix}$ [2]

(b) The point O is marked on the grid below.

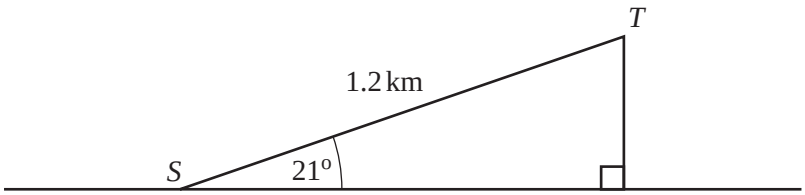
Draw the vector $\overrightarrow{OP}$ where $\overrightarrow{OP} = \mathbf{p}$.



[1]

For Examiner's Use

12



NOT TO SCALE

The diagram shows a path, *ST*, up a hill.
The path is 1.2 kilometres long and slopes at an angle of 21° to the horizontal.

Calculate the height of the hill, showing all your working.
Give your answer in **metres**.

Answer ..... m [3]

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13 The population of Latvia in 1989 was 2 700 000.
In 1994 it was 2 500 000.

Calculate the percentage **decrease** in the population between 1989 and 1994.

Answer ..... % [3]

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14 = < >

Choose one of the symbols given above to complete each of the following statements.

When $x = 6$ and $y = -7$, then

(a) x ..... y [1]

(b) x^2 ..... y^2 [1]

(c) $y - x$ ..... $x - y$ [1]

For Examiner's Use

15 **(a)** Write 0.48 correct to 1 significant figure.

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

(b) **(i)** Find an approximate answer for the sum

$$9.87 - 5.79 \times 0.48$$

by rounding each number to 1 significant figure. Show your working.

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

(ii) Use your calculator to find the exact answer for the sum in **part (b) (i)**.
Write down all the figures on your calculator.

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

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16 Simplify the following expressions.

(a) $9r - 4s - 6r + s$

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

(b) $q^4 \div q^3$

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

(c) $p^6 \times p^{-2}$

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

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17 Three friends, Cleopatra, Dalila and Ebony go shopping.
The money they each have is in the ratio

Cleopatra : Dalila : Ebony = 5 : 7 : 8.

Cleopatra has \$15.

(a) How many dollars do they have in total?

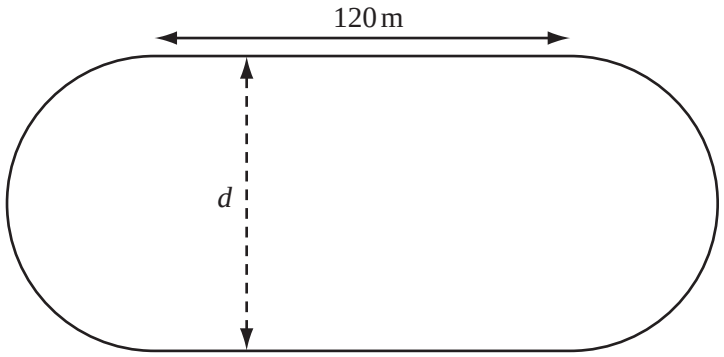
Answer(a) ..... [2]

(b) Dalila spends \$12 on a hat.
How many dollars does she have left?

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

For Examiner's Use

18 A 400 metre running track has two straight sections, each of length 120 metres, and two semicircular ends.



NOT TO SCALE

(a) Calculate the **total** length of the **curved** sections of the track.

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

(b) Calculate *d*, the distance between the parallel straight sections of the track.

Answer(b) $d =$ ..... m [2]

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19 Joseph buys 45 kilograms of potatoes from a supplier for \$0.65 per kilogram.

(a) How much does he pay for the potatoes?

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

(b) He then puts the potatoes into bags which each hold 2.5 kilograms.
How many bags can he fill with the potatoes?

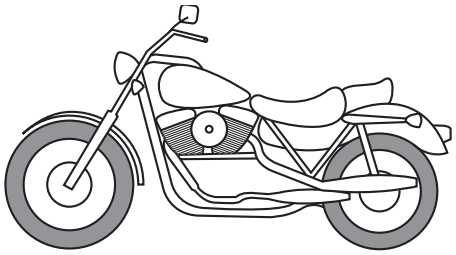
Answer(b) ..... bags [1]

(c) At the market he sells the bags of potatoes for \$2.20 per bag.
Calculate the smallest number of **complete** bags he needs to sell in order to make a profit.

Answer(c) ..... bags [2]

20

For Examiner's Use



$900

Lorenzo saves money for a motorbike.
The marked price of the motorbike is $900.
He pays a deposit of 35% of the marked price.

(a) Calculate his deposit.

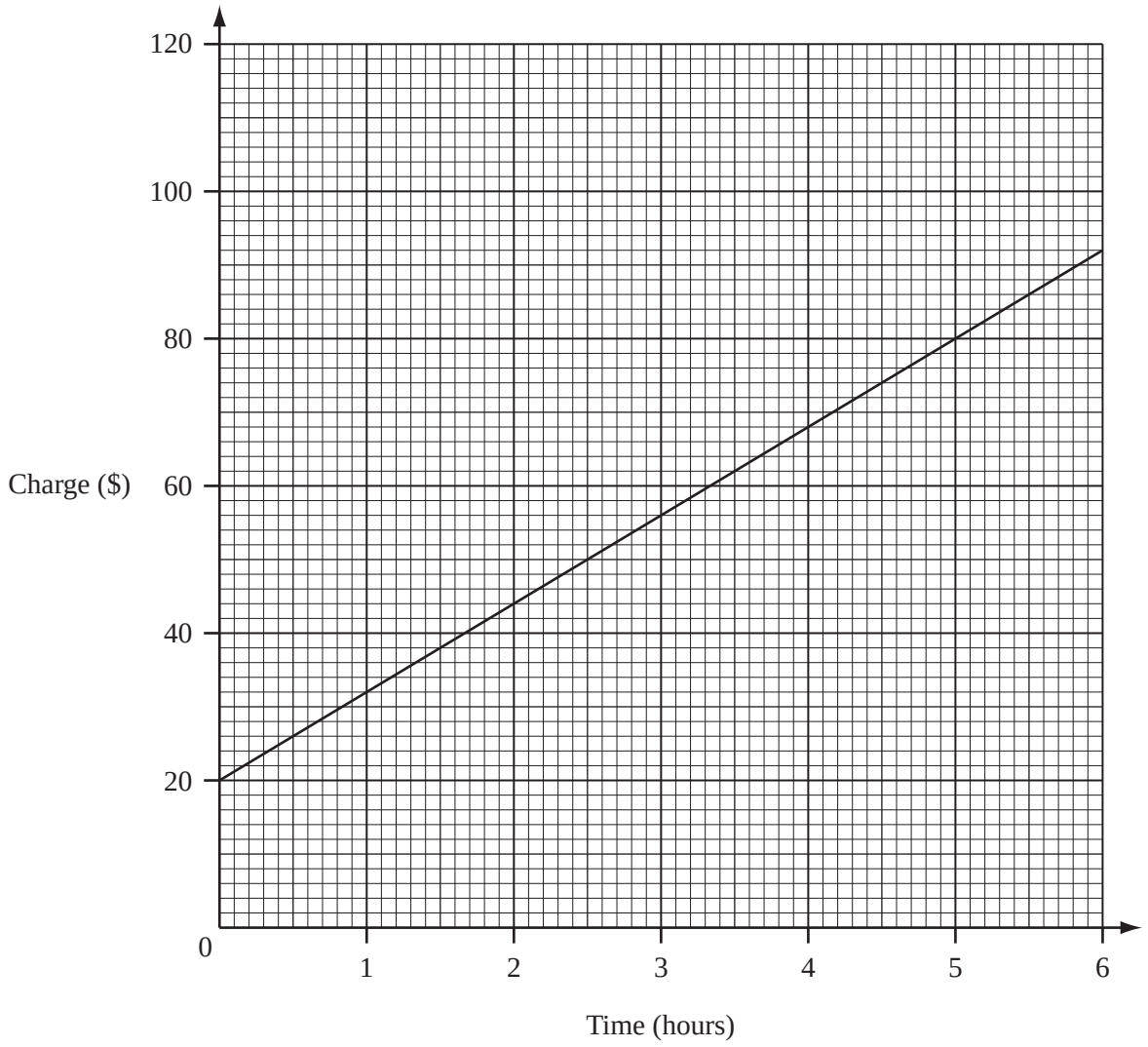
Answer(a) $..... [2]

(b) He then makes 12 monthly payments of $60 each.
How much more than the $900 marked price does he pay altogether?

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

For Examiner's Use

21 The graph below shows the amount a plumber charges for up to 6 hours work.



(a) How much does he charge for $3\frac{1}{2}$ hours work?

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

(b) The plumber charged $50.
How many hours did he work?

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

(c) Another plumber charges $16 per hour.

(i) Draw a line on the grid above to show his charges. Start your line at (0,0). [2]

(ii) Write down the number of hours for which the two plumbers charge the same amount.

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

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