UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MATHEMATICS

0580/01 0581/01

Paper 1 (Core)

Candidates answer on the Question Paper.
Additional Materials: Electronic calculator
                        Geometrical instruments   October/November 2006
                        Mathematical tables (optional)
                        Tracing paper (optional)   **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 of the 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 **8** printed pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1   At noon one day the temperature is −9.5 °C.
    By midnight the temperature has fallen by 3.6 °C.
    What is the temperature at midnight?
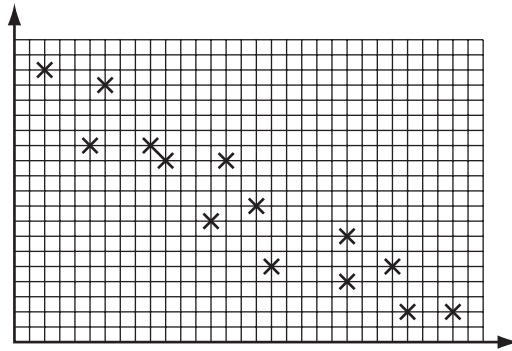
    Answer .... °C [1]

2   Insert brackets to make the following statement correct.

    $$2 \quad \times \quad 3 \quad - \quad 4 \quad + \quad 5 \quad = \quad 3$$ [1]

3   Which word describes the correlation in the scatter graph below?

    positive   negative   none

    Answer .... [1]

4   The *n*th term of a sequence is given by n^2+2.
    Work out the 4th term.

    Answer .... [1]

5                           $1 = 0.78 euros
    Use this exchange rate to change $15.50 into euros.

    Answer .... euros [1]

6 Factorise completely $2a^2b - 6a$.

Answer .... [2]

7 **(a)** Change 56.1 metres into kilometres.

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

(b) Change 15.3 metres into millimetres.

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

8 Simplify $3x^2y \times x^4y^2$.

Answer .... [2]

9 Work out 43^3, giving

(a) your full calculator display,

Answer(a) .... [1]

(b) your answer correct to the nearest thousand.

Answer(b) .... [1]

10 Write these fractions in order with the smallest first.

$$\frac{33}{50} \qquad \frac{2}{3} \qquad \frac{6}{10}$$

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

11 Solve the equation $5x - 2 = 10x - 8$.

                                                        Answer x = ... [2]

12 Only two of the following five statements are correct.

    A $0.07077 \geqslant 0.07707$
    B $0.07077 \neq 0.07707$
    C $0.07077 = 0.07707$
    D $0.07077 < 0.07707$
    E $0.07077 > 0.07707$

Write down the letters which correspond to the two correct statements.

                          Answer .... and .... [2]

13 Work out $2.6 \times 10^{-3} + 9.1 \times 10^{-4}$.
Write your answer in standard form.

                                                        Answer .... [2]

14 The length of a mirror is 15.6 centimetres correct to the nearest millimetre.
Complete the statement below about the length of the mirror.

                  Answer .... cm $\leqslant$ length < .... cm [2]

15 A truck uses 2.5 litres of fuel to travel 8 kilometres.

   (a) How far will the truck travel on 1 litre of fuel?

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

   (b) How far will the truck travel on 120 litres of fuel?

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

16 Write down the value of x when

(a) $2^x = 8$,

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

(b) $3^x = \dfrac{1}{81}$.

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

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17 The surface area of a sphere with radius r is $A = 4\pi r^2$.

(a) Calculate the surface area of a sphere with a radius of 5 centimetres.

Answer(a) .... cm^2 [1]

(b) Make r the subject of the formula $A = 4\pi r^2$.

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

18
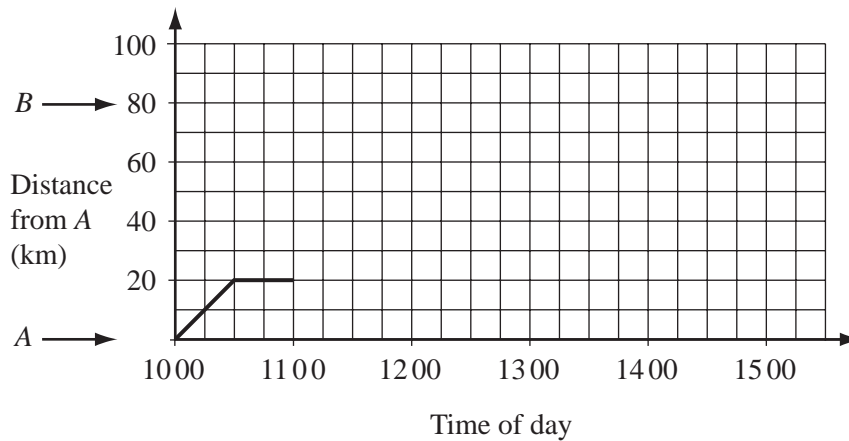
(a) Carla drives from town A to a supermarket.
At 11 00 she continues her journey to town B, driving at 80 km/h.
The first part of the journey is shown on the grid above.

(i) How many minutes is Carla at the supermarket?

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

(ii) Draw the rest of her journey to town B on the grid. [1]

(b) Carla spends 1 hour in town B and then drives back to town A, at a constant speed, arriving
at 14 30.
Show this information on the grid. [2]

19 A shopkeeper buys some ready-made meals from a supplier.

(a) Complete the bill shown below.

Meal	Cost of one meal	Number of meals	Total cost
Chicken curry	$3.48	15	$
Pizza	$2.99	28	$

[1]

(b) He sells all 15 Chicken curry meals for $4.00 each.
Work out the total profit on these meals.

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

(c) He sells 15 Pizzas for $3.55 each but is unable to sell the rest.
Calculate his loss on the Pizzas as a **percentage** of the total cost of the Pizzas.

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

20 (a) Draw the lines of symmetry on the two letters below.

H   W

[2]

(b) Write down the order of rotational symmetry for each of the figures below.

€   X

Order ....   Order .... [2]

21 Write the following as single vectors.

(a) $\begin{pmatrix} 2 \\ 3 \end{pmatrix} + \begin{pmatrix} 1 \\ 0 \end{pmatrix} - \begin{pmatrix} 3 \\ -1 \end{pmatrix}$

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

(b) $6\begin{pmatrix} 5 \\ -4 \end{pmatrix}$

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

22

$$\frac{13.5 + 16}{4.8 - (22 \div 13)}$$

(a) Rewrite this calculation with each number rounded to 1 significant figure.
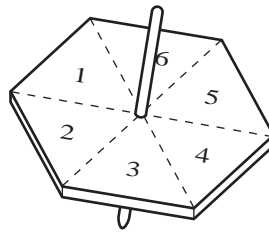
Answer(a)

[2]

(b) Use your answer to **part (a)** to estimate the answer to the calculation.
Show your working and write your answer correct to 1 significant figure.

Answer(b) .... [1]

(c) Use your calculator to find the answer to the **original** calculation correct to 3 significant figures.

Answer(c) .... [2]

23 The diagram shows a six-sided spinner.

(a) Amy spins a biased spinner and the probability she gets a two is $\frac{5}{36}$.

Find the probability she

(i) does not get a two,

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

(ii) gets a seven,

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

(iii) gets a number on the spinner less than 7.

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

(b) Joel spins his blue spinner 99 times and gets a two 17 times.
Write down the relative frequency of getting a two with Joel's spinner.

Answer(b) .... [1]

(c) The relative frequency of getting a two with Piero's spinner is $\frac{21}{102}$.

Which of the three spinners, Amy's, Joel's or Piero's, is most likely to give a two?

Answer(c) .... [1]