UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE
NAME

CENTRE
NUMBER

CANDIDATE
NUMBER

MATHEMATICS   **0580/01, 0581/01**

Paper 1 (Core)   **May/June 2007**

                                                   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.

For Examiner's Use

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

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

1 Work out the value of $\dfrac{9 \quad 3\times7}{3\times2}$.

Answer .... [1]

2 Write the following in order, with the smallest first.

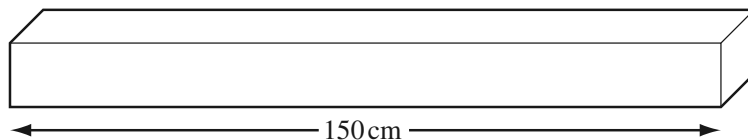$$\frac{3}{5} \qquad 0.58 \qquad 62\%$$

Answer .... < .... < .... [1]

3 Jamal arrived at work at 09 20 and left at 17 15.

How long, in hours and minutes, did he spend at work?

Answer .... h .... min [1]

4

NOT TO SCALE

A piece of wood is 150 centimetres long.

It has to be cut into equal lengths of $6\frac{1}{4}$ centimetres.

How many of these lengths can be cut from this piece of wood?

Answer .... [1]

5 Daniel plots a scatter diagram of speed against time taken.

As the time taken increases, speed decreases.

Which one of the following types of correlation will his scatter graph show?

Positive   Negative   Zero

Answer .... [1]

6 The average temperatures in Moscow for each month are shown in the table below.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature °C	−10.2	−8.9	−4.0	4.5	12.2	16.3	18.5	16.6	10.9	4.3	−2.0	−7.5

(a) Which month has the lowest average temperature?

Answer(a) .... [1]

(b) Find the difference between the average temperatures in July and December.

Answer(b) .... °C [1]

7

North

P $145°$

North

NOT TO SCALE

L
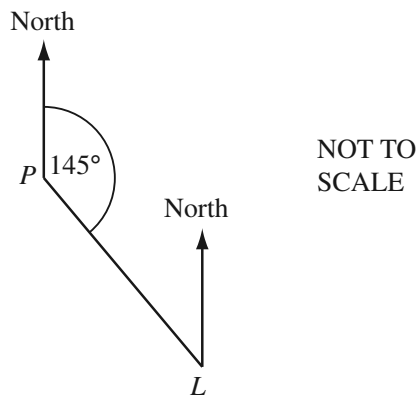
The bearing of a lighthouse, L, from a port, P, is 145°.

Find the bearing of P from L.

Answer .... [2]

8 The points *A* and *B* are marked on the diagram.
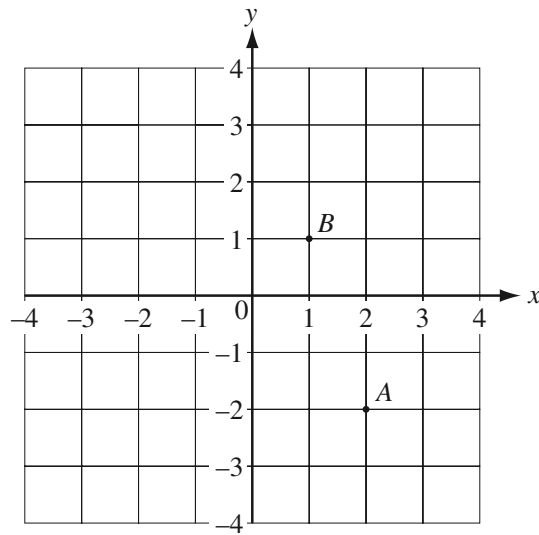
(a) Write $\overrightarrow{AB}$ as a column vector.

$$\text{Answer(a)} \qquad \overrightarrow{AB} = \begin{pmatrix} \\ \end{pmatrix}$$

[1]

(b) $\overrightarrow{BC} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$.

Write down the co-ordinates of *C*.

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

9 Expand the brackets and simplify

$$3x^2 - x(x-3y).$$

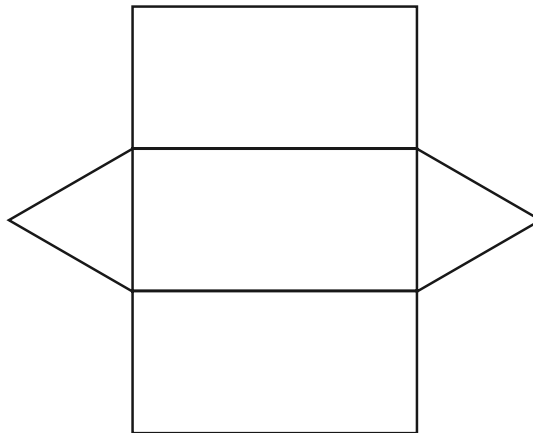*Answer* .... [2]

10
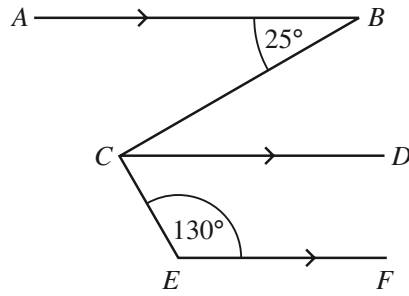
NOT TO
SCALE

In the diagram, *AB, CD* and *EF* are parallel lines.

Angle *ABC* = 25° and angle *CEF* = 130°.

Calculate angle *BCE*.

Answer Angle BCE = ... [2]

11 The net of a solid is drawn **accurately** below.

Write down the special name for

(a) the triangles shown on the net,

Answer(a) .... [1]

(b) the solid.

Answer(b) .... [1]

12 Write down the equation of the straight line through $(0, -1)$ which is parallel to $y = 3x + 5$.

Answer y = ... [2]

13 **(a)** $4^p \times 4^5 = 4^{15}$. Find the value of p.

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

(b) $2^7 \div 2^q = 2^4$. Find the value of q.

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

(c) $5^r = \dfrac{1}{25}$. Find the value of r.

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

14 **(a)** Alex changed \$250 into euros (€) when the rate was €1 = \$1.19886.

How many euros did he receive?

Answer(a) € .... [2]

(b) Write 1.19886 correct to 3 significant figures.

Answer(b) .... [1]

15 The diagram shows a regular hexagon and a square.
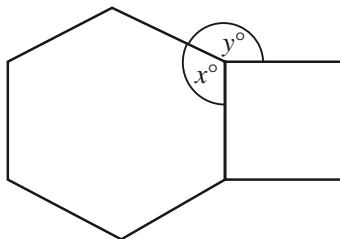
NOT TO SCALE

Calculate the values of x and y.

Answer x = ...

y = ... [3]

16 Aminata bought 20 metres of cloth at a cost of $80.

She sold 15 metres of the cloth at $5.40 per metre and 5 metres at $3 per metre.

(a) Calculate the profit she made.

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

(b) Calculate this profit as a percentage of the original cost.

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

17 (a) The surface area of the earth is approximately $510\,000\,000$ square kilometres.
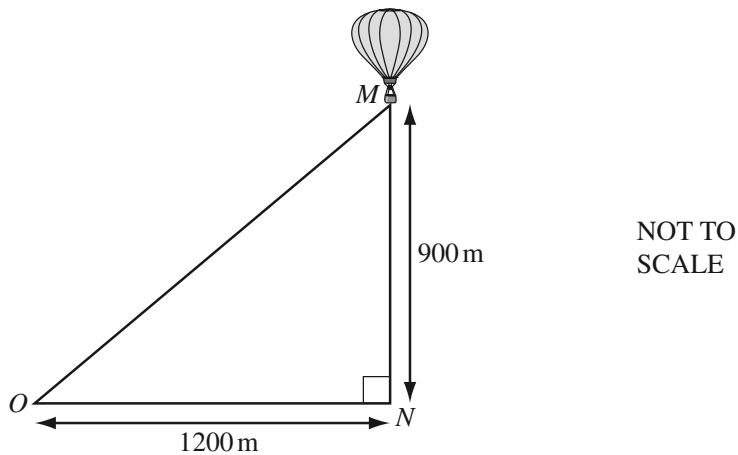
Write this number in standard form.

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

(b) 29.4% of the surface area of the earth is land.

Calculate the area of land.

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

18

NOT TO SCALE

900 m

1200 m

A hot air balloon, *M*, is 900 metres vertically above a point *N* on the ground.

A boy stands at a point *O*, 1200 metres horizontally from *N*.

(a) Calculate the distance, *OM*, of the boy from the balloon.

Answer(a) OM = ... m [2]

(b) Calculate angle *MON*.

Answer(b) Angle MON = ... [2]

0580/01/J/07

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19 In triangle *ABC*, *AB* = 110 mm, *AC* = 65 mm and *BC* = 88 mm.

(a) Calculate the perimeter of the triangle *ABC*.

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

(b) Construct the triangle *ABC*, leaving in your construction arcs.

The side *AB* is drawn for you.

A   110 mm   *B*
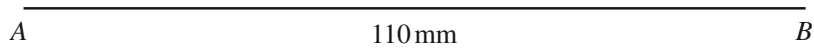
[2]

(c) The side *AB* is 110 mm, **correct to the nearest millimetre**.

Write down the shortest possible length of *AB*.

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

20 15 students estimated the area of the rectangle shown below.

Their estimates, in square centimetres, were

45	44	50	50	48
24	50	46	43	50
48	20	45	49	47

(a) Work out

(i) the mode,

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

(ii) the mean,

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

(iii) the median.

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

(b) Explain why the mean is not a suitable average to represent this data.

Answer(b)

[1]

21
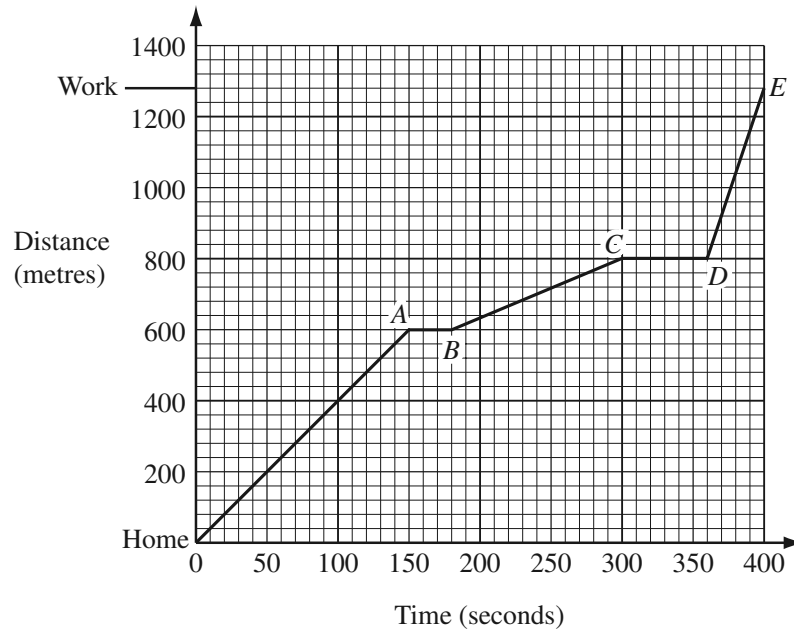
The graph shows the distance travelled by a cyclist on a journey from Home to Work.

(a) The cyclist stopped twice at traffic lights.

For how many seconds did the cyclist wait altogether?

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

(b) For which part of the journey did the cyclist travel fastest?

Answer(b) .... [1]

(c) (i) How far did the cyclist travel from Home to Work?

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

(ii) Calculate the cyclist's average speed for the whole journey.

Answer(c)(ii) .... m/s [3]

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