Candidate Name _____

| Centre Number | Candidate Number |
|---|---|
| | |

**International General Certificate of Secondary Education**
**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**MATHEMATICS** **0580/1, 0581/1**

PAPER 1 **OCTOBER/NOVEMBER SESSION 2002**

1 hour

Candidates answer on the question paper.
Additional materials:
Electronic calculator
Geometrical instruments
Mathematical tables (optional)
Tracing paper (optional)

**Time** 1 hour

**INSTRUCTIONS TO CANDIDATES**

Write your name, Centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

If working is needed for any question it must be shown below that question.

**INFORMATION FOR CANDIDATES**

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 $\pi$, use either your calculator value or 3.142.

| FOR EXAMINER'S USE |
|---|
| |

**This question paper consists of 7 printed pages and 1 blank page.**



UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

[Turn over

*For Examiner's Use*

**1** Work out \$50 – \$23.46.

*Answer* \$……. [1]

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**2** A train leaves Johannesburg at 0945 and arrives in Pretoria at 1032.
How many minutes does the journey take?

*Answer*…….minutes [1]

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**3** Work out $\frac{37^3 + 13^3}{37 + 13}$.

*Answer*……. [2]

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**4** Write 24% as a fraction in its lowest terms.

*Answer*……. [2]

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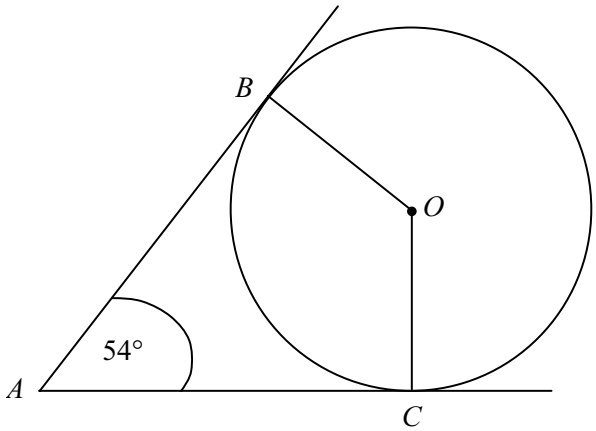
**5** The integer $n$ is such that $-3 \leq n < 3$.
List all the possible values of $n$.

*Answer*……. [2]

---

**6**




NOT TO SCALE

$AB$ and $AC$ are tangents to the circle, centre $O$.
Angle $BAC = 54°$.

**(a)** Write down the size of angle $ABO$.

*Answer (a) Angle ABO =*……. [1]

**(b)** Work out angle $BOC$.

*Answer (b) Angle BOC =*……. [1]

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*For Examiner's Use*

**7** When Carla started work she was paid \$80 each week.
After 3 months her pay was increased by 15%.
After the increase how much was she paid each week?

*Answer* \$.....  [2]

---

**8** The population of Argentina is $3.164 \times 10^7$. Its area is $2.8 \times 10^6$ square kilometres.
Work out the average number of people per square kilometre in Argentina.

*Answer*.....people/km$^2$  [2]

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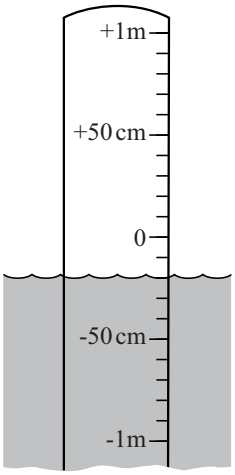
**9** The diagram shows a flood-warning post in a river.




**(a)** Write down the water level shown in the diagram.

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

**(b)** The water level rises by 1 metre.
What is the new level?

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

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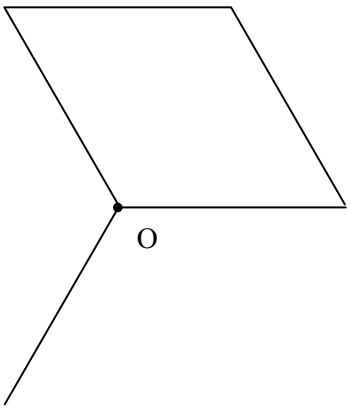
*For Examiner's Use*

**10** Complete this diagram accurately so that it has rotational symmetry of order 3 about the point O.




[2]

**11** An athlete's time for a race was 43 .78 seconds.

**(a)** Write this time correct to

**(i)** one decimal place,

*Answer (a) (i)*……seconds [1]

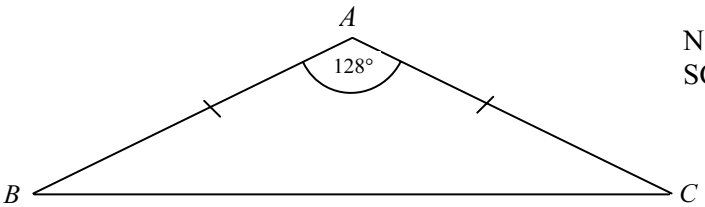
**(ii)** one significant figure.

*Answer (a) (ii)*……seconds [1]

**(b)** Write 43.78 and your answers to **(a)** parts **(i)** and **(ii)** in order, largest first.

*Answer (b)* ……>……>…… [1]

**12**




NOT TO SCALE

In triangle *ABC*, *AB* = *AC*.

**(a)** What is the special name of this triangle?

*Answer (a)*…… [1]

**(b)** Angle *BAC* = 128°. Work out angle *ABC*.

*Answer (b) Angle ABC =*…… [2]

For Examiner's Use

**13** $T = 2\sqrt{n}$.

**(a)** Find $T$ when $n = 25$.

*Answer (a)* $T =$……. [1]

**(b)** Make $n$ the subject of the formula.

*Answer (b)* $n =$……. [2]

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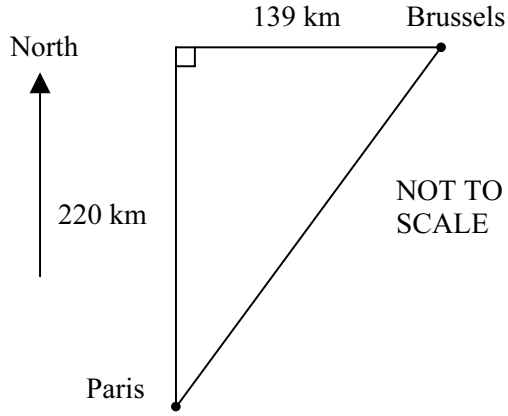
**14**




Brussels is 220 km North and 139 km East of Paris.

**Calculate** the bearing of Brussels from Paris, to the nearest degree.

*Answer*……. [3]

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**15** **(a)** Write down the values of

$2^0 =$ ……. , $2^1 =$ ……. , $2^2 =$ ……. , $2^3 =$ ……. , $2^4 =$ ……. [2]

**(b)** Change $\frac{5}{49}$ to a decimal. Write down your full calculator display.

*Answer (b)* $\frac{5}{49} =$……. [1]

**(c)** What do you notice about your answers to parts **(a)** and **(b)**?

*Answer (c)* ……..…….…….

……. [1]

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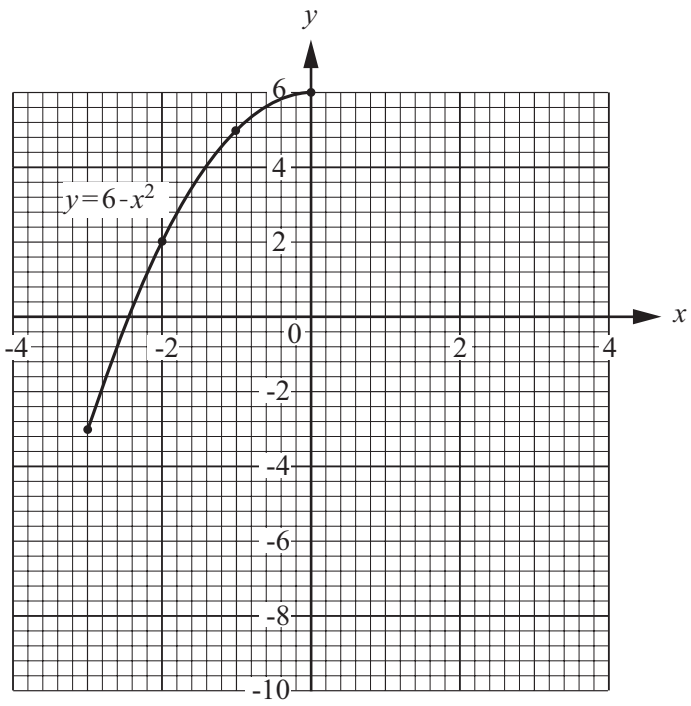
*For Examiner's Use*

**16**




The diagram shows part of the graph of $y = 6 - x^2$ for $-3 \leq x \leq 0$.

Complete the graph for $-4 \leq x \leq 4$.

[4]

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**17** The frequency of radio waves ($F$) is connected to the wavelength ($l$) by the formula

$$F = \frac{300\,000}{l}.$$

**(a)** Calculate the value of $F$ when $l = 1500$.

*Answer (a)* $F =$ ..... [1]

**(b)** Calculate the value of $l$ when $F = 433$, giving your answer to the nearest whole number.

*Answer (b)* $l =$ ..... [3]

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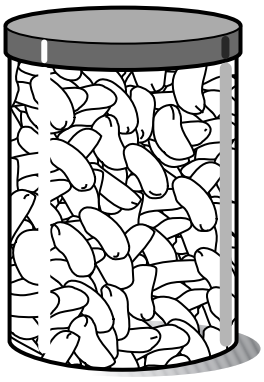
**18**



Seven people were asked to guess the number of beans in a jar. Their guesses were

194, 173, 170, 144, 182, 259, 159.

**(a)** Find the median.

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

**(b)** Work out the mean.

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

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For Examiner's Use

**19** **(a)** Factorise $40a - 8b + 32c$.

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

**(b)** Solve the equations

**(i)** $x - 7 = 9$,

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

**(ii)** $2(y + 1) = 3y - 5$.

*Answer (b) (ii)* $y =$ ..... [2]

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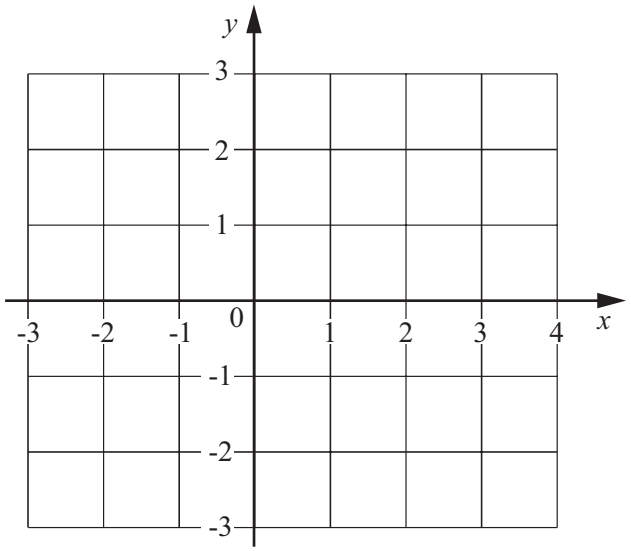
**20**




**(a)** On the grid above, plot the points $A$ (0,2), $B$ (2,2), $C$ (4,1) and $D$ (–2, –1). [1]

**(b)** Find the area of the quadrilateral $ABCD$.

*Answer (b)* .....$\text{cm}^2$ [2]

**(c)** The vector $\overrightarrow{BC} = \begin{pmatrix} x \\ y \end{pmatrix}$.

Find the value of $x$ and the value of $y$.

*Answer (c)* $x =$.....

$y =$..... [2]

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