UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

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| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | |

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**MATHEMATICS** **0580/13**

Paper 1 (Core) **October/November 2010**

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

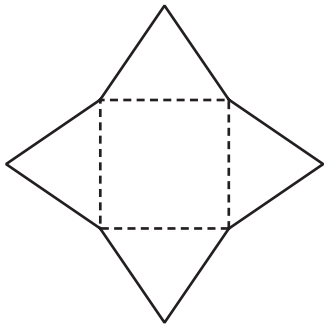
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 56.

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


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**1**



Write down the name of the solid that can be made from the net shown in the diagram.

*Answer* ..... [1]

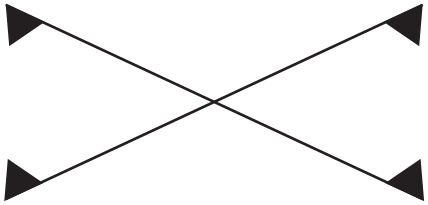
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**2** Write down all the square numbers which are factors of 100.

*Answer* ..... [2]

---

**3**



For the diagram, write down

**(a)** the number of lines of symmetry,

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

**(b)** the order of rotational symmetry.

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

---

**4** In a desert the temperature at noon was 38°C.
At midnight the temperature was –3°C.

**(a)** Find the change in temperature between noon and midnight.

*Answer(a)* ..... °C [1]

**(b)** At 02 00 the temperature was 4°C below the midnight temperature.

Write down the temperature at 02 00.

*Answer(b)* ..... °C [1]

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**5** Multiply out the brackets.

$$x(2x + y)$$

*Answer* ..... [2]

---

**6** Solve the equation.

$$\frac{2x+1}{3} = 4$$

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

---

**7** Work out $\sqrt[3]{7.2^3 - 100}$.
Give your answer correct to 3 decimal places.

*Answer* ..... [2]

---

**8** Chris and Max share \$45 in the ratio Chris:Max = 7 : 2 .

Calculate how much Chris receives.

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

---

**9** When Valentina was 10 years old, her mass was 32 kg.
Two years later her mass had increased by 45%.

Calculate Valentina's mass when she was 12 years old.

*Answer* ..... kg [2]

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**10** Change 18.75% into a fraction.

Write your answer in its lowest terms.

*Answer* ..... [2]

---

**11** Factorise completely.

$3ac - 6ad$

*Answer* ..... [2]

---

**12** Simplify $\left(1\frac{1}{2}\right)^{-3}$.

Give your answer as a fraction.

*Answer* ..... [2]

---

**13** Solve the simultaneous equations.

$3x + y = 5$
$5x + y = 9$

*Answer* $x =$ .....

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

---

**14** 17 27 $\sqrt{17}$ 0.294 $\frac{5}{17}$

From the list of numbers, write down

**(a)** a prime number,

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

**(b)** an irrational number,

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

**(c)** the smallest number.

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

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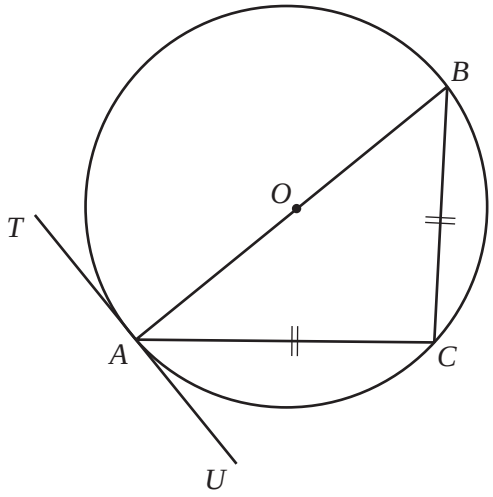
**15** Amiria invests \$200 for 2 years at 3% per year **compound** interest.

Calculate the total amount Amiria has at the end of the two years.

*Answer* \$ ..... [3]

---

**16**




NOT TO SCALE

In the diagram, *TAU* is a tangent to the circle at *A*.
*AB* is a diameter of the circle and *AC* = *BC*.

Find

**(a)** angle *BCA*,

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

**(b)** angle *ABC*,

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

**(c)** angle *CAU*.

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

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**17** Insert brackets to make each statement correct.

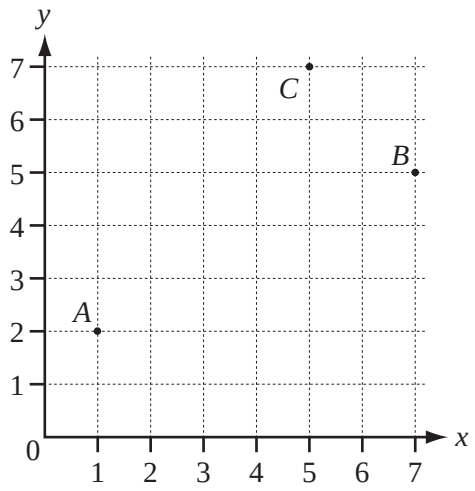
**(a)** 7 + 2 × 9 = 81 [1]

**(b)** 36 ÷ 6 ÷ 2 = 12 [1]

**(c)** 5 × 3 + 6 × 2 = 90 [1]

---

**18**




The diagram shows three points, $A(1, 2)$, $B(7, 5)$ and $C(5, 7)$.

**(a)** Write as column vectors

**(i)** $\overrightarrow{AC}$,

*Answer(a)*(i) $\overrightarrow{AC}$ = $\begin{pmatrix} \\ \end{pmatrix}$ [1]

**(ii)** $\overrightarrow{CB}$.

*Answer(a)*(ii) $\overrightarrow{CB}$ = $\begin{pmatrix} \\ \end{pmatrix}$ [1]

**(b)** Use two of the symbols +, –, = in the spaces to make a correct statement.

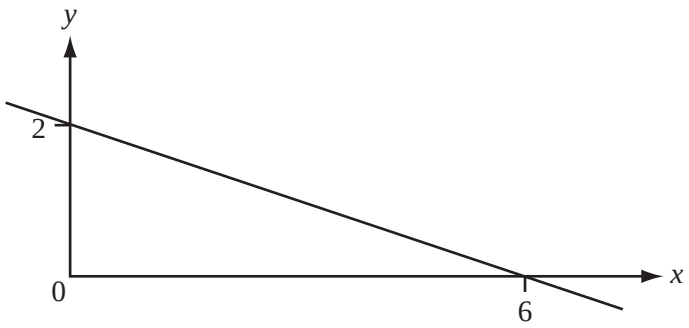
$\overrightarrow{AC}$ ..... $\overrightarrow{CB}$ ..... $\overrightarrow{AB}$ [1]

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**19**

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The diagram shows a straight line passing through the points (0, 2) and (6, 0).

Find the equation of this line in the form $y = mx + c$.

*Answer* $y =$ ..... [3]

---

**20**




**(a)** The diagram shows 5 discs.
One disc is chosen at random.

**(i)** Which number is most likely to be chosen?

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

**(ii)** What is the probability that the number on the disc is even?

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

**(iii)** What is the probability that the number on the disc is even and a factor of 20?

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

**(b)** A disc is chosen at random from the discs with even numbers.

What is the probability that the number on the disc is a factor of 20?

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

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**Questions 21 and 22 are printed on the next page**

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**21**

0 0 0 1 2 2 4 4 5 9

The list shows the number of days absent in a school term for each of 10 students.

Find the mode, the median and the mean for the number of days absent.

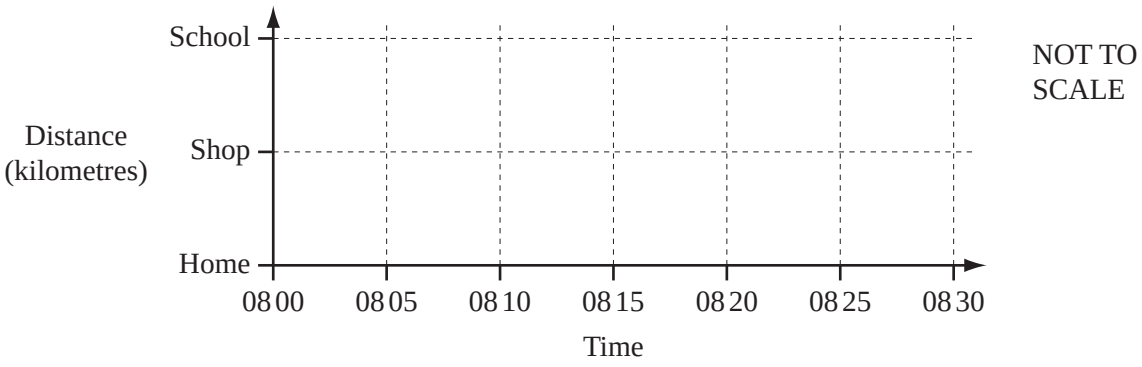
*Answer* Mode = .....

Median = .....

Mean = ..... [4]

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**22**




Rob walks to school each morning.
One day, he leaves home at 08 00.
He stops at a shop at 08 10 and stays there for 5 minutes.
He then continues to school and arrives at 08 30.

**(a)** Draw the travel graph for Rob's journey from home to school. [3]

**(b)** Rob's average speed for the whole journey from home to school is 3.3 km/h.

Calculate the distance from Rob's home to school.

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

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