

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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| CANDIDATE NAME | | | | | |
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0580/13 **MATHEMATICS**

Paper 1 (Core) May/June 2011

1 hour

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator

Geometrical instruments Mathematical tables (optional) 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.

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1 (a) Write down ten thousand and seventy three in figures.

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| | 32.0 |
| S. | Taca. |
| Answer(a) | Abh |

(b) Work out $13 + 5 \times 4 - 2$. Write down all the steps of your working.

| Answer(b) | [1] |
|-----------|---------|
| | |

2 Write down the next term in each sequence.

3 Write down the time and date which is 90 hours after 20 30 on May 31st.

4 Factorise completely.

$$2xy - 4yz$$

5 Insert < or > or = in the spaces provided to make correct statements.

(a)
$$\frac{3}{11}$$
 0.273

6 Make x the subject of the formula. $y = \frac{x}{3} + 5$



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For the diagram, write down

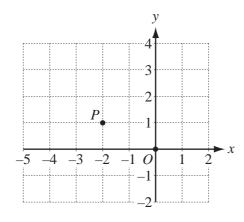
(a) the number of lines of symmetry,

Answer(a) [1]

(b) the order of rotational symmetry.

Answer(b) [1]

8



In the diagram O is the origin and P is the point (-2, 1).

(a) Write \overrightarrow{OP} as a column vector.

$$Answer(a) \overrightarrow{OP} = \left(\begin{array}{c} \\ \\ \end{array} \right)$$
 [1]

(b)
$$\overrightarrow{PQ} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$$

Mark the point Q on the diagram.

[1]

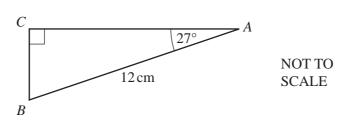
- 9 Using integers between 10 and 30, write down
 - (a) an odd multiple of 7,

 $Answer(a) \qquad [1]$

(b) a cube number.

Answer(b) [1]

10

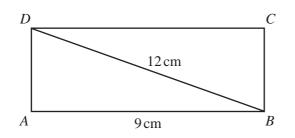


In triangle ABC, AB = 12 cm, angle $C = 90^{\circ}$ and angle $A = 27^{\circ}$. Calculate the length of AC.

| $Answer\ AC =$ | cm | Г21 |
|----------------|----------|-----|
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In the rectangle ABCD, AB = 9 cm and BD = 12 cm. Calculate the length of the side BC.

Answer
$$BC =$$
 cm [3]

12 (a) Write 16 460 000 in standard form.

(b) Calculate $7.85 \div (2.366 \times 10^2)$, giving your answer in standard form.

| | r |
|----|--------|
| • | For |
| | iner's |
| A. | |

13 (a) Find the value of x when $\frac{18}{24} = \frac{27}{x}$.

| | MMM. P. A. | 200 |
|---------------|------------|------------|
| Answer(a) x = | | For iner's |

(b) Show that $\frac{2}{3} \div 1\frac{1}{6} = \frac{4}{7}$.

Write down all the steps in your working.

Answer(b)

[2]

(a) A drinking glass contains 55 cl of water. Write 55 cl in litres.

| Answer(a) | litres [1] |
|-----------|------------|
|-----------|------------|

(b) The mass of grain in a sack is 35 kg. The grain is divided equally into 140 bags.

Calculate the mass of grain in each bag. Give your answer in grams.

> Answer(b) g [2]

15 (a) Write 67.499 correct to the nearest integer.

Answer(a) [1]

(b) Write 0.003040506 correct to 3 significant figures.

Answer(b) [1]

(c) d = 56.4, correct to 1 decimal place.

Write down the lower bound of *d*.

Answer(c) [1]

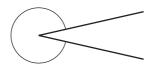
$$x + 2y = 3$$
$$2x - 3y = 13$$



$$Answer x =$$

$$y =$$
 [3]

17 (a)



What type of angle is shown by the arc on the diagram?

| Answer(a) | [1] |
|-----------|---------|
| | |

- **(b)** *ABCD* is a quadrilateral.
 - *AB* is parallel to *DC*.
 - BC is longer than AD.
 - (i) Draw a possible quadrilateral ABCD.

Answer(b)(i)

[1]

(ii) Write down the geometrical name for the quadrilateral ABCD.

Answer(b)(ii) _____ [1]

For iner's

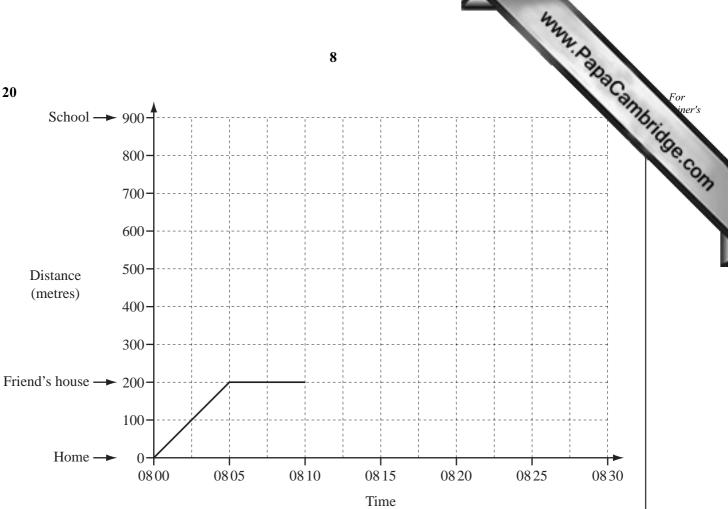
18 Eva invests \$120 at a rate of 3% per year compound interest.

Calculate the total amount Eva has after 2 years. Give your answer correct to 2 decimal places.

| | | | | | | | | Answer \$ | | ••• | [3] |
|----|------|-------|---------------|--------------|----------------|--------------|---------|------------------|-------------|-----|-----|
| 19 | At a | ı ski | resort t | he tempera | ture, in °C, v | was measur | ed ever | ry 4 hours duri | ng one day. | | |
| | The | resu | ılts wer | re -12°, | -13°, −1 | 0°, 4°, | 4°, | -6°. | | | |
| | (a) | Fine | d the di | ifference be | etween the hi | ighest and t | the low | est of these ter | mperatures. | | |
| | | | | | | | | Answer(a) | | °C | [1] |
| | (b) | Fine | d | | | | | | | | |
| | | (i) | the m | ean, | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | Answer(b)(i) | | °C | [2] |
| | | (ii) | the m | edian, | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | Answer(h)(ii) | | °C | [2] |
| | | (iii) | the m | ode. | | | • | mswer (b)(ii) | | C | [~] |
| | | (111) | <i>ine</i> in | .ouc. | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | A | nswer(b)(iii) | | °C | [1] |

Question 20 is printed on the next page.





The graph shows part of Ali's journey from home to his school.

The school is 900 m from his home.

He walks 200 m to his friend's house and waits there.

He then takes 20 minutes to walk with his friend to their school.

(a) Complete the travel graph showing Ali's journey.

[1]

(b) How long does he wait at his friend's house?

Answer(b)

(c) Calculate the average speed for Ali's complete journey from home to his school. Give your answer in kilometres per hour.

> Answer(c) km/h [4]

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