

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

State Con



CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

MATHEMATICS

0580/13

Paper 1 (Core)

October/November 2011

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.

This document consists of 12 printed pages.



During April the probability that it will rain on any one day is $\frac{5}{6}$. On how many of the 30 days in April would it be expected to rain?

1
_

		Answer	 [1]
2	(a)	Write, in figures, the number	
		one hundred and five thousand and two.	
		Answer(a)	 [1]
	(b)	Write your answer to part (a) correct to the nearest ten thousand.	

3 Simplify the expression.

$$7x + 11y + x - 6y$$

Answer [2]

4 Insert **one** pair of brackets into each calculation to make the answer correct.

(a)
$$7 \times 6 - 3 + 5 = 26$$

[1]

[1]

(b)
$$8 - 6 \times 4 - 1 = -10$$

[1]

5	Write the	following	in order	of size	starting	with	the sr	nallest

$$0.525 \qquad \frac{11}{21} \qquad \frac{111}{211} \qquad 52.4\%$$

6 Thomas fills glasses from a jug containing 2.4 litres of water. Each glass holds 30 centilitres.

How many glasses can Thomas fill?

7 Martha divides \$240 between spending and saving in the ratio

spending: saving = 7:8.

Calculate the amount Martha has for spending.

210

211

212

213

214

215 216

From the list of numbers, find

(a) a prime number,

Answer(a) [1]

(b) a cube number.

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

9 Calculate the selling price of a bicycle bought for \$120 and sold at a profit of 15%.

10 Solve the simultaneous equations.

$$x + 5y = 22$$
$$x + 3y = 12$$

$$Answer x =$$

$$y = [2]$$

[2]

11 Solve the equation.

$$\frac{2x-3}{2} = 2$$

		Answer x =	 [2]
12	The population of a city is 128 000, correct to the neare (a) Write 128 000 in standard form.	st thousand.	
	(b) Write down the upper bound of the population.	Answer(a)	 [1]
		Answer(b)	 [1]
13	Pedro invested \$800 at a rate of 5% per year compound Calculate the total amount he has after 2 years.	d interest.	

Answer \$

$$5g^2h + 10hj$$

14	Factorise completely. $5g^2h + 10hj$	For iner's
	Answer	[2]
15	For her holiday, Dina changed 500 Swiss francs (CHF) into pounds (£). The rate was £1 = CHF 1.6734. Calculate how much Dina received in pounds. Give your answer correct to 2 decimal places.	
	Answer £	[2]
16	Simplify $4x^4 \times 5x^5$. Answer	[2]

17 The scale of a map is 1:500000. On the map the centres of two cities are 26 cm apart.

Calculate the actual distance, in kilometres, between the centres of the two cities.

Answer	 km	[2]

18 Show that $3^{-2} + 2^{-2} = \frac{13}{36}$.

Write down all the steps of your working.

Answer

19 In Vienna, the mid-day temperatures, in °C, are recorded during a week in December. This information is shown below.

-2 2 1 -3 -1 -2 0

Calculate

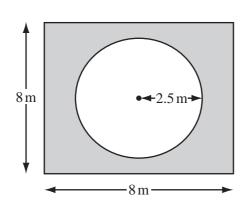
(a) the difference between the highest temperature and the lowest temperature,

Answer(a) °C [1]

(b) the mean temperature.

Answer(b) °C [2]

20



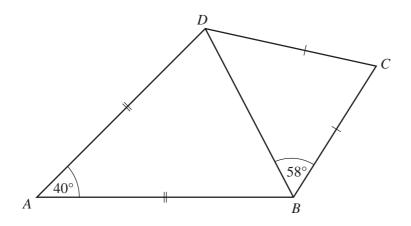
NOT TO SCALE

The diagram shows a circular pool of radius 2.5 m. A square piece of land surrounds the pool.

Each side of the square is 8 m long.

Calculate the shaded area of the land that surrounds the pool.

Answer m^2 [3]



NOT TO SCALE

In the quadrilateral ABCD, AB = AD and CB = CD.

Angle $BAD = 40^{\circ}$ and angle $CBD = 58^{\circ}$.

- (a) Calculate
 - (i) angle ABD,

$$Answer(a)(i) Angle ABD =$$
 [1]

(ii) angle BCD.

$$Answer(a)(ii) Angle BCD =$$
 [1]

(b) Write down the mathematical name for the quadrilateral *ABCD*.

$$Answer(b)$$
 [1]

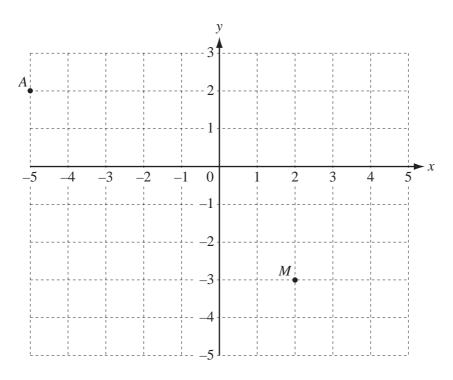
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22	(a)	Calculate	700
22	(a)	Calculate	${28.6^3}$

Answer(a)	Γ1 ⁻
III is wer (a)	 L±.

(b) Work out $(8 \times 10^6)^2$, giving your answer in standard form.

Answer(b) [2]



The diagram shows two points A(-5, 2) and M(2, -3).

- (a) B is the point (5, -2).
 - (i) On the grid, mark the point B.

[1]

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

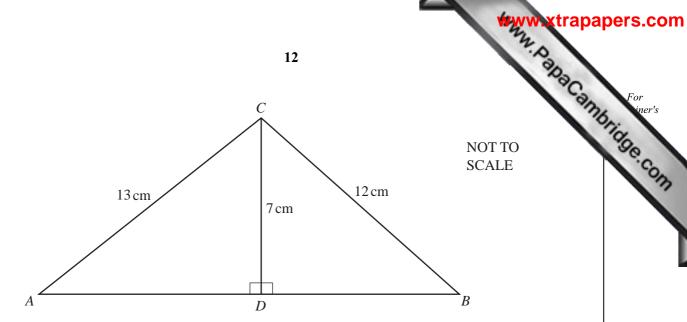
$$Answer(a)(ii) \overrightarrow{AB} = \left(\begin{array}{c} \\ \\ \end{array} \right)$$
 [1]

(b) M is the midpoint of the line BD.

Find the co-ordinates of D.

Answer(b) (, , , , , [2]

Question 24 is printed on the next page.



In triangle ABC, D is on AB so that angle ADC = angle BDC = 90° .

AC = 13 cm, BC = 12 cm and CD = 7 cm.

(a) Calculate the length of DB.

(b) Use trigonometry to calculate angle *CAD*.

$$Answer(b) \text{ Angle } CAD =$$
 [2]

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