

## Cambridge International Examinations

Cambridge International General Certificate of Secondary Education

	CANDIDATE NAME							
	CENTRE NUMBER		CANDIDATE NUMBER					
*								
4	MATHEMATICS			0580/11				
7	Paper 1 (Core)			May/June 2014				
7 7 5				1 hour				
3 2 7 5 *	Candidates answer	the Question Paper.						
	Additional Materials:	: Electronic calculator Tracing paper (optional)	Geometrical instruments					

## 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 an HB pencil for any diagrams or graphs. Do not use staples, paper clips, 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **12** printed pages.



1	Work out. $10 - 3 \times 2$		
		Answer	[1]
2	Write down the prime numbers between 20 and 30.		
		Answer	[1]
3			
	59° x° 163°	NOT TO SCALE	
	(a) Find the value of x.		
		$Answer(a) x = \dots$	[1]
	(b) One of the angles is 163°.		
	What type of angle is this?		
		Answer(b)	[1]
4	A city has a population of five hundred and six thousan	d.	
	Write the size of the population		
	(a) in figures,		
		Answer(a)	[1]
	(b) in standard form.		
		Answer(b)	[1]

$$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

Answer(a)

×	
	[1]

(b) Use your answer to part (a) to estimate the value of p.

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

6 Solve the equation.

$$\frac{n-8}{2} = 11$$

Answer  $n = \dots$  [2]

7 
$$\mathbf{a} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$$
  $\mathbf{b} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$ 

Work out  $\mathbf{a} - 2\mathbf{b}$ .



8 The width,  $w \, \text{cm}$ , of a carpet is 455 cm, correct to the nearest centimetre.

Complete the statement about the value of *w*.

Answer .....  $\leq w < \dots$  [2]

 $y = \frac{2}{x^2} + \frac{x^2}{2}$ 

Find the value of y when x = 6. Give your answer as a mixed number in its simplest form.

Answer  $y = \dots$  [2]

10 Use your calculator to work out  $\sqrt{\frac{3}{4}} + 2^{-1}$ .

Give your answer correct to 2 decimal places.

**11** The diagram shows a cuboid.



The volume of this cuboid is  $720 \text{ cm}^3$ . The width is 8 cm and the length is 15 cm.

Calculate *h*, the height of the cuboid.

Answer  $h = \dots$  cm [2]



12 The scatter diagram shows the rainfall and the average temperature in a city for the month of June, over a period of 10 years.

(a) What type of correlation does this scatter diagram show?

*Answer(a)* [1]

(b) Describe the relationship between the rainfall and the average temperature.

Answer(b)	
	[1]

13 The graph can be used to convert between miles and kilometres.



A train travels 24 miles in 20 minutes.

Find its average speed in kilometres per hour.

Answer ..... km/h [2]



The diagram shows an isosceles triangle *ABC*. *DCB* is a straight line and is parallel to *AE*. Angle  $DCA = 127^{\circ}$ .

Find the value of

**(a)** *a*,

 $Answer(a) \ a = \dots \qquad [2]$ 

**(b)** *b*.

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

15 Carlo changed 800 euros (€) into dollars for his holiday when the exchange rate was €1 = \$1.50. His holiday was then cancelled.
He changed all his dollars back into euros and he received €750.

Find the new exchange rate.

Answer  $\in 1 =$  [3]

16 (a) Simplify the expressions.

**(b)** 
$$(h^3)^k = h^{12}$$

Find the value of *k*.

## Answer(b) $k = \dots$ [1]





The diagram shows a circle, centre *O*. *P*, *Q* and *R* are points on the circumference. PQ = 17 cm and QR = 9 cm.

(a) Explain why angle PQR is 90°.

Answer(a) .....

.....[1]

(b) Calculate the length *PR*.

*Answer(b) PR* = ..... cm [2]

- 18 In this question, do not use your calculator and show all the steps in your working.
  - (a) Show that  $3\frac{1}{5} 2\frac{5}{8} = \frac{23}{40}$ .

Answer(a)

[2]

**(b)** Work out  $\frac{7}{8} \div \frac{23}{40}$ .

Give your answer as a mixed number in its simplest form.

19 The table shows the average monthly temperature (°C) for Fairbanks, Alaska.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°C)	-23.4	-19.8	-11.7	-0.8	9.2	15.4	16.9	13.8	7.5	-5.8	-21.4	-21.8

(a) Find

(i) the difference between the highest and the lowest temperatures,

*Answer(a)*(i) .....°C [1]

(ii) the median.

```
Answer(a)(ii) .....°C [2]
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(b) A month is chosen at random from the table.

Find the probability that its average temperature is below zero.

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

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Day	Starting time	Finishing time	
Saturday	0600	2400	
Sunday	0600	2400	
Monday	0600	2400	
Tuesday	0600	2400	
Wednesday	0600	2400	
Thursday	0600	2400	
Friday	1300	2400	

20 A bus company in Dubai has the following operating times.

(a) Calculate the total number of hours that the bus company operates in one week.

*Answer(a)* ..... h [3]

(b) Write the starting time on Friday in the 12-hour clock.

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



The diagram shows a circle inside a square. The circumference of the circle touches all four sides of the square.

(a) Calculate the area of the circle when the side of the square is 15 cm.

		Answer(a)	 cm <sup>2</sup>	[2]
(b)	Draw all the lines of symmetry on the diagram.			[2]

Question 22 is printed on the next page.

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In the diagram, B is 27 metres due east of A. *C* is 34 metres from *A* and due south of *B*.

(a) Using trigonometry, calculate angle ACB.

Answer(a) Angle  $ACB = \dots$  [2]

(b) Find the bearing of C from A.

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