

Cambridge International Examinations

Cambridge International General Certificate of Secondary Education

CANDIDATE NAME			
CENTRE NUMBER		CANDIDATE NUMBER	
MATHEMATICS			0580/11
Paper 1 (Core)			May/June 2014
			1 hour
Candidates answer on	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 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.

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



1	Work	Out
	VVOIIX	out.

 $10-3\times2$

		Answer	[1]
2	Write down the prime numbers between 20 and 30.		
		Answer	[1]
3			
	(500 X°)	NOT TO SCALE	
	163°		
	(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 thousand	l.	
	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

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

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

Answer $\left(\begin{array}{c} \end{array}\right)$ [2]

8 The width, w cm, of a carpet is 455 cm, correct to the nearest centimetre.

Complete the statement about the value of w.

Answer $\leq w \leq 1$ [2]

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

Find the value of y when x = 6.

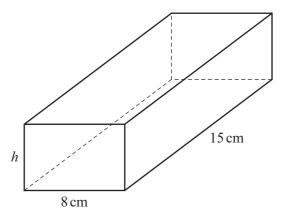
Give your answer as a mixed number in its simplest form.

$$Answer y =$$
 [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.



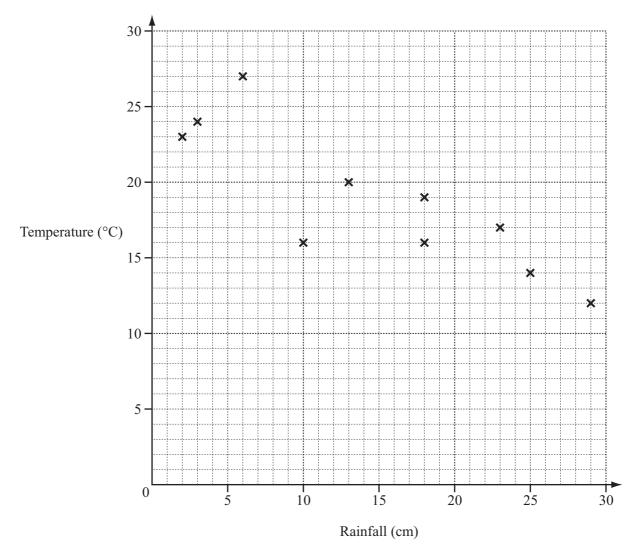
NOT TO SCALE

The volume of this cuboid is 720 cm³. 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.



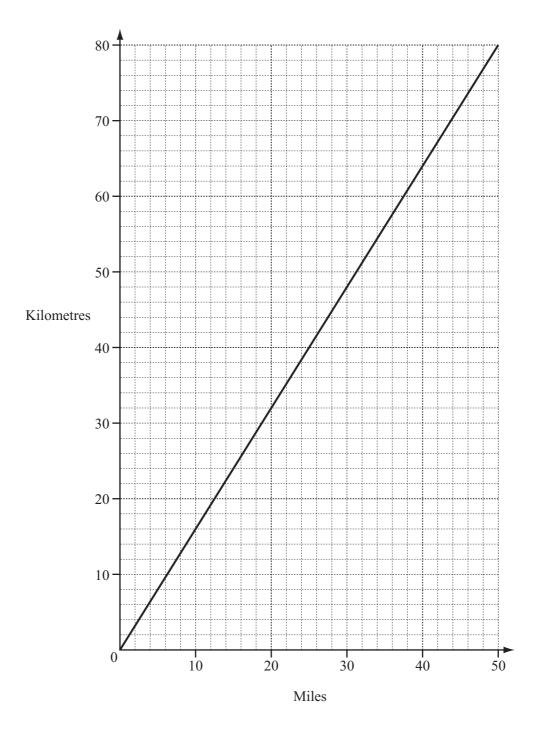
(a) What type of correlation does this scatter diagram show?

Answer(a)		1	L	l
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(b) Describe the relationship between the rainfall and the average temperature.

Answer(b)	· ·
	[1]

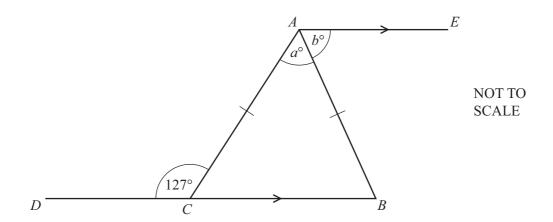
13 The graph can be used to convert between miles and kilometres.



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)
$$a =$$
 [2]

(b) *b*.

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

Carlo changed 800 euros (\in) into dollars for his holiday when the exchange rate was \in 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.

4 /		G: 1:C	.1	
16	(a)	Simplify	the	expressions.

G)	n 3	~	p^{7}
(i)	p^3	X	p

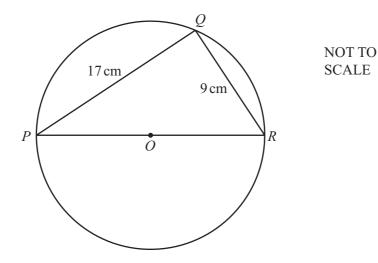
(ii)
$$t^5 \div t^8$$

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

Find the value of k.

Answer(b)
$$k =$$
 [1]

17



The diagram shows a circle, centre *O*. *P*, *Q* and *R* are points on the circumference.

 $PQ = 17 \,\mathrm{cm}$ and $QR = 9 \,\mathrm{cm}$.

(a) Explain why angle PQR is 90°.

nswer(a)	
	Г1
	1

(b) Calculate the length *PR*.

$$Answer(b) PR = \dots cm [2]$$

18	In t	this questio	n, do no	ot use y	our calc	culator	and sho	w all th	e steps	in your	workir	ıg.		
	(a)	Show that	$3\frac{1}{5}-1$	$2\frac{5}{8} = \frac{2}{4}$	$\frac{3}{0}$.									
		Answer(a)												
														[2]
	(b)	Work out	$\frac{7}{8} \div \frac{23}{40}$	<u>3</u>										
		Give your	answer	as a miz	ked num	nber in i	ts simple	est form	١.					
									Answer	(b)				[2]
19	The	table show	s the av	erage m	onthly t	empera	ture (°C)) for Fai	rbanks,	Alaska.				
Mo	nth		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ten	pera	ature (°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 di	fference	betwee	en the hi	ghest aı	nd the lo	west ter	nperatu	res,				
								An	ıswer(a,)(i)				°C [1]
		(ii) the m	edian.											
														
	<i>a</i> >	A	1	, .	C	.1 · •	1	An	swer(a)	(ii)				°C [2]
	(b)	A month is	s chosen	at rand	om fron	n the tal	ole.							

Find the probability that its average temperature is below zero.

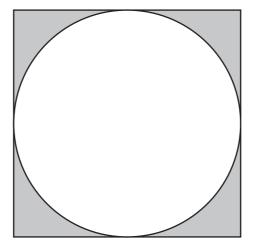
20 A bus company in Dubai has the following operating times.

Day	Starting time	Finishing time
Saturday	0600	24 00
Sunday	06 00	24 00
Monday	0600	24 00
Tuesday	0600	24 00
Wednesday	0600	24 00
Thursday	0600	24 00
Friday	13 00	24 00

(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.



The diagram shows a circle inside a square.

The circumference of the circle touches all four sides of the square.

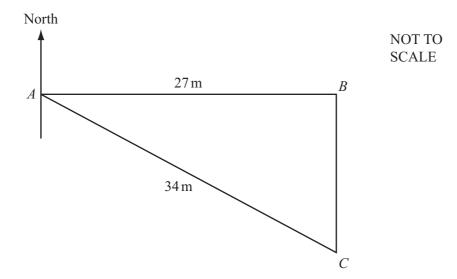
(a) Calculate the area of the circle when the side of the square is 15 cm.

Answer(a) cm² [2]

(b) Draw all the lines of symmetry on the diagram.

[2]

Question 22 is printed on the next page.



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 $ACB = ...$ [2]

(b) Find the bearing of *C* from *A*.

Answer(b) [2]

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