

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 130.

This document consists of 16 printed pages.



		mm	
		2	L. MA
(a)	Ab Ab	dullah and Jasmine bought a car for \$9000. dullah paid 45% of the \$9000 and Jasmine paid the rest.	Maths er's
	(i)	How much did Jasmine pay towards the cost of the car?	-loud.co
		Answer(a)(i) \$	[2]
	(ii)	Write down the ratio of the payments Abdullah: Jasmine in its simplest form.	
		Answer(a)(ii) :	[1]
(b)	Las Abe Cal	t year it cost \$2256 to run the car. dullah, Jasmine and their son Henri share this cost in the ratio 8:3:1. culate the amount each paid to run the car.	
		Answer(b) Abdullah \$	
		Jasmine \$	
		Henri \$	[3]
(c)	(i)	A new truck costs \$15000 and loses 23% of its value each year . Calculate the value of the truck after three years.	
		Answer(c)(i) \$	[3]
	(ii)	Calculate the overall percentage loss of the truck's value after three years.	[2]
		Answer(c)(ii)	%[3]
	(a) (b)	 (a) Aba Aba (i) (ii) (b) Las Aba Cal (c) (i) (ii) 	4 (a) Abdullah and Jasmine bought a car for \$9000. Abdullah paid 45% of the \$9000 and Jasmine paid the rest. (b) How much did Jasmine pay towards the cost of the car?

3
 Answer(a)
 -3 < 2x - 1 < 6.

 Answer(a)
 -3 < 2x - 1 < 6.
 (a)

 (b)
 Simplify

$$\frac{x^2 + 3x - 10}{x^2 - 25}$$
.
 (a)

 Answer(b)
 (a)

 (c)
 (f)
 Show that $\frac{5}{x^2 - 25}$.
 (f)

 Answer(c)
 (f)

 (g)
 Show that $\frac{5}{x^2 - 25}$.
 (f)

 Answer(c)
 (f)

 (g)
 Show that $\frac{5}{x-3} + \frac{2}{x+1} = 3$ can be simplified to $3x^2 - 13x - 8 = 0$.

 Answer(c)(i)
 (f)

 (g)
 Solve the equation $3x^2 - 13x - 8 = 0$.

 Show all your working and give your answers correct to two decimal places.
 (f)

 Answer(c)(ii) $x = 1, \dots, \text{ or } x = 1, \dots, \text{ (f)}$

	4			4 TA
table shows ir	formation about the heights of 12	0 girls in a swimming club		Patho
	Height (<i>h</i> metres)	Frequency		O'C/C
	$1.3 < h \le 1.4$	4		
	$1.4 < h \le 1.5$	13		
	$1.5 < h \le 1.6$	33		
	$1.6 < h \le 1.7$	45		
	$1.7 < h \le 1.8$	19		
	$1.8 < h \le 1.9$	6		
•) Girls from thi Calculate the	s swimming club are chosen at rar probability that	Answer(a)(ii)		m [4]
 Girls from thi Calculate the (i) the heigh 	s swimming club are chosen at rar probability that it of the first girl chosen is more th	Answer(a)(ii) adom to swim in a race. aan 1.8 metres,		m [4]
 O) Girls from thi Calculate the (i) the heigh (ii) the heigh 	s swimming club are chosen at ran probability that It of the first girl chosen is more th	Answer(a)(ii) adom to swim in a race. aan 1.8 metres, Answer(b)(i) I chosen are 1.8 metres or 1	ess.	m [4]

3

ete th	ne cumulative frequency table	5 e for the heights.	MNW. My Marins
	Height (<i>h</i> metres)	Cumulative frequency	
	<i>h</i> ≤ 1.3	0	^U U
	<i>h</i> ≤ 1.4	4	Con
	<i>h</i> ≤ 1.5	17	
	<i>h</i> ≤ 1.6	50	
	$h \le 1.7$		7
	$h \le 1.8$	114	
	$h \leq 1.9$		

(c) (i) Complete the cumulative frequency table for the heights.

(ii) Draw the cumulative frequency graph on the grid.



[1]

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[2]



The diagram shows a plastic cup in the shape of a cone with the end removed. The vertical height of the cone in the diagram is 20 cm. The height of the cup is 8 cm. The base of the cup has radius 2.7 cm.

(a) (i) Show that the radius, r, of the circular top of the cup is 4.5 cm.

Answer(a)(i)

(ii) Calculate the volume of water in the cup when it is full. [The volume, V, of a cone with radius r and height h is $V = \frac{1}{3} \pi r^2 h$.]

Answer(a)(ii) cm^{3} [4]

(b) (i) Show that the slant height, s, of the cup is 8.2 cm.

Answer(b)(i)

(ii) Calculate the curved surface area of the outside of the cup. [The curved surface area, A, of a cone with radius r and slant height l is $A = \pi r l$.]

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[3]



[4]





The quadrilateral *ABCD* represents an area of land. There is a straight road from *A* to *C*. AB = 79 m, AD = 120 m and CD = 95 m.Angle $BCA = 26^{\circ}$ and angle $CDA = 77^{\circ}.$

(a) Show that the length of the road, AC, is 135 m correct to the nearest metre.

Answer(a)

6

(b) Calculate the size of the **obtuse** angle *ABC*.

[4]

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Answer(b) Angle ABC = [4]

10





(b)	13 Draw the image of (i) triangle <i>B</i> after a translation of $\begin{pmatrix} -5\\ 2 \end{pmatrix}$, (ii) triangle <i>B</i> after a transformation by the matrix $\begin{pmatrix} 1 & 0\\ 0 & 2 \end{pmatrix}$.	177 (Maths [2] [3]	HISTHS SET'S
(c)	Describe fully the single transformation represented by the matrix $\begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix}$.		
	Answer(c)	[3]	



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		mm	14
(、 		m 6
(c) Al	arge coach costs \$450 to hire and a small coach costs \$350.	Ath S
	(i)	Find the number of large coaches and the number of small coaches that would giv minimum hire cost for this school trip.	e the
		Answer(c)(i) Large coaches	
		Small coaches	[2]
	(ii)	Calculate this minimum cost.	
		Answer(c)(ii) \$	[1]
9 (a) 72	$= 2 \times 2 \times 2 \times 3 \times 3$ written as a product of prime factors.	
Ň	(i)	Write the number 126 as a product of prime factors.	
		Answer(a)(i) 126 =	[2]
	(ii)	Find the value of the highest common factor of 72 and 126.	
		Answer(a)(ii)	[1]
	(iii)	Find the value of the lowest common multiple of 72 and 126.	
	·		
		<i>Answer(a)</i> (111)	[2]
		The rest of question 9 is printed on the next page.	

MMM. Mymathscioud.com (b) John wants to estimate the value of π . He measures the circumference of a circular pizza as 105 cm and its diameter as 34 cm, b correct to the nearest centimetre.

Calculate the lower bound of his estimate of the value of π . Give your answer correct to 3 decimal places.

> Answer(b) [4]

(c) The volume of a cylindrical can is 550 cm^3 , correct to the nearest 10 cm^3 . The height of the can is 12 cm correct to the nearest centimetre.

Calculate the upper bound of the radius of the can. Give your answer correct to 3 decimal places.

Answer(c) cm [5]

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