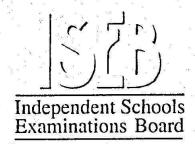
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(Block capitals, please)	* 100 10 10 10 10 10 10 10 10 10 10 10 10		
JUNIOR SCHOOL	SENIOR SCHOOL		



COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

PAPER 2

Non-Calculator Paper

Monday 5 June 2006

Please read this information before the examination starts.

- This examination is 60 minutes long.
- All questions should be attempted.
- A row of dots denotes a space for your answer.
- A completely correct answer may receive no marks unless you show all your working.
- Answers given as fractions should be reduced to their lowest terms.

		ing coeting £1.85
ł	(2)	Ann buys a newspaper costing 48 p and a magazine costing £1.85
	(ω)	How much does Ann spend altogether?
si th		Tiow made does and the second
	W W	
	23	A
		Answer: £(1)
	28	
	æ	CA 40
	(p)	
		How much change should he receive when
		he pays with a £10 note?
	W 8	Contract.
10	12 17	
		Anguar 6 (1)
	8	Answer: £(1)
	(0)	A copy of 'Potty Hatter' costs £5.95
5	(c)	What is the cost of 6 copies of 'Potty Hatter'?
		What is the cost of a copies of a styllar is
		Value
18		
		Answer: £(2)
	22	
	(d	Tickets for the cinema are all the same price.
	ir.	The Jones family spends £46 on 8 cinema tickets.
		What is the cost of each ticket?
	a¥.	

2. ((a) Write the follow	ving in order of size	e, starting with	the smallest:		
		0.35	$\frac{7}{20}$ 363	%		9 5 5
						e Type and and and and and and and and and and
						50 50
S x					2 0 W W W	
			Answer:			(2)
, , , , , , , , , , , , , , , , , , ,	(b) Write $\frac{5}{8}$ as a c	lecimal.	0.00 0.00 0.00 0.00			# # # # # # # # # # # # # # # # # # #
)						
e e e e e e e e e e e e e e e e e e e			Answer:			(2)
						ega a
3.	(a) Calculate $12\frac{1}{2}$	% of £20			30 N S S N S S	
						0 0 0 0 0 0 0 0 0 0
0			R 6 8		e se	
			Answer: £			(2)
4 2 2 3 4 4 2 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	(b) Write 135 cen	timotroe as a nerce	ntage of 3 me	tres.	a ²	
	(b) Write 135 cen	timetres as a perce	, mage 0. 2, 1, 1			
			e e			8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
* 3 * * * *	a a a a a	a		2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	·····································	2 2 2
200 20 31			Answer:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	%	
S.A.	. 2836326	N N	3	**************************************	Turn o	VCI

2 N	(i) 24 - 12 ÷ 3	4 E E			
\$(2)			n, a 10		
s Jagar		8	* W * * * *		2 14 15 15 16
* #		20 E	90 W		
	2 2 200	# #	8 8 8 8		3 160 ₁₀
×					
\$ a		8	a a a	**************************************	2 ⁸ 8 9
3		2 2 2			e a st ii
n.			Inswer:	,	
18	2 2 3				
#2 #2	e # g	ë			
	(ii) $\sqrt[3]{27} - 5^2$	W			
96	g g g	™ _{ES} ⊗.			
	2 602	ø .	200 E E E		" A 400 A 40
뮋	iii	2 11 00	~ a		
	g				
#1	x x x x x x x x x x x x x x x x x x x	350	4 8 8 8		
8		8	26 E 8		
8	2 15 6	20 ₁₀	49		
	9	* A	nswer:		
	-8	at a			
	# S	W W	20 M	* x *	
(b)	(i) Write 378 as a pro	oduct of its prin	me factors, us	ing indices.	
	á s			2	
	*	*	*		888 8 8 8 8 8 8
746	8	×		18 Sh	a _{ca}
			*	\$0. \$0.	ar gr _e
2 K	a a a		@	, a a	W at
	7 S	15 M	8 8 8 8		2 2 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
	** _{0.} *	n a	9 2 2	25	* ************************************
		A	nswer:		/6
	# # # # #	82		**********************	(3
	* * *	되	* *	8	72.
	(ii) Hence, or otherwindivided to give the	ise, calculate	the number h)V which 270 -	
76 25	divided to give the	answer 42	W (E)	7) WINCH 3/8 P	nust be
**	2 E E E E E E E E E E E E E E E E E E E		a .	6 8	92
8	9 &		2)		
18	W #	8			
义	2			-00 -00	9
	8 B				
	* * * * * * * * * * * * * * * * * * *	a		8	w w
		u u ⁿ o u		e 8	e e e e e e e e e e e e e e e e e e e
#F		Δτ	nswer:	e n	(1)

S.A. 28363**26**

4. (a) Calculate

	How many bananas does the monkey eat in 28 days?	Si Pi
	A Company of the Comp	a a a
01		
e nee		
an Tan	Answer:	(2)
70 20		
(b)	Julie shares 12 bars of chocolate equally amongst her pupils.	x = **
a 8	Each pupil receives $\frac{2}{3}$ of a bar and none is left over.	
20 N N N N	How many pupils are there?	200 200 200 200 200 200
(c) (c)		il and a
900 100 100 100 100 100 100 100 100 100		
吳	Answer:	(2)
2 T S	7. (OVO).	, , , , , , , , , , , , , , , , , , ,
6. (a)	Write down the next two terms in the following sequences:	
Bire		281 m
52 95	(i) 1, 2, 5, 10,	
# #	(i) 1, 2, 5, 10,	
	(i) 1, 2, 5, 10, Answer:	(2)
		(2)
		(2)
	Answer:	(2)
	Answer:	. (2)
	Answer:,	
(b)	Answer:,	

Answer:

	V	* 5	0		N 2
7. (a) Simplify			26 26 26 26 26 26 26 26 26 26 26 26 26 2		
(i) $3a^3 + 2a^3$			er Tage	8 8 8	
			# # # # #		
		10 E E E E E E E E E E E E E E E E E E E	**************************************		2 2 2 2 8
		Answer:		.,	
		2 2 5 6 W	e meneral	20 M M M M M M M M M M M M M M M M M M M	20 20 20 ₂₀
(ii) $3a^3 \times 2a^3$					95 NOS
	** a ** ** ** ** ** ** **	F			0 10 E
		# # # # # # # # # # # # # # # # # # #			
		Answer:			
		8 8 8	81 95 08 50	28 25 25 25 25 25 25 25 25 25 25 25 25 25	8 8 8 8 8 8
(iii) $\frac{a^6b}{a^2b^4}$			e e		
	5 9 8 8	2 % 28	S 0 2 8		10 M
		N N	. 1	10 10 10 10 10 10 10 10 10 10 10 10 10 1	
2 a	85-16 N	20 (6 %	11 12 25		a s
s ge	% # #	Answer: .	**********	***********	
(iv) $(33)^2 \pm 36$	25	st sa		e	2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
(iv) $\frac{(3a^3)^2 + 3a^6}{3a^3}$	-2	a d		8	s e ⁸

(iv)
$$(3a^3)^2 + 3a^6$$

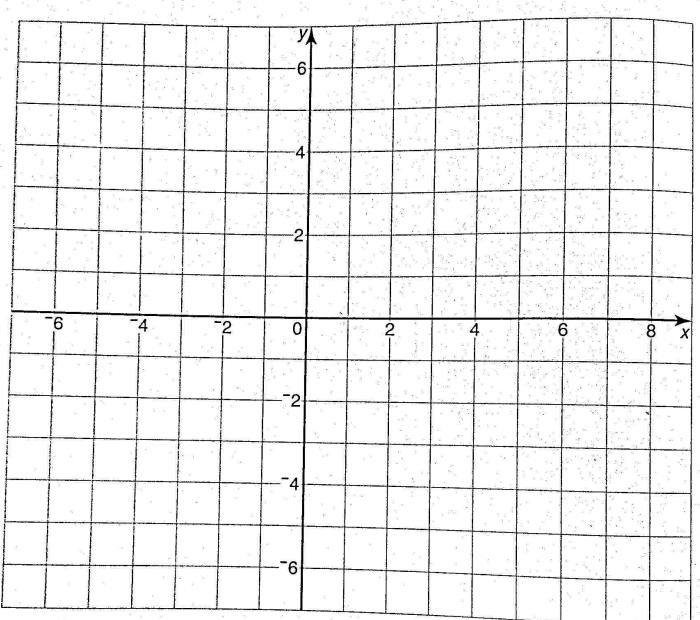
(b) Factorise completely
$$12y^3 - 18y^2$$

\$V				W ₂ = 20	8 23	8,
8.	Multiply out the brackets and simplify					100 AV
a a ^{a a} a	3(2p-5)-2(p+4)					
70 27 23						* * * * * * * * * * * * * * * * * * *
2 W						nn no mar no mair
29		Answer:				(3)
8						
E E		2 B B	8 0 28			100 100 F
9.	When $a = 2$ $b = -3$ and	c = 4				W 1000 100 100 1000 1000 1000 1000 1000
9 N	find the value of	, M (2) (3)		w gw a w		# A
	(i) 5a + 2bc		At a			© 128
						* 22
a a		2004 20 20 31 32 32 20			3 3 5 6 4 8 8	
B		2 2 2 1			a a a a a a a a a a a a a a a a a a a	* * * * * * * * * * * * * * * * * * *
		. 1				
		Answer	8 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2			. (2)
si.		71101101				2 0 2
	(ii) 0.12	3 3 2				
	(ii) $2b^2 - b^3$					2 8 6 ²
3 ° 3		the second second	# # # # # #	10 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	2 2 2 2 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 2 2
s			en e			
38		9		3 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	N N N N	
94 ₅₂		200 Z	M WE H	# # # #		* * * * * * * * * * * * * * * * * * *
* o		Answe	r:			(2
© 2 9		8 8 8 8 2	2 8 8 2 8 8		# # # # # # # # # # # # # # # # # # #	25
† .6	(iii) $(ab)^2 - ac^2$	89 80	a 2 a 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 Z	
		a 8		¥27	6	. 2

Answer:(3)

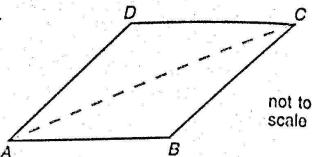
- (a) plot the points (-3,1), (-5,4), (-3,6) and (-1,4)
- (b) join the points in order and label the figure A. (1)

(1)



	22 PF		20
(ii)	On	the grid opposite	2 E
2 8 2 2	(a)	reflect A in the x axis and label the image B	(2)
is E E	(b)	rotate A through 180° about the point (1,0) and label the image C.	(2)
(iii)	A is	translated so that the completed pattern of 4 shapes has 2 lines of metry.	
2 2 1 3 W 2 2	(a)	Draw the image of A. Label this image D.	(1)
er W	(b)	Describe this translation in words.	
20 12 12 12 12 12 12 12 12 12 12 12 12 12		Answer:	(1)
9 9			
91	(c)	Write down the equation of each line of symmetry.	
	8 8 8 8		
	8 % 8 %	Answers:	(1)
8 14 8	e R		(1)
	8 Z 8		
(iv)	Wh	at is the order of rotational symmetry of the completed pattern?	
2 8	76		
2. ©	18 S ^R 18 S	Answer: order	(1)
_ a #			





(i) Using ruler and compasses, construct a full scale drawing of ABCD when AB = 5 cm and AC = 8 cm.
 Point A is plotted for you.

+ A

(3)

(ii) Measure and write down the length of BD.

(iii) Calculate the area of ABCD.

Answer: cm² (3)

12.	Dick has two fair four-sided dice,	each	with	numbers	1 t	0 4	on its	faces	•
w We	One is red and the other is blue.	16 16		9 1	80		Λ	8 8	8

He rolls both dice at the same time.

If both numbers are odd, he multiplies them together:



1 & 3 scores
$$1 \times 3 = 3$$

If both numbers are even, he multiplies them together:

$$2 \& 4 \text{ scores } 2 \times 4 = 8$$

If one number is odd and the other is even, he adds them together:

$$1 \& 2 \text{ scores } 1 + 2 = 3$$

Dick records the scores in the table below.

(i) Complete the table.

# 154 H	R 17	8 8	RED	22	
es Se		1	2	3	4
	1		. 3	3	2 m
BLUE	2			9 8	8
	3		a Ragh		
	4	** ** **	**************************************		

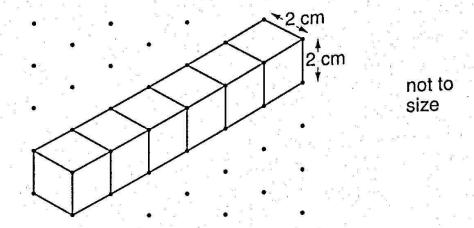
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- (ii) What is the probability that the score is
 - (a) an odd number

(b) a prime number?

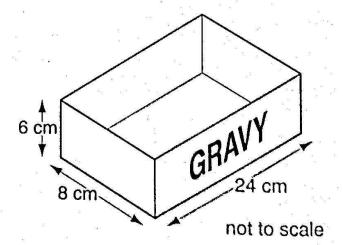
82		141
Answer:	*********	(1)

- 13. Six gravy cubes of side 2 cm are to be packed tightly in a box.
 - (i) One possible way of packing the cubes is shown below.



These cubes are packed like this in box A.

- (a) What are the measurements of box A?
 - Answer: cm by cm (1)
- (b) How many of box A are needed to fill this container?(Ignore the thickness of packaging.)



wragent	shape.
the can be packed tightly in a box of a different	
(ii) The six cubes can be packed tightly in a box of a different	(2)
This is box b.	
(a) Draw a sketch of box B.	
(b) What are the measurements of box B?	
(b) Wriat are	om by cm (1)
Answer: cm by c	
(c) Calculate the total surface area of box B.	
(c) Calculate the total	
	r e "salari

(3)

14. Here are the first three patterns in a sequence drawn on 1 contimotro 'dotted' paper. pattern 3 pattern 1 pattern 2 (1) (i) Draw pattern 4 below.

(ii) Complete the table below.

pattern	1	2	3	4	n
number of squares	1		5		
number of dots	4	10			
length of perimeter (cm)	4		20		

(4)

(iii) How many dots are there in pattern 50?

		111	
A		(1)	
Answei			

(iv) One pattern has a perimeter of 996 cm.

How many dots are there in this pattern?

15. In a game of Lobbit, x points are score and y points if you lob it into the 'outer'	d if you lob your ball into the 'innor'
1 'inner' and 2 'outers' score 9 points in tot	al
(i) Express this information as an equation	on In terms of x and y.
Λn	swor: (1)
2 'inners' score 8 more points than 1 'oute	
(ii) Express this information as an equation	on in terms of x and y.
An	swer: (1)
(iii) Using your answers to parts (i) and (ii of x and y.), solve equations to find the values
An	nswer: $x = \dots y = \dots (4)$
A game of Lobbit consists of 10 lobs.	
Cedric scored with all his 10 lobs and total	illed 41 points.
(iv) How many 'inners' and 'outers' did he	get?
Answe	r: 'inners' and 'outers' (2)
a	a.

(Total marks: 100)