SURNAME(Block capitals, please)	* * * * * * * * * * * * * * * * * * *	FIRST NAME	*****************
JUNIOR SCHOOL		SENIOR SCHOOL	 *****



COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

PAPER 2

Non-Calculator Paper

Monday 7 June 2004

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.

(i) the sum o	f 63.5 and 9.74	
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9 g 8	* 2	
(ii) the differe	nce between 74 and	7.4
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(iii) 4.36 × 0.7	7	
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(iv) 2.7 ÷ 0.4	**************************************	
(10) 2.7 . 0.1		
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e e	g - 4 4	
	9 ^N N	Answer: (2)

1. Calculate

2. (a) write 40% as a fraction.		
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	2 2	
	26 E	
	•	
	Answer:	(
	, 4101,011	7
* s	** %	
(b) Write $\frac{3}{8}$ as a decimal.	8 8	8 B
(b) Timo 8 do d decimal.	20 E E	
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(c) Calculate 24% of £12.50	z z z	
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	95%	
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	Answer £	
	# a	2 ×
(d) Coloulate 4 of 4 5 matros	8 8	9 N N N N N N N N N N N N N N N N N N N
(d) Calculate $\frac{4}{15}$ of 4.5 metres.		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
		···
	# # # # # # # # # # # # # # # # # # #	s
	THE SECOND SECOND	No.

3. (a)	By writing each nu to	mber correc	t to 1 significa	nt figure, est	imate the	
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525		s ge a s		∞	8 82 8 8	e s s
77	e e e e e e e e e e e e e e e e e e e	C	2 ° 2			\$\\ \tilde{x}\
	20 E 10 E	20 E	Answer:			(3)
24	* * * * * * * * * * * * * * * * * * *	*	3 48 K	ह्व ⁶ - श स स		5
(b)	Calculate 2 ⁴ × ³ √27	7		z a	a 2	
	E et	At No.	(4) (2) (4)	* * * *		2 8
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-03	4 2 g	n n	s o s	원 원학 보 로 전	## ## ## ## ## ## ## ## ## ## ## ## ##	20 21 20 21
	* * * * * * * * * * * * * * * * * * *	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Answer:			(2)
(c)	(i) Write 240 as th	e product o	f prime factors	using indice	5.	# 76 76
v			ä	. d 3	i) š	20 20
25 B			er even	S S		.a.
	€ 30 ²⁰⁰	G.				
N	s s s	a.	to to	15	2	8 8
	, , , ,		Answer:	n ²² n 150 on and a 160 y	** *******	(3)
76	(!!) Nathana tha ama	llest into cor	humbish 240	oon ha divide	nd to mobo	tha.
	(ii) What is the sma result a perfect :	illest integer square?	by which 240	can be divide	au to make	ine .
	18		%		œ	2
26 20	# # # # # # # # # # # # # # # # # # #	**************************************	^च छ	۰	e e	12 18
8	N N N	* *** *** *** *** *** *** *** *** ***	a ⁰ 0		ı	2
	æ ≅	8	Answer:			(2)

4.	(a)		I from Frumpton to London by train.	e ^a a
81	, a	Ivor catches the 11:35 train from F		10 80
e .	·	At what time should Ivor arrive in L	ondon?	n a m
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	4.			* * * * * * * * * * * * * * * * * * *
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8 8 8			A	(1)
ń	3		Answer:	· 417.
8	93 69			70
	(b)	A top class distance runner average	ges 1 mile every 5 minutes.	II. 32
	**	How long will it take him to run 26	miles?	a.
	80 to			ξ _α
10				
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18 St	14 2			
	8 8 ₀			*****
			Answer: h mi	n (2)
	S			
	(c)	How far does a bus travel in 25 m	inutes at 30 km/h?	J
	(0)			21 22 39
8	le.			2 g/s
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	18 3			
5015		# # ## ## ## ## ## ## ## ## ## ## ## ##		
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				10 M
į¥.			Answer: k	m (2)
14				
	(d)	Write 90 km/h as a speed in metro	es per second.	
	(u)	· · · · · · · · · · · · · · · · · · ·		
si				81
	At .	e e e e e e e e e e e e e e e e e e e		
	e)	s * s s y		
		*	Answer: m	v/s (2)
		w w		(5)

S.A. 2834326 5 Turn over

5. (a) Simplify		a Taran Paran a	e e e
(i) $3y^3 + 3y^3$			
	× ,	и и и и удили	
	Answer:	har . J	(1)
	, , ,		
(ii) $3y^3 \times 3y^3$			f
e e e	-		
	Answer:		(2)
(iii) $\frac{6y^3}{3y^6}$			
a nation of	Answer:		(2)
(b) Multiply out the brackets a	and simplify		\sim
2(3p-4q)-5(p+2q)	100	**	
	•		
e i i i i i i i i i i i i i i i i i i i	Answer:	(3)	
(c) Factorise completely		*	- /
16a ² + 29a			$\cdot \rightarrow \int$
	Answer:	(2)	

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		_	
6.	(a)	Sol	MA
U.	lai	201	VC
800 M	\/	5000 00000	

(i)
$$5a+3=21-a$$

(ii)
$$\frac{2}{3}(b+1) = 10$$

(b) (i) Solve these inequalities
$$-1$$
(a) $2n + 1 > 8 - 1$

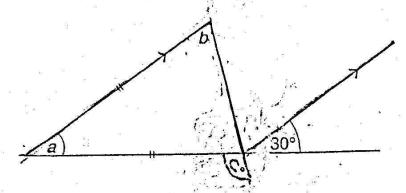
(b)
$$2(n-3) \le 6$$

(ii) Write down the integers that satisfy both inequalities in part (b)(i).

Turn over

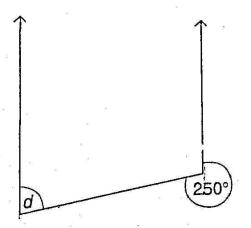
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7. Calculate the size of each of the angles marked a, b, c and d.



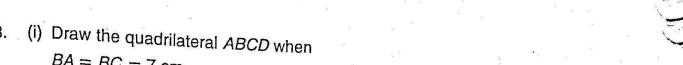
not to scale

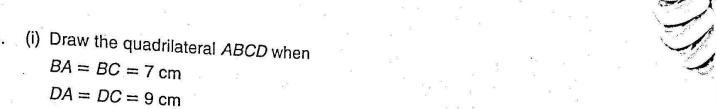
Answer:
$$b =$$
 (2)

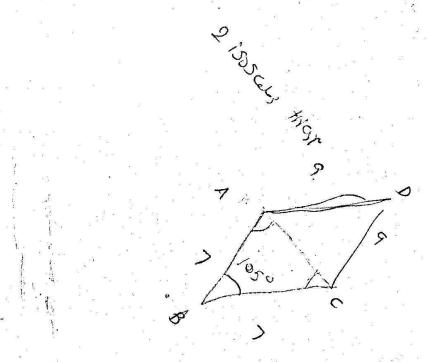


not to scale

Answer:
$$d =$$
 (2)







B-(3)

(ii) What special name is given to ABCD?

angle ABC = 105°

The position of B has been marked for you.

Answer:

(iii) Measure and write down the length of AC.

Answer: AC =

(iv) Measure and write down the size of angle ADB.

Answer: angle ADB =

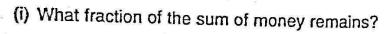
D C B

On the grid

(i) with ce	ntre P, enlarge ABCD by scale	e factor 3		(2
	e image A'B'C'D'.	# ## ## ## ## ## ## ## ## ## ## ## ## #	# 8t	(1
The area of	A'B'C'D' is 108 units ² .			a
(iii) What is	the area of ABCD?		<i>8</i>	

		1925	
Answer:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	 units ²	(2)

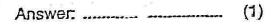
ID.	(a)	6 children share a sum of money.
8 W G	a a a	Big Brother takes $\frac{4}{9}$ of it and Small Sister takes $\frac{1}{3}$ of it.



	(a)		
Anguer	*	92	(2)
HIISWEI.	**********	****	1-1

The Frightful Four then share what is left over equally between them.

(ii) What fraction of the sum of money does each take?



(b) Every day Jenny's donkey eats $\frac{3}{4}$ of a bale of hay. How many bales will the donkey eat in 24 days?



Answer: (2)

(c) In the desert, every soldier drinks $\frac{1}{5}$ of a litre of water each day.

An army patrol drinks 20 litres in a day.

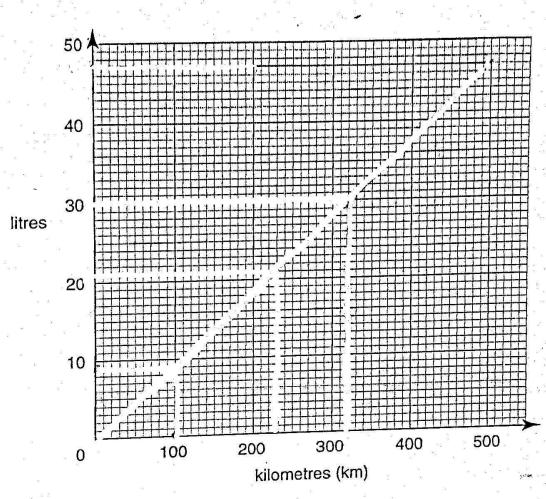
How many soldiers are there in the patrol?



Answer: (2)

- 11. Bob's car uses on average 9 litres of petrol overy 100 kilometres.
 - (i) Using this fact, calculate the number of litres of petrol that Bob's car uses to travel 500 kilometres.

e 188 a A	· · · · · · · · · · · · · · · · · · ·
Answer:	 litres (1)
,	2 70



- (ii) On the grid draw a line which shows how much petrol Bob's car uses for distances up to 500 km. (2)
- (iii) Use your graph to answer the following, showing clearly where you take your readings.
 - (a) How far will the car travel on 30 litres of petrol?

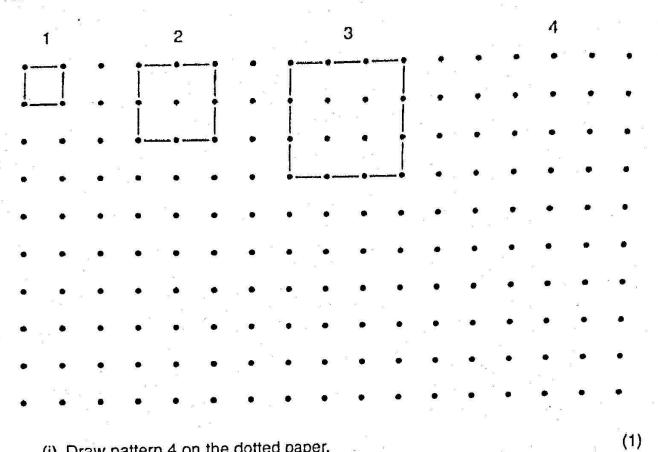
(b) Bob wants to travel 230 kilometres. His car contains 5 litres of petrol. How much more petrol will he need?

Answer: litres (2)

# * # ₁		0.	s large as <i>b</i> n an equation		of a and b to sh	ow thic	At (6)	
a a		35 36	oquali	on in terms	or a and b to si	10W tills.		80 an annual
	n _e a	2 0 2	\mathcal{M} . Where $\mathcal{M}_{\mathrm{rec}}$	15 15	Answer:			(1)
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2 3 2°	2 time	s a is 16	6 more than	b.			27 27 21	# 7 B
	(ii) W	rite dow	n an equation	on in terms	of a and b to sh	low this.	w w w	× × ×
e	. S'20	*** 15** 15** 15** 15** 15** 15** 15**	e * e	8 8 8 8 8	Answer:			(1)
	52 (3) (652)	\$E	2 2 2 2 2 2 2	10 Jt ₉₀ St	\$5. 	a & &	er	
a	(iii) U	sina vou	ır answers to	o parts (i) a	and (ii), solve eq	uations to	find the v	alue
U.	of	a and b),		61 10		s a	
. 2 m	3 3 5	(4) 10. ₄₉				w _{ss} w	в в	9 B E E
22 22				til			# # # # # # # # # # # # # # # # # # #	
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16	and the second s	<u>.</u>	# # E	300 ²⁵ is	8 E ₈ 7	(e)	ala a a — — — — — — — — — — — — — — — — —	
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10 10	a a	×			A	8	10 E	
	er u		2 2	la la	Answer: $a = \frac{1}{2}$,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		a
# g	a a	8 (4	\$ 6	g N	Answer: $b = $			(4)
	2 3	2 S	8 8 8 10 10	4			9	6 8
2 2				nart (iii) V	vrite the ratio of	$\sqrt{10a}$ to	\sqrt{b} in its lo	west
	iv) Usi) teri	ng your ns.	answers to	pare (my, 1	1110 1110 1111	22		30 - 1
8 ⁹⁵ 60	e e e e e e e e e e e e e e e e e e e	n n No		a a				© 20 80
11/12	×	8 ₉₂	* # * *	* * *		27 26 28	25 27 TE	
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*		a	U & V		Answer:	8 B 4		(2

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13. Here are the first three patterns in a sequence with space for the fourth pattern,



- (i) Draw pattern 4 on the dotted paper.
- (ii) Complete the table below.

pattern number	1	2	3	4	5	n
number of dots on perimeter	4	8				
number of dots inside pattern	0	1				
total number of dots	4	9				36

(iii) How many dots are there on the perimeter of pattern 9?

 (1)

(3)

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# 8	W	76 W		9 **	*3	a a
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,	v) How m	iany dots are in	ere inside patte		20	an Ma
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9	9	Sealer N	20 E	**		
			Ar	ıswer:		(1)
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	vii A patte	ern has a total o	of 900 dots.	w 18		2 K (8)
`	Hown	nany dots are th	nere inside this	pattern?	9 9 9	
<i></i>	FIOW	inatily		3 8 8	8 E	
- T	8	605 Sa		25		
8		is	*	a: 70	E 0 2	#1. 19: ^{TE}
	99	9	e · · ·		2 8	# 8 #
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N.			840	2		(3)
8		re 25 M 94 (5 ft)	Aı	nswer:		energy H
9 31 22		*	(Total mark	(s: 100)	a at	es . In
At .	e e		*	10		W
C A	2834326	19	15	ia ia	#855 ED	а ж
O'W'				18		X

(iv) What is the number of the pattern which has 60 dots on its perimeter?