

#### **NOVEMBER 2010**

#### MATHEMATICS CALCULATOR PAPER

Time allowed: 45 minutes

- Work through the paper carefully
- Do not spend too much time on any single question
- Show any working in the spaces provided
- Use the blank left hand pages for rough work
- Remember to show all of your working, even if you are using your calculator



Given that $s = (t - \frac{1}{2}u)^3$ , find	Do not write in this
(i) $s \text{ when } t = 9 \text{ and } u = 12$	box
(ii) $u$ when $s = 1000$ and $t = 8$	3
Solve the equations	
$3x = 7x - (10 - x)$ $\frac{x}{2} - \frac{x}{5} = 6$	3
$\frac{3x}{5} = \frac{2}{3}$	3
$\frac{3}{x} = 12$	3
•••••	2

	Do not write
( [	in this box
4 circles of radius 8cm are drawn so that they touch each other as shown	
creating the shaded region. Find the area of the shaded region.	
	4
The east of 2 bittons and 1 manning is \$100. This information can be written as	
The cost of 2 kittens and 1 puppies is £106. This information can be written as	
2k + p = 106	
The cost of 1 kitten and 2 puppies is £119. Write down an equation to represent	
this information.	
••••••	2
Find the cost of each kitten and each puppy	_
Vitton —	
Kitten =	
<b>Puppy</b> =	3

Look at the patto	ern below				Do not
_			TOTAL		write in this
Row 1	29 ×	31	= 899 = 30	× 30 1 × 1	box
Row 2	28 ×	32	= 896 = 30	× 30 2 × 2	
Row 3	27 ×	33	= 891 = 30	× 30 3 × 3	
Row 4	26 ×	34	= 884 = 30	× 30 4 × 4	
On the dotted lin	e below compl	ete Row 5			
Row 5	•••••	•••••	•••••		2
	1 00	260			
Which row will h	ave a total of 8	336?			
What is the total	of row 202		••••	•••••	2
what is the total	0110W 20.				
			••••	•••••	2
Now look at this	second pattern	l			
TEAMS	2	3	4	5	
MATCHES	A vs B	A vs B	A vs B	A vs B	
		A vs C	A vs C	A vs C	
		B vs C	A vs D	A vs D	
			B vs C	A vs E	
			B vs D	B vs C	
			C vs D	B vs D	
				B vs E	
				C vs D	
				C vs E	
				D vs E	
TOTAL	1	3	6	10	
Each total is obta	nined by counti	ng the numb	er of matches in	n a league.	
What is the TOT	AL number of	league match	nes for 7 TEAM	IS?	
What number of TEAMS would there be in a league with a TOTAL of 91 matches?					2
			••••	•••••	2

A pick'n'mix bag contains 10 swizzles, 7 toffees and 8 gob-stoppers. I select a sweet from the bag.	Do not write in this box
(a) What is the probability that my sweet is not a swizzle?	1
(b) What is the probability that my sweet is a chocolate peanut?	1
I eat the first sweet. I now select a second sweet.	
(c) If my first sweet was a toffee what is the probability that my second sweet is another toffee?	2
•••••	
(d) If my first sweet was a toffee what is the probability that my second sweet is a gob-stopper?	
	2
The value of a gold ingot at the end of every year is 10% more than it was at the start of the year. In January 2009 a gold ingot was worth £8000.  (i) How much was it worth in January 2010?	
	2
(ii) How much will it be worth in January 2015?	
	3
At the start of which year will the value of the ingot first be more than £20000?	
END OF EXAMINATION IF YOU HAVE TIME CHECK YOUR WORK	3



#### 13+ Entrance Examination

#### **NOVEMBER 2010**

#### MATHEMATICS NON CALCULATOR PAPER

Time allowed: 20 minutes

- Work through the paper carefully
- Do not spend too much time on any single question
- Show any working in the spaces provided
- Use the blank left hand pages for rough work



<u>Page 1</u>
he following showing your working in the space provid

		working in the space provide	
2011 + 999 =	2011 – 999 =	2011 × 11 =	Do not write in this box
			1
			1
			1
Use your previous answer to find 20.11 × 1.1 =	What is 24 × 9?	Use your previous answer to write down the answer to 2400 × 90	1
			1
			1
20.11 + 0.09 =	20.11 + 0.9 =	20.11 + 9 =	1
			1
			1
Given that 25 × 19 = 475	Given that 567 ÷ 27 = 21	What is 4000 ÷ 40	
			1
		••••••	1
Use this answer to find 475 ÷ 19 =	Use this answer to find 567 ÷ 21 =	Use your answer to write down the answers to	1
and 47500 ÷ 19 =			1
and	and	4000 ÷ 20	1
and $(475 + 475) \div 19 =$	56.7 ÷ 2.7 =		1
		4000 ÷ 80	1
		••••••	1
			1

Page 2

Write these three	What is $7\frac{1}{2}$ % of £400	Find five eighths of	Do not write
quantities in order of	2 70 01 2 100	408p	in this
size, starting with the			box
smallest first.			2
$\frac{5}{6}$ , 0.8, 9%			2
			2
•••••	•••••	•••••	
Solve these equations $3x-4=2(13-x)$	$\frac{14}{15} \times \frac{5}{7} + \frac{1}{2}$	Write down a <u>fraction</u> between 0.16 and 0.17	3
	15 , 2		3
5 1			3
$\frac{x+5}{4} = \frac{1}{2}$	$\left(\frac{4}{5} - \frac{2}{3}\right) \div 2\frac{1}{2}$	between $\frac{1}{3}$ and 30%	3
		3	1
			1
	***	1.6.1	
Find the next 2 terms in	What is % as:	A tather share out £.35	
Find the next 2 terms in the sequence:	What is ¾ as: A decimal?	A father share out £35 pocket money in the	
the sequence:	What is % as: A decimal?	pocket money in the	
		pocket money in the ratio of 3:5:6. How	2
the sequence:		pocket money in the ratio of 3:5:6. How much does each child	2
the sequence:		pocket money in the ratio of 3:5:6. How	2
the sequence:	A decimal?	pocket money in the ratio of 3:5:6. How much does each child	1
the sequence:		pocket money in the ratio of 3:5:6. How much does each child	
the sequence:	A decimal?	pocket money in the ratio of 3:5:6. How much does each child	1
the sequence:	A decimal?	pocket money in the ratio of 3:5:6. How much does each child	1
the sequence:	A decimal?	pocket money in the ratio of 3:5:6. How much does each child	1
the sequence: 2, 5, 7, 12, 19, 31,	A decimal?	pocket money in the ratio of 3:5:6. How much does each child get?	1
the sequence: 2, 5, 7, 12, 19, 31,	A decimal?  A percentage?	pocket money in the ratio of 3:5:6. How much does each child get?	1
the sequence: 2, 5, 7, 12, 19, 31,	A decimal?  A percentage?	pocket money in the ratio of 3:5:6. How much does each child get?	1



## I3+ Entrance Examination November 2011 MATHEMATICS

Time allowed: 45 minutes

- Work through the paper carefully
- You do not have to finish everything
- Do not spend too much time on any single question
- Show any working in the spaces provided
- Use the blank left hand pages for rough work



Given that $s = (t - \frac{1}{2}u)^3$ , find	Do not write in this
(iii) $s$ when $t = 9$ and $u = 12$	box
(iv) $u$ when $s = 1000$ and $t = 8$	3
Solve the equations	
$3x = 7x - (10 - x)$ $\frac{x}{2} - \frac{x}{5} = 6$	3
$\frac{3x}{5} = \frac{2}{3}$	3
$\frac{3}{x} = 12$	3
	2

	Do not
	write
( <u>'</u> '	in this box
	БОА
(	
You are given that the area of an ellipse is $\pi \times r \times s$ , where r is the length of the	
short radius and s is the length of the long radius. 4 ellipses of short radius 8cm	
and long radius 10cm are drawn so that they touch each other as shown	
creating the shaded region. Find the area of the shaded region.	
	4
	4
•••••	
The cost of 3 hens and 1 duck is £23. This information can be written as	
3h + d = 23	
The cost of 1 hen and 3 ducks is £29. Write down an equation to represent this	
information.	
•••••	
	2
Assuming all hens are the same price and all ducks are the same price, find the	
cost of each hen and each duck.	
cost of each near and each ducin	
<b>I</b>	
Hen =	
Hen =	
Hen = Duck =	

Look at the patt	ern below				Do not write
Row 0	12 ×	: 12	TOTAL = 144 = 12	$2 \times 12 - 0 \times 0$	in this box
Row 1	11 ×	: 13	= 143 = 12	2 × 12 1 × 1	
Row 2	10 ×	: 14	= 140 = 12	$2 \times 12 - 2 \times 2$	
Row 3	9 ×	: 15	= 135 = 12	$2 \times 12 - 3 \times 3$	
On the dotted lin	ne below compl	ete Row 4			
Row 4	•••••	•••••	•••••		2
Which row will l	nave a total of 9	05?			
What is the total					2
What is the total	0110W 13.				2
Now look at this	second nattern		••••		
110W IOOK at this	second pattern	L			
TEAMS MATCHES	A vs B	3 A vs B A vs C B vs C	4 A vs B A vs C A vs D	5 A vs B A vs C A vs D	
		D vs C	B vs C B vs D	A vs E B vs C	
			C vs D	B vs D B vs E	
				C vs D	
				C vs E	
TOTAL				D vs E	
TOTAL	1	3	6	10	
Each total is obta	ained by counti	ing the number	er of matches in	n a league.	
What is the TOT	AL number of	league match	nes for 8 TEAM	IS?	
What number of matches?	TEAMS would	d there be in a	 a league with a	TOTAL of 104	2
induction (					
			••••		2

	Do not
A bag of mini-cheeses contains 16 Cheddars, 13 Stiltons and 7 Red Leicesters. I select a mini-cheese from the bag.	write in this box
(e) What is the probability that my cheese is not a Cheddar?	1
(f) What is the probability that my cheese is a Camembert?	1
I eat the first cheese. I now select a second cheese.	
(g) If my first cheese was a Cheddar what is the probability that my second sweet is another Cheddar?	2
•••••	
(h) If my first cheese was a Stilton what is the probability that my second sweet is a Red Leicester?	
	2
***************************************	
It is estimated that the population of tigers goes down by 10% every year. In January 2010 there were an estimated 2000 tigers.  (iii) How many tigers were there in January 2011?	
	2
(iv) How many tigers will their be in January 2025 (nearest whole number)?	
	3
At the start of which year will the population first be below 800?	
	3
END OF EXAMINATION IF YOU HAVE TIME CHECK YOUR WORK	



## I3+ Entrance Examination November 2011 MATHEMATICS

Time allowed: 20 minutes

- Work through the paper carefully
- You do not have to finish everything
- Do not spend too much time on any single question
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PAGE	I	2	3	TOTAL
MARK	18	24	18	60
MARK				



### PAGE 1 ANSWER ALL QUESTIONS IN THE SPACES PROVIDED, SHOWING ANY NECESSARY WORKINGS

2002 + 999 =	2002 – 999 =	What is 2002 x 10?	DO NOT
			WRITE IN THIS
			вох
			1
			1
	Handhan Indahan	11	1
Use your previous answer to write down	Use these last two answers to write	Use your previous answer to write down	1
2002 x 5	down 2002 x 15	20.02 x 1.5	_
			1
			1
			_
2002 7	2002 70 -	2002 700 -	
2002 - 7 =	2002 - 70 =	2002 - 700 =	1
			1
			1
			_
Given that 35 x 17 =	What is 600 x 12 ?	What is 8000 ÷ 100?	
595			1 1
			1
What is 595 ÷ 17 ?			
	What is 600 x 1.2?	What is 8000 ÷ 400?	1
			1 1
What is 59500 ÷ 17?			_
			1
	What is 600 x 0.12?	What is 8000 ÷ 50?	1 1
What is			_
(595 + 595 + 595) ÷			
17?			

PAGE 2

Which of these three is the largest and which is the smallest? $70\% \ 0.65 \ \frac{4}{5}$ What is $5\% \ of \ £600$ ?  What is $5\% \ of \ £600$ ?  Use your answer to find four ninths of $360$ Use your answer to find four ninths of $360$ 1  1  Use your answers to find $17^{1}/_{2}\% \ of \ £600$ ?  Add together $\frac{1}{4} \ of \ 24$ Adam is twice as old as Richard.  Adam is twice as old as Richard.  Will is $\frac{2}{3} \ of \ Adam's$ age.  Write down a decimal between $75\% \ and \ 80\%$ 1  1  Write down a fraction between $60\% \ and \ 70\%$ 1  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  O.101, 0.011, 0.11  What fraction of this flag is shaded?  How many more rectangles need to be shaded to fill $\frac{2}{9}$ of the			1	
is the largest and which is the smallest? $70\% \ 0.65 \ \frac{4}{5}$ $Vhat is 5\% \ of £600?$ $Vhat is 2^{1}/2\% \ of £600? Vhat is 2^{1}/2\% \ of £600? Vhat is 2^{1}/2\% \ of £600 Vhat is their total age? Vhat is their tota$	Which of these three	What is 10% of £600?	Find one ninth of 360	
which is the smallest? $70\% \ 0.65 \ \frac{4}{5}$ What is $5\% \ of \ £600$ ?  What is $2^1/2\% \ of \ £600$ ?  Use your answer to find four ninths of $360$ 1  Add together  Add together  Richard is $12$ years old.  Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  And  1, 1, 2, 3, 5, 8,  What is their total and  And  And  And  And  And  And  And	is the largest and			IN
$70\% \ 0.65 \ \frac{4}{5}$ $What is 2^1/2\% \ of \\ £600?$ $Use your answer to \\ find four ninths of 360$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	which is the smallest?			
What is $2^1/2\%$ of £600?  Use your answer to find four ninths of 360  Use your answers to find $17^1/2\%$ of £600  Add together  Add together $\frac{1}{4} \text{ of } 24$ Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  Write down a decimal between 75% and 80%  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is said and and and and and and and and and an		What is 5% of £600?		1
$Largest = \\ Smallest = \\ Smallest = \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	70% 0.65 4			1
Largest = Use your answers to find $17^{1}/2\%$ of £600 Use your answer to find four ninths of 360 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	70% 0.65 -			
Largest = Use your answers to find $17^{1}/2\%$ of £600 Use your answer to find four ninths of 360 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		144 - 4 :- 2 <sup>1</sup> / 0/ - 6		1
Largest = Use your answers to find four ninths of 360 $\frac{1}{1}$ 1  Add together Richard is 12 years old.  Adam is twice as old as Richard.  Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  Write down a decimal between 75% and 80% $\frac{1}{1}$ 1  What is their total age?  What are the next two numbers in these series $\frac{1}{1}$ 1, 4, 8, 13, 19,  O.101, 0.011, 0.11  What fraction of this flag is shaded? $\frac{1}{1}$ 1  What fraction of this flag is shaded? $\frac{1}{1}$ 1  What many more rectangles need to be $\frac{2}{1}$				_
Largest = Smallest = Use your answers to find $17^{1}/_{2}\%$ of £600  Add together $\frac{1}{4} \text{ of } 24$ $\frac{2}{5} \text{ of } 30$ and $\frac{1}{2} \text{ of } 15$ What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Use your answers to find $17^{1}/_{2}\%$ of £600  Write down a decimal between 75% and 80%  1  Write down a fraction between 60% and 70%  1  Write down a fraction between 60% and 70%  1  What is their total age?  2  2  3  4  4  4  4  4  4  4  4  4  4  4  4		£600?	1	_
Largest = Use your answers to find $17^1/2\%$ of £600  Add together old.  Adam is twice as old as Richard.  Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Use your answers to find $17^1/2\%$ of £600  Write down a fraction between 60% and 70%  Put these decimals in order, starting with the largest.  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  Whow many more rectangles need to be $\frac{2}{2}$			find four ninths of 360	
Smallest =	Largest =			1
Smallest =	Laigest –	Use your answers to		
Add together old.  Adam is twice as old as Richard.  Adam's twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,				1
old. $\frac{1}{4}$ of 24 Adam is twice as old as Richard. $\frac{2}{5}$ of 30 Write down a fraction between 60% and 70% $\frac{1}{1}$ What are the next two numbers in these series $\frac{1}{1}$ At $\frac{1}{1}$ $1$	Smallest =	, 2, 1 0 1 2 0 1		1
old. $\frac{1}{4}$ of 24 Adam is twice as old as Richard. $\frac{2}{5}$ of 30 Write down a fraction between 60% and 70% $\frac{1}{1}$ What are the next two numbers in these series $\frac{1}{1}$ At $\frac{1}{1}$ $1$				
old.  Adam is twice as old as Richard.  Adam's twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Old.  Adam is twice as old as Richard.  Write down a fraction between 60% and 70%  1  Write down a fraction between 60% and 70%  1  Write down a fraction between 60% and 70%  1  What is their total age?  2  2  4  What are the next two numbers in these series  1, 4, 8, 13, 19,  Adam is twice as old as Richard.  Write down a fraction between 60% and 70%  1  What is their total age?  1  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	Add together	Richard is 12 years	Write down a decimal	1
Adam is twice as old as Richard.  Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Adam is twice as old as Richard.  Write down a fraction between 60% and 70%  1  What is their total age?  2  2  What are the next two numbers in these series  1, 4, 8, 13, 19,  1  What fraction of this flag is shaded?  1  How many more rectangles need to be		old.	between 75% and 80%	
Adam is twice as old as Richard.  Adam is twice as old as Richard.  Will is $\frac{2}{3}$ of Adam's age.  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  O.101, 0.011, 0.11  What fraction of this flag is shaded?  1  Whow many more rectangles need to be	1 - of 24			_
and $\frac{1}{2}$ of 15  and $\frac{1}{2}$ of 15  Will is $\frac{2}{3}$ of Adam's age.  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  A Write down a fraction between 60% and 70%  1  What is their total age?  2  2  2  2  4  4  4  4  4  4  4  5  6  7  8  8  8  8  8  8  9  9  1  1  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	4 01 24	Adam is twice as old		_
and $\frac{1}{2}$ of 15  Will is $\frac{2}{3}$ of Adam's age.  Write down a fraction between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  O.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be	_			1
will is $\frac{2}{3}$ of Adam's age.  Will is $\frac{2}{3}$ of Adam's between 60% and 70%  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Write down a fraction between 60% and 70%  1  What is their total age?  Put these decimals in order, starting with the largest.  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be	<sup>2</sup> / <sub>-</sub> of 30	as Kicharu.		
age.  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is their total age?  Put these decimals in order, starting with the largest.  O.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	5	9		1
age.  What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is their total age?  Put these decimals in order, starting with the largest.  O.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	1	Will is $\frac{2}{3}$ of Adam's		1
What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Detween 60% and 70%  1  1  What is their total age?  2  2  What are the next two numbers in these series  1, 4, 8, 13, 19,  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	and $\frac{1}{2}$ of 15	•	Write down a fraction	1
What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is their total age?  Put these decimals in order, starting with the largest.  2  What fraction of this flag is shaded?  1  How many more rectangles need to be	-	age.	between 60% and 70%	-
What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is their total age?  Put these decimals in order, starting with the largest.  2  What fraction of this flag is shaded?  1  How many more rectangles need to be				4
What is their total age?  What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  What is their total age?  Put these decimals in order, starting with the largest.  2  2  What fraction of this flag is shaded?  1  How many more rectangles need to be 2				_
What are the next two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  Put these decimals in order, starting with the largest.  2  2  2  4  4  4  4  4  4  5  6  7  8  8  9  9  1  1  1  1  1  1  1  1  1  1  1		What is their total		1
two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  order, starting with the largest.  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2		age?		
two numbers in these series  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  order, starting with the largest.  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2	What are the next	Put these decimals in		
the largest.  1, 4, 8, 13, 19,  2  1, 4, 8, 13, 19,  and  1, 1, 2, 3, 5, 8,  the largest.  0.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2				2
1, 4, 8, 13, 19,  1, 4, 8, 13, 19,  O.101, 0.011, 0.11  What fraction of this flag is shaded?  1  How many more rectangles need to be 2				
What fraction of this flag is shaded?  1 1, 1, 2, 3, 5, 8,  How many more rectangles need to be	Series	the largest.		
What fraction of this flag is shaded?  1 1, 1, 2, 3, 5, 8,  How many more rectangles need to be				
What fraction of this flag is shaded?  1 1, 1, 2, 3, 5, 8,  How many more rectangles need to be	1, 4, 8, 13, 19,	0.101, 0.011, 0.11		
and flag is shaded?  1 1, 1, 2, 3, 5, 8,  How many more rectangles need to be 2				1
and flag is shaded?  1 1, 1, 2, 3, 5, 8,  How many more rectangles need to be 2			What fraction of this	
How many more rectangles need to be				
1, 1, 2, 3, 5, 8, How many more rectangles need to be	and		ilag is silaueur	1
1, 1, 2, 3, 5, 8, rectangles need to be				
rectangles need to be	1 1 2 3 5 8			1
shaded to fill $\frac{2}{3}$ of the	<u> </u>		rectangles need to be	•
			shaded to fill - of the	
3			3 3	
flag?	_		flag?	
and	and			

PAGE 3

Work out $\frac{1}{3} + \frac{5}{12}$	Work out $\frac{7}{15} - \frac{2}{5}$	Add together the following, giving your answer as a DECIMAL	DO NOT WRITE IN THIS BOX
		65%, 0.507 and $\frac{1}{4}$	1 1
			1 1
			1 1 1
What is the biggest number that divides exactly into	What is the smallest number that 2, 3, and 8	Find two numbers that have a difference of 5 and add up to 19	1
60, 72 and 84?	all divide into?	or 5 and add up to 15	1
			1
What is 0.7 written as a fraction?	What is $\frac{1}{5}$ written as a decimal?	Name the shapes below	1 1 1
What is 0.07 written as a fraction?	What is $\frac{1}{50}$ written as a decimal?		1 1 1 1
What is 0.707 written as a fraction?	What is $\frac{3}{50}$ written as a decimal?		1 1



#### **Reigate Grammar School**



# 13+ Entrance Examination November 2012 MATHEMATICS

Time allowed: 45 minutes

- Work through the paper carefully
- You do not have to finish everything
- Do not spend too much time on any single question
- Show any working in the spaces provided
- Use the blank left hand pages for rough work



Given that $s = \sqrt{t^3 + u}$ , find (v) $s$ when $t = 3$ and $u = 22$	Do not write in this
(vi) $u$ when $s = 11$ and $t = 5$	box 3
	4
Solve the equations $5x = 7x - (12 - x)$ $\frac{x}{4} - \frac{x}{6} = 5$	3
$\frac{4x}{7} = \frac{3}{4}$	3
$\frac{4}{x} = 20$	3
••••••	2

You are given that the volume of a cone is equal to the area of the circular base multiplied by one third of its height. Given that the base radius is 6cm and the height is 14cm, find the volume of the cone shown here.	Do not write in this box
	4
•••••	
The cost of 4 antelopes and 1 gazelle is £680. This information can be written	ı as
4a + g = 680	
The cost of 2 antelopes and 3 gazelles is £540. Write down an equation to represent this information.	
Assuming all antelopes are the same price and all gazelles are the same price find the cost of each antelope and each gazelle.	2
Antelope =	
Gazelle =	

Look at the patte	ern below		TOTAL Y	Do not write
Row 0	25 × 2	25	$TOTAL = 625 = 25 \times 25 - 0 \times 0$	in this box
Row 1	<b>24</b> × 2	26	$= 624 = 25 \times 25 - 1 \times 1$	
Row 2	23 × 2	27	$= 621 = 25 \times 25 - 2 \times 2$	
Row 3	22 × 2	28	$= 616 = 25 \times 25 - 3 \times 3$	
On the dotted lin	e below complet	te Row 4		
Row 4		•••••		. 2
Which row will h	nave a total of 57	76?		
What is the total	of row 12?		••••••	2
, , , , , , , , , , , , , , , , , , , ,	01101111 <b>2</b> 0			2
A second pattern plays each team		two leagues,	where each team in league A	
TEAMS MATCHES	<b>2</b> A1 vs B1	<b>4</b> A1 vs B1	<b>6</b> A1 vs B1	
		A1 vs B2 A2 vs B1		
		A2 vs B1 A2 vs B2		
			A2 vs B2	
			A2 vs B3	
			A3 vs B1	
			A3 vs B2	
TOTAL	1	4	A3 vs B3 9	
Each total is obta	nined by countin	g the number	of matches.	
What is the TOT	AL number of l	eague matche	es for 8 TEAMS?	
What number of matches?	TEAMS would	there be in a	league with a TOTAL of 400	2
			•••••	2

	Do not
A bag of pick-n-mix contains 12 Caramels, 5 Nougats and 8 Pralines. I select a sweet at random from the bag.	write in this box
(i) What is the probability that my sweet is not a Nougat?	1
(j) What is the probability that my sweet is a Liquorice?	1
I eat the first sweet. I now select a second sweet.	
(k) If my first sweet was a Nougat, what is the probability that my second sweet is another Nougat?	2
(l) If my first sweet was a Praline what is the probability that my second	
sweet is a Caramel?	
	2
It is estimated that the population of the UK goes up by 1% every year.  According to the January 2011 census, there were 61,000,000 people living in the UK.	
(v) What was the UK population in January 2012?	
	2
(vi) In the next census, 2021, what is the expected UK population (nearest whole number)?	
	3
••••••••••••	
At the start of which year will the population first be greater than 70 million?	
	3
END OF EXAMINATION IF YOU HAVE TIME CHECK YOUR WORK	

#### **Reigate Grammar School**



### 13+ Entrance Examination November 2012

#### **MATHEMATICS**

Time allowed: 20 minutes

- Work through the paper carefully
- You do not have to finish everything
- Do not spend too much time on any single question
- Show any working in the spaces provided
- Use the blank left hand pages for rough work

PAGE	1	2	3	TOTAL
MARK	18	24	18	60
MARK				



PAGE 1
ANSWER ALL QUESTIONS IN THE SPACES PROVIDED, SHOWING ANY
NECESSARY WORKINGS

	NECESSARY WORKIN	165	
2012 + 499 =	2012 – 499 =	What is 2012 x 100?	DO NOT WRITE IN THIS BOX
			1
			1 1
Han your proving	Use these last two	Hee wour provious	-
Use your previous answer to write down 2012 x 50	answers to write	Use your previous answer to write down 20.12 x 1.5	1
1011 X 30	G0001 2022 X 200	2011 X 110	1
			1
2012 - 9 =	2012 - 90 =	2012 - 900 =	
			1
			1
			1
Given that 31 x 16 = 496	What is 700 x 15 ?	What is 600 ÷ 1000?	1
430			1
What is 496 ÷ 16 ?			1
Wildt is 450 + 10 !	What is 700 x 1.5?	What is 600 ÷ 2000?	1
			1
What is 49600 ÷ 16?			1
	144 1 700 0 453	N/I 1 COC - 2723	1
	What is 700 x 0.015?	What is 600 ÷ 250?	1 1
What is (496+496) ÷ 8?			-
<u> </u>		1	1

PAGE 2

	PAGE Z		
Which of these three	What is 10% of	Find one seventh of	DO NOT
is the largest and	£4000?	560	WRITE
_	14000.	300	THIS
which is the smallest?			вох <b>1</b>
_			
8% 0.1 <sup>1</sup> / <sub></sub>	What is 5% of £4000?		1
11			
			1
	What is 21/ % of		1
	What is $2^1/_2\%$ of		1
	£4000?	Use your answer to	
Largest =		find five sevenths of	1
Laigest –		560	
	Use your answers to		1
Smallest =	find 27 <sup>1</sup> / <sub>2</sub> % of £4000		1
	11110 27 /2% 01 £4000		_
Add together	Richard is 15 years	Write down a decimal	1
	old.	between 95% and 96%	
1 of 20			1
$\frac{1}{5}$ of 20	Adam is four times as		1
			1
$\frac{2}{3}$ of 33	old as Richard.		
3 01 33			1
	Will is $\frac{5}{2}$ of Adam's		_
and $\frac{1}{2}$ of 9	Will is – of Adam's	Write down a fraction	1
2013	age.	between 20% and 25%	1
		between 20% and 25%	
			1
			1
	What is their total		
	age?		
What are the next	Put these decimals in		
two numbers in these	order, starting with		2
series	_		2
series	the largest.		
3, 12, 48, 192,	0.072, 0.69, 0.7		
			1
		What fraction of this	
		flag is shaded?	
and		_	1
		How many more	
1, 3, 4, 7, 11, 18,		•	1
		rectangles need to be	
		shaded to fill $\frac{2}{3}$ of the	
_		flag?	
and			

PAGE 3

Work out 1 4	Work out 11 2	Add together the following, giving your	DO NOT WRITE IN
5 + 15	12 3	answer as a DECIMAL	THIS BOX
		46%, 0.258 and $\frac{3}{5}$	1 1
			1
			1
			1 1
			1
What is the biggest number that divides exactly into	What is the smallest number that 4, 5, and 6	Find two numbers that have a difference of 11 and add up to 23	1
30, 42 and 54?	all divide into?	•	1
			1
Nul. 1: 0.40 '::	4		
What is 0.13 written as a fraction?	What is $\frac{1}{4}$ written as a decimal?	Name the shapes below	1 1
			1
What is 0.0013 written as a fraction?	What is $\frac{1}{400}$ written		1 1
written as a fraction:	as a decimal?		1
What is 0.1313	7 What is written		1 1
written as a fraction?	as a decimal?		



