REIGATE GRAMMAR SCHOOL

NOVEMBER 2010

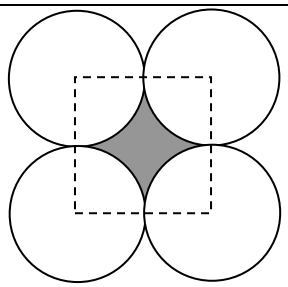
MATHEMATICS
CALCULATOR PAPER

Time allowed: 45 minutes

NAME……

- **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** **(i)** s **when** t **= 9 and** u **= 12** …… **(ii)** u **when** s **= 1000 and** t **= 8** ……	**Do not write in this box** **3** **4**
Solve the equations **3**x **= 7**x **– (10 –** x**)** …… $\frac{x}{2} - \frac{x}{5} = 6$ …… $\frac{3x}{5} = \frac{2}{3}$ …… $\frac{3}{x} = 12$ ……	**3** **3** **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 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.** **……..** **Find the cost of each kitten and each puppy** **Kitten =……..** **Puppy = ……..**	**2** **3**

Look at the pattern below

		TOTAL	
Row 1	**29 × 31**	**= 899**	**= 30 × 30 -- 1 × 1**
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 line below complete Row 5

Row 5…… **2**

Which row will have a total of 836?

…… **2**

What is the total of row 20?

…… **2**

Now look at this second pattern

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 obtained by counting the number of matches in a league.

What is the TOTAL number of league matches for 7 TEAMS?

……

What number of TEAMS would there be in a league with a TOTAL of 91 matches? **2**

…… **2**

Do not write in this box

	Do not write in this box
A pick'n'mix bag contains 10 swizzles, 7 toffees and 8 gob-stoppers. I select a sweet from the bag.	
(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?	
……	**3**
END OF EXAMINATION **IF YOU HAVE TIME CHECK YOUR WORK**	

13+ Entrance Examination

NOVEMBER 2010

MATHEMATICS
NON CALCULATOR PAPER

Time allowed: 20 minutes

NAME……

- **Work through the paper carefully**
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Page 1

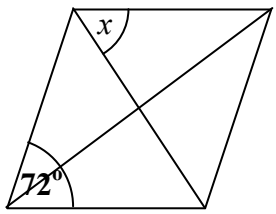
Complete each of the following, showing your working in the space provided

2011 + 999 =	**2011 – 999 =**	**2011 × 11 =**	**Do not write in this box** **1** **1** **1**
Use your previous	**What is 24 × 9?**	**Use your previous**	

answer to find **20.11 × 1.1 =**		**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** **Use this answer to find** **475 ÷ 19 =** **and** **47500 ÷ 19 =** **and** **(475 + 475) ÷ 19 =**	**Given that** **567 ÷ 27 = 21** **Use this answer to find** **567 ÷ 21 =** **and** **56.7 ÷ 2.7 =**	**What is 4000 ÷ 40** **…….** **Use your answer to write down the answers to** **4000 ÷ 20** **…….** **4000 ÷ 80** **…….**	 **1** **1** **1** **1** **1** **1** **1** **1**

Page 2

Write these three quantities in order of size, starting with the <u>smallest</u> first. $\frac{5}{6}$, **0.8, 9%**	**What is $7\frac{1}{2}$% of £400**	**Find five eighths of 408p** **……..**	**Do not write in this box** **2** **2** **2**

……..	…….		
Solve these equations $3x-4=2(13-x)$ …….. $\frac{x+5}{4}=\frac{1}{2}$ ……...	$\frac{14}{15}\times\frac{5}{7}+\frac{1}{2}$ …….. $\left(\frac{4}{5}-\frac{2}{3}\right)\div 2\frac{1}{2}$ …….	**Write down a <u>fraction</u> between 0.16 and 0.17** --------- **Write down a <u>decimal</u> between $\frac{1}{3}$ and** 30% ---------	**3** **3** **3** **3** **1** **1**
Find the next 2 terms in the sequence: **2, 5, 7, 12, 19, 31, …** …… …….	**What is ⅜ as:** **A decimal?** …….. **A percentage?** ……..	**A father share out £35 pocket money in the ratio of 3:5:6. How much does each child get?** -------, -------, -------	**2** **1** **1** **4**
Drawn below is a rhombus and its diagonals. Find the value of *x*.  …….			**3**

REIGATE GRAMMAR SCHOOL

13+ Entrance Examination
November 2011

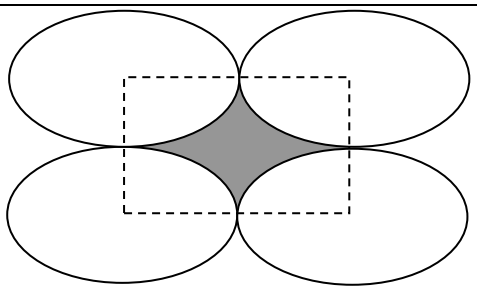
MATHEMATICS

Time allowed: 45 minutes

NAME.....

- **Work through the paper carefully**
- **<u>You do not have to finish everything</u>**
- **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** **(iii)** s **when** t **= 9 and** u **= 12** …… **(iv)** u **when** s **= 1000 and** t **= 8** ……	**Do not write in this box** **3** **4**
Solve the equations **3**x **= 7**x **– (10 –** x**)** …… $\frac{x}{2} - \frac{x}{5} = 6$ …… $\frac{3x}{5} = \frac{2}{3}$ …… $\frac{3}{x} = 12$ ……	**3** **3** **3** **2**

 **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.** **……..**	**Do not write in this box** **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.** **……..** **Assuming all hens are the same price and all ducks are the same price, find the cost of each hen and each duck.** **Hen =……..** **Duck = ……..**	**2** **3**

Look at the pattern below

		TOTAL	
Row 0	**12 × 12**	**= 144**	**= 12 × 12 -- 0 × 0**
Row 1	**11 × 13**	**= 143**	**= 12 × 12 -- 1 × 1**
Row 2	**10 × 14**	**= 140**	**= 12 × 12 -- 2 × 2**
Row 3	**9 × 15**	**= 135**	**= 12 × 12 -- 3 × 3**

On the dotted line below complete Row 4

Row 4…… **2**

Which row will have a total of 95?

…… **2**

What is the total of row 13?

…… **2**

Now look at this second pattern

TEAMS	**2**	**3**	**4**	**5**
MATCHES	A vs B	A vs B A vs C B vs C	A vs B A vs C A vs D B vs C B vs D C vs D	A vs B A vs C A vs D A vs E B vs C B vs D B vs E C vs D C vs E D vs E
TOTAL	**1**	**3**	**6**	**10**

Each total is obtained by counting the number of matches in a league.

What is the TOTAL number of league matches for 8 TEAMS?

……

What number of TEAMS would there be in a league with a TOTAL of 104 matches? **2**

…… **2**

Do not write in this box

	Do not write in this box
A bag of mini-cheeses contains 16 Cheddars, 13 Stiltons and 7 Red Leicesters. I select a mini-cheese from the bag.	
(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**	

REIGATE GRAMMAR SCHOOL

13+ Entrance Examination
November 2011

MATHEMATICS

Time allowed: 20 minutes

NAME.....

- **Work through the paper carefully**
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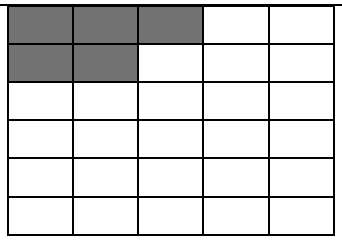
PAGE	1	2	3	TOTAL
MARK	18	24	18	60
MARK				

PAGE 1

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

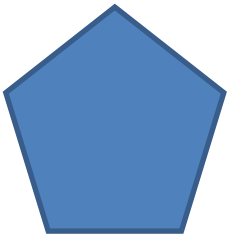
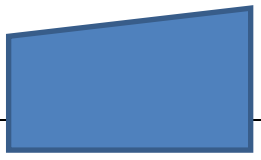
2002 + 999 =	**2002 – 999 =**	**What is 2002 x 10?**	DO NOT WRITE IN THIS BOX **1** **1** **1**
Use your previous answer to write down 2002 x 5	**Use these last two answers to write down 2002 x 15**	**Use your previous answer to write down 20.02 x 1.5**	**1** **1** **1**
2002 - 7 =	**2002 - 70 =**	**2002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

PAGE 2

Which of these three is the largest and which is the smallest? **70% 0.65 $\frac{4}{5}$** **Largest =** **Smallest =**	**What is 10% of £600?** **What is 5% of £600?** **What is $2^{1}/_{2}$% of £600?** **Use your answers to find $17^{1}/_{2}$% of £600**	**Find one ninth of 360** **Use your answer to find four ninths of 360**	**DO NOT WRITE IN THIS BOX** **1** **1** **1** **1** **1** **1** **1** **1**
Add together **$\frac{1}{4}$ of 24** **$\frac{2}{5}$ of 30** **and $\frac{1}{2}$ of 15**	**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?**	**Write down a decimal between 75% and 80%** **Write down a fraction between 60% and 70%**	**1** **1** **1** **1** **1** **1** **1** **1** **1**
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.** **0.101, 0.011, 0.11**	 **What fraction of this flag is shaded?** **How many more rectangles need to be**	**2** **2** **1** **1** **1**

and		shaded to fill $\frac{2}{3}$ of the flag?	

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