



REIGATE GRAMMAR SCHOOL

NOVEMBER 2010

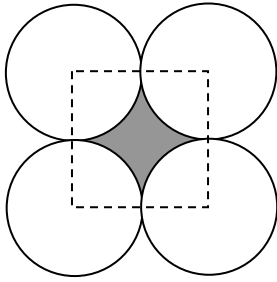
**MATHEMATICS
CALCULATOR PAPER**

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**

| | |
|---|--|
| <p>Given that $s = (t - \frac{1}{2}u)^3$, find</p> <p>(i) s when $t = 9$ and $u = 12$</p> <p>(ii) u when $s = 1000$ and $t = 8$</p> <p>.....</p> <p>.....</p> | <p>Do not write in this box</p> <p>3</p> <p>4</p> |
| <p>Solve the equations</p> <p>$3x = 7x - (10 - x)$</p> <p>.....</p> <p>$\frac{x}{2} - \frac{x}{5} = 6$</p> <p>.....</p> <p>$\frac{3x}{5} = \frac{2}{3}$</p> <p>.....</p> <p>$\frac{3}{x} = 12$</p> <p>.....</p> | <p>3</p> <p>3</p> <p>3</p> <p>2</p> |



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.

.....

2

Find the cost of each kitten and each puppy

Kitten =

Puppy =

3

| | | | | |
|--|----------------|---|--|--|
| Look at the pattern below | | | Do not write in this box | |
| Row 1 | 29×31 | TOTAL $= 899 = 30 \times 30 - 1 \times 1$ | | |
| Row 2 | 28×32 | $= 896 = 30 \times 30 - 2 \times 2$ | | |
| Row 3 | 27×33 | $= 891 = 30 \times 30 - 3 \times 3$ | | |
| Row 4 | 26×34 | $= 884 = 30 \times 30 - 4 \times 4$ | | |
| 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 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 7 TEAMS? | | | | |
| | | | | |
| What number of TEAMS would there be in a league with a TOTAL of 91 matches? | | | | 2 |
| | | | | |
| | | | | 2 |

| | |
|---|---|
| <p>A pick'n'mix bag contains 10 swizzles, 7 toffees and 8 gob-stoppers. I select a sweet from the bag.</p> <p>(a) What is the probability that my sweet is not a swizzle?</p> <p>(b) What is the probability that my sweet is a chocolate peanut?</p> <p>I eat the first sweet. I now select a second sweet.</p> <p>(c) If my first sweet was a toffee what is the probability that my second sweet is another toffee?</p> <p>(d) If my first sweet was a toffee what is the probability that my second sweet is a gob-stopper?</p> | <p>Do not write in this box</p> <p>1</p> <p>1</p> <p>2</p> <p>2</p> |
| <p>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.</p> <p>(i) How much was it worth in January 2010?</p> <p>(ii) How much will it be worth in January 2015?</p> <p>At the start of which year will the value of the ingot first be more than £20000?</p> <p style="text-align: center;">END OF EXAMINATION IF YOU HAVE TIME CHECK YOUR WORK</p> | <p>2</p> <p>3</p> <p>3</p> |

13+ Entrance Examination

NOVEMBER 2010

MATHEMATICS

NON CALCULATOR PAPER

Time allowed: 20 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

Page 1

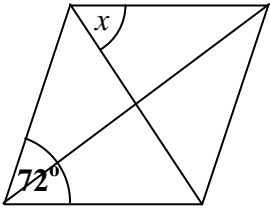
Complete each of the following, showing your working in the space provided

| | | | |
|-------------------|-------------------------|--------------------|-----------------------------------|
| $2011 + 999 =$ | $2011 - 999 =$ | $2011 \times 11 =$ | Do not write in this box |
| | | | 1 |
| | | | 1 |
| | | | 1 |
| Use your previous | What is 24×9 ? | Use your previous | |

| | | | |
|--|---|--|--|
| answer to find $20.11 \times 1.1 =$ | | 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 $25 \times 19 = 475$ Use this answer to find $475 \div 19 =$ and $47500 \div 19 =$ and $(475 + 475) \div 19 =$ | Given that $567 \div 27 = 21$ Use this answer to find $567 \div 21 =$ and $56.7 \div 2.7 =$ | What is $4000 \div 40$ Use your answer to write down the answers to $4000 \div 20$ $4000 \div 80$ | 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 |
|--|--|---|---|

| | | | |
|---|--|---|---|
| <p>.....</p> <p>Solve these equations $3x - 4 = 2(13 - x)$</p> <p>.....</p> <p>$\frac{x+5}{4} = \frac{1}{2}$</p> <p>.....</p> | <p>.....</p> <p>$\frac{14}{15} \times \frac{5}{7} + \frac{1}{2}$</p> <p>.....</p> <p>$\left(\frac{4}{5} - \frac{2}{3}\right) \div 2\frac{1}{2}$</p> <p>.....</p> | <p>Write down a <u>fraction</u> between 0.16 and 0.17</p> <p>-----</p> <p>Write down a <u>decimal</u> between $\frac{1}{3}$ and 30%</p> <p>-----</p> | <p>3</p> <p>3</p> <p>3</p> <p>3</p> <p>1</p> <p>1</p> |
| <p>Find the next 2 terms in the sequence: 2, 5, 7, 12, 19, 31, ...</p> <p>.....</p> | <p>What is $\frac{3}{8}$ as: A decimal?</p> <p>.....</p> <p>A percentage?</p> <p>.....</p> | <p>A father share out £35 pocket money in the ratio of 3:5:6. How much does each child get?</p> <p>-----, -----, -----</p> | <p>2</p> <p>1</p> <p>1</p> <p>4</p> |
| <p>Drawn below is a rhombus and its diagonals. Find the value of x.</p> <div style="text-align: center;">  </div> <p>.....</p> | | | <p>3</p> |



REIGATE GRAMMAR SCHOOL

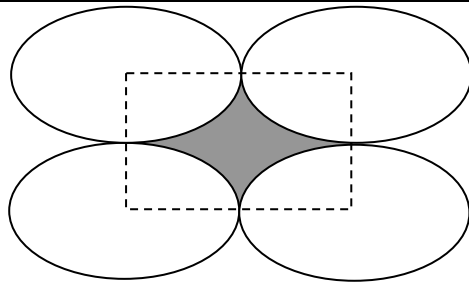
**I3+ Entrance Examination
November 2011**

MATHEMATICS

Time allowed: 45 minutes

NAME.....

- 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



Do not write in this box

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

.....

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.

Hen =

Duck =

3

| | | | | |
|---|----------------|--|--|--|
| Look at the pattern below | | | Do not write in this box | |
| Row 0 | 12×12 | TOTAL $= 144 = 12 \times 12 -- 0 \times 0$ | | |
| Row 1 | 11×13 | $= 143 = 12 \times 12 -- 1 \times 1$ | | |
| Row 2 | 10×14 | $= 140 = 12 \times 12 -- 2 \times 2$ | | |
| Row 3 | 9×15 | $= 135 = 12 \times 12 -- 3 \times 3$ | | |
| 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? | | | | |
| | | | | |

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



REIGATE GRAMMAR SCHOOL

I3+ Entrance Examination November 2011

MATHEMATICS

Time allowed: 20 minutes

NAME.....

- 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 | | | | |

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

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

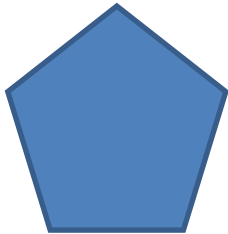

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PAGE 2

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|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <p>Which of these three is the largest and which is the smallest?</p> <p>70% 0.65 $\frac{4}{5}$</p> <p>Largest =</p> <p>Smallest =</p> | <p>What is 10% of £600?</p> <p>What is 5% of £600?</p> <p>What is $2\frac{1}{2}\%$ of £600?</p> <p>Use your answers to find $17\frac{1}{2}\%$ of £600</p> | <p>Find one ninth of 360</p> <p>Use your answer to find four ninths of 360</p> | <p>DO NOT WRITE IN THIS BOX</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Add together</p> <p>$\frac{1}{4}$ of 24</p> <p>$\frac{2}{5}$ of 30</p> <p>and $\frac{1}{2}$ of 15</p> | <p>Richard is 12 years old.</p> <p>Adam is twice as old as Richard.</p> <p>Will is $\frac{2}{3}$ of Adam's age.</p> <p>What is their total age?</p> | <p>Write down a decimal between 75% and 80%</p> <p>Write down a fraction between 60% and 70%</p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>What are the next two numbers in these series</p> <p>1, 4, 8, 13, 19,.....</p> <p>and</p> <p>1, 1, 2, 3, 5, 8,.....</p> | <p>Put these decimals in order, starting with the largest.</p> <p>0.101, 0.011, 0.11</p> | <table border="1" data-bbox="954 1518 1281 1747"> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td> </tr> </table> <p>What fraction of this flag is shaded?</p> <p>How many more rectangles need to be</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> |
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| and | | shaded to fill $\frac{2}{3}$ of the flag? | |
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PAGE 3

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

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