The King's School
and
The Junior King's School
Canterbury

2011 Entrance Examinations (12+)

MATHEMATICS

45 minutes

There are two sections: one multiple choice, and one requiring written answers.

<u>Timing</u>: you should allow about 25-30 minutes for section A and the remainder of time for section B(multiple choice questions)

<u>Multiple choice sections</u>: ring clearly the correct answer (one in each question).

CALCULATORS ARE <u>NOT</u> ALLOWED

NAME: ..... AGE: .....

PRESENT SCHOOL: .....

Total ..../48..... ***%*** .....

***Written Section**: write your working and answers on the paper in the spaces provided. Show all working.*

1. What is the probability of rolling a number three on a fair dice?

   …… (1)

2. A dice is rolled 400 times. The number 3 comes up 10 times. Is this a normal fair dice? Explain your answer.



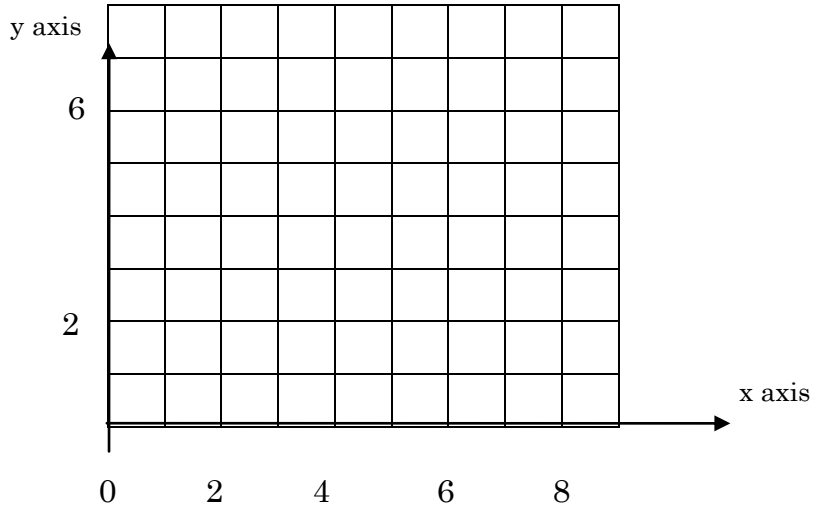
(2)

3. Share £450 in the ratio 4:1

(3)

4. a) Plot the points on the graph below

A (0,7) **B** (6,1) and **C**(6,5). Join them to make a triangle.



b) What type of triangle is this?

……..

c) What co-ordinate point is the middle of line **BC**?

……..

(5)

5. a) Multiply out the brackets

$-4(7x-2)$

……

b) Simplify

$-7a - 2b - 17b + 3a$

……

c) $8y^2 \times 2x^3y^5$

…… (6)

6. calculate the answers

7. a) $8\frac{3}{4} + 2\frac{3}{5}$

(3)

b) $4\frac{1}{5} \times 4\frac{2}{7}$

(3)

c) $3\frac{3}{7} \div \frac{3}{14}$

(3)

8. Calculate a) $1.08 + 2.779$

(2)

……

b) 7×2.8

(2)

……

c) $(0.06)^2$

(2)

……

9. Choose from these numbers below

3 27 6 13 20

a) a prime number .....

b) a triangular number .....

c) a factor of 81 .....

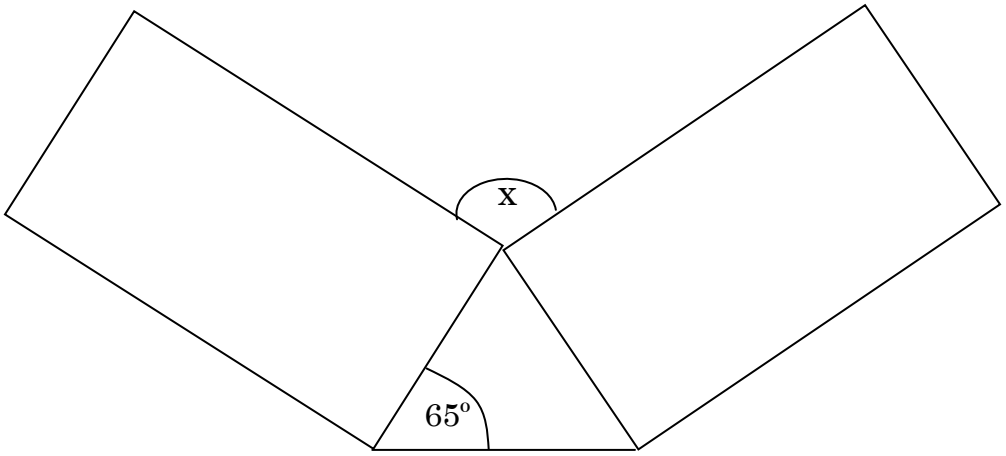
(3)

10. 50 million people go to America each year on holiday. 20% who go are from England. How many are from England?

..... are from England

(2)

11. This picture is of two identical rectangles. What is the value of the angle **x** ? Show working.



X = …… °

(3)

12. Natasha went bug hunting. She collected some ants (6 legs), and some spiders (8 legs). Se collected 13 bugs with 82 legs in total. How many ants were there and how many spiders?

(2)

13. A box half full of apples weighs 40kg and the same box one fifth full weighs 22kg, what does the box weigh when empty?

(3)

14. What is the smaller angle between the hands of a clock at 12.20? (It is NOT 120º!)

(3)

END OF WRITTEN SECTION

Number Patterns: *Ring the next number in the series – think about how to get from the first number to the second.*
Each question has a new rule.
Circle the correct answer in each case.

Example

[3 → 4] [12 → 13] [6 → ?] answer.... (a) 4 (b) 5 (c) 6 (d) 7 (e) 8

1) [3 → 8] [4 → 10] [2 → ?] **answer...** (a) 3 (b) 4 (c) 6 (d) 7 (e) 8

2) [3 → 9] [5 → 13] [12 → ?] **answer....** (a) 20 (b)27 (c) 17 (d) 24 (e) 25

3) [4 → 15] [3 → 12] [5 → ?] **answer...** (a) 14 (b) 15 (c) 16 (d) 18 (e) 20

5) [9 → 3] [12 → 4] [27 → ?] **answer...** (a) 5 (b) 9 (c) 13 (d) 19 (e) 21

***Number Series**: work out which number comes next in the following sequences of numbers. Circle the correct answer in each case.*

Example

2 4 6 8 10 → **answer...** (a) 6 (b) 8 (c) 12 (d) 16 (e) 20

1) **5 4 6 5 7** → **answer...** (a) 2 (b) 4 (c) 6 (d) 8 (e) 10

2) $\frac{8}{9}$ $\frac{7}{9}$ $\frac{2}{3}$ $\frac{5}{9}$ $\frac{4}{9}$

→ **answer...** (a) $\frac{1}{9}$ (b) $\frac{1}{6}$ (c) $\frac{2}{9}$ (d) $\frac{1}{3}$ (e) $\frac{1}{2}$

3) **6 8 11 5 7 10** → **answer...** (a) 2 (b) 4 (c) 6 (d) 8 (e) 12

4) **1 4 8 2 5 9** → **answer...** (a) 3 (b) 4 (c) 6 (d) 7 (e) 11

***Equation Building**: in each question, use all the given numbers and signs once to make **one** of the numbers in the given answers. Circle the correct answer in each case.*

Example

5 6 2 × ÷ → **answer...** (a) 3 (b) 5 (c) 10 (d) 12 (e) 15

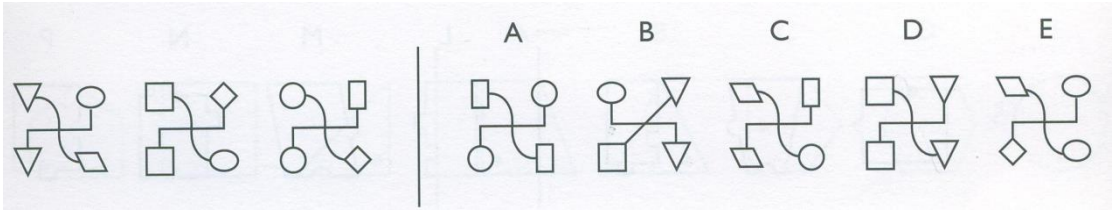
1) **3 3 5 + -** → **answer...** (a) 0 (b) 1 (c) 6 (d) 8 (e) 7

2) **6 3 2 × ÷** → **answer...** (a) 2 (b) 5 (c) 10 (d) 9 (e) 40

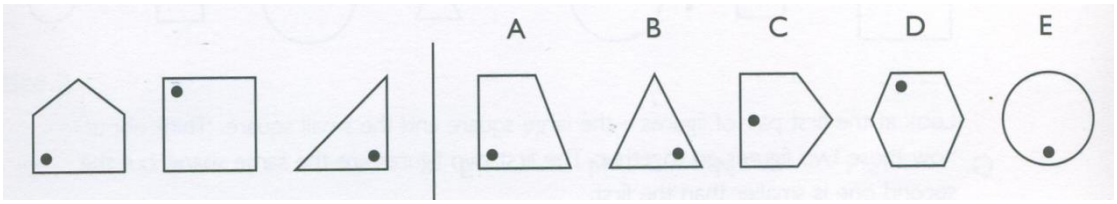
3) **8 8 8 + -** → **answer...** (a) 0 (b) 3 (c) 8 (d) 18 (e) 27

***Figure Classification**: Choose a shape from the right hand side (with letters) which follows the same rule as the first three shapes(without letters)*
Circle one shape as your answer.

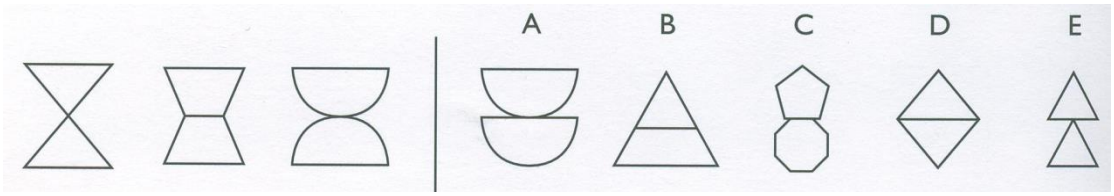
1)



2)



3)



***General multiple choice questions**: circle the correct answer in each case.*

1) The first day of the summer holiday is 3rd July 2011 and the children go back to school on 5th September 2011. How many days' holiday is this?

a) 60 b) 61 c) 62 d) 63 e) 64

2) Which of these fractions expressions has the **smallest** value?

(a) $\frac{1}{2}-\frac{1}{6}$ (b) $\frac{1}{2}\times\frac{1}{6}$ (c) $\frac{1}{6}\div\frac{1}{2}$ (d) $\frac{1}{6}+\frac{1}{2}$ (e) $\frac{1}{2}\div\frac{1}{6}$

3) If you are told that

$$730 \times 29 = 21170$$

then which of the following is true?

a) $0.73 \times 2.9 = 21.17$

b) $0.73 \times 0.029 = 2.117$

c) $21.17 \div 73 = 2.9$

d) $211.7 \div 2.9 = 73$

END OF MULTIPLE CHOICE SECTION