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

Entrance Examinations (12+) 2012
MATHEMATICS
45 minutes

There are 2 sections: Section A is a written section and Section B is multiple choice.

You should allow about 25-30 minutes for section A.

In the multiple choice section, please ring clearly the one correct answer.

CALCULATORS ARE NOT ALLOWED

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

PRESENT SCHOOL: .....

Total =

***Written Section**: write in the spaces provided. Show all of your working.*

Q1. Find the mean and the median for the following set of numbers:

3 5 6 4 9

Mean = ……

Median = ……

(2)

Q2. Find the volume and surface area of a cuboid with a length of 8cm, a width of 5cm and a height of 7cm

Volume = ……..

Surface area = ……

(3)

Q3. Calculate: (a) 1.08 + 2.779

……(1)

(b) 1365 ÷ 15

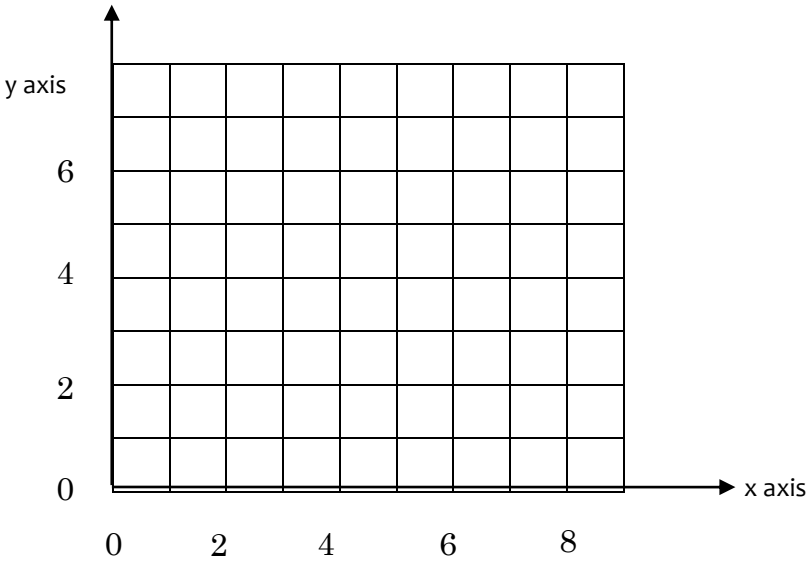
……(2)

(c) 34.7 × 1.9

……(2)

Q4. (a) Plot the points on the graph below and then join them to make a triangle

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



(b) What type of triangle is this?

……

c) Write the co-ordinate of the mid-point of line BC?

(……,……)

(4)

Q5. Multiply out the brackets:

$-4(7x-2)$ ……

(1)

Q6. Simplify

(i) $-7a-2b-17b+3a$ ……

(ii) $8y^2 \times 2x^3y^5$ ……

(4)

Q7. Showing ALL of your working, calculate the following:

a) $\mathbf{4\frac{3}{4} + 2\frac{3}{5}}$

(2)

b) $\mathbf{2\frac{1}{5} \times 3\frac{2}{7}}$

(3)

c) $\mathbf{2\frac{3}{7} \div \frac{3}{14}}$

(3)

Q8. The cost of a house increased by 15% from the beginning of 2010 to the beginning of 2011. At the beginning of 2010, the house cost £200 000. Find the cost of the house at the beginning of 2011.

……(3)

Q9. For each sequence, find the next 2 terms and then write an expression for the nth term:

a) 6 12 18 24 30 …

b) 7 10 13 16 19 …

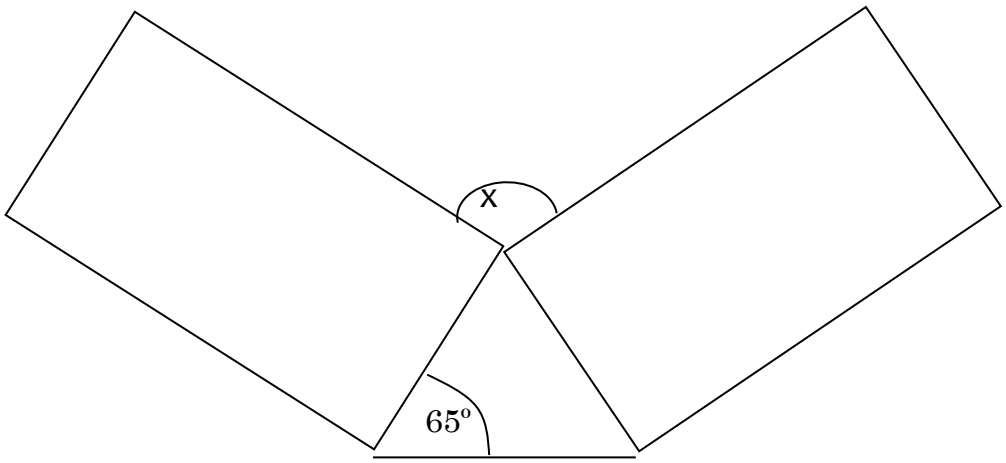
c) 2 5 10 17 26 …

(6)

Q10. Write 144 and 180 as products of their prime factors and then use your answers to find the lowest common multiple of 144 and 180.

(3)

Q11. This picture is of two identical rectangles. Calculate the value of the angle **x** **s**howing all of your working.



X = …… °

(2)

Q12. Billy is 3 years older than Bert. Bernard is twice Billy's age. The sum of their ages is 53 years. Find Bert's age.

……(3)

Q13. On a farm there are a total of 14 animals of which some are sheep and some are chickens. There are a total of 44 legs. Find how many sheep there are on the farm.

…… sheep

(3)

Q14. Find the smaller angle between the hands of a clock at exactly 3.30? (hint: it is NOT 90°!)

……°

(3)

END OF WRITTEN SECTION
TOTAL = 50 MARKS

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

4) [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

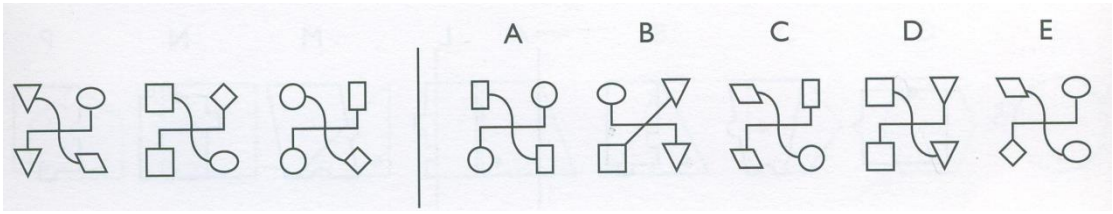
1) **3 3 5 + -** → **answer...** (a) 0 (b) 1 (c) 6 (d) 8 (e) 7

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

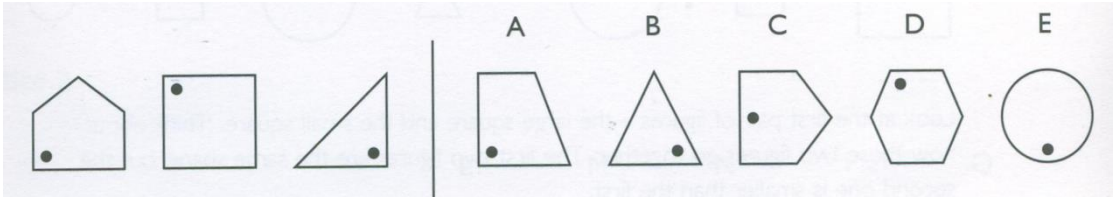
3) **8 8 8 + -** → **answer...** (a) 0 (b) 3 (c) 8 (d) 18 (e) 27

***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.

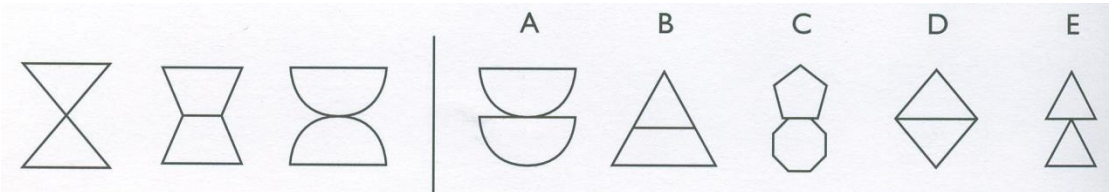
1)



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
TOTAL = 17 MARKS