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

Entrance Examinations (11+) 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 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. Calculate the following:

(a) 587 + 331

……

(b) 1746 – 829

……

(c) 147 × 37

……

(d) £175.65 ÷ 5

……

(e) 7695 ÷ 15

……

(f) 63.5 × 1.7

……

(12)

Q2. Find, and list in order, all of the factors of the number 45

……
(3)

Q3. Write 144 as a product of prime factors.

……
(3)

Q4. What are the next <u>two</u> terms in the following sequence?

5, 6, 8, 11, 15 …

…… , ……
(2)

Q5. Simplify the following expressions:

(a) 2a + a + 3a + a + a

……

(b) 5m + 3n + 6m + 4n + 2m

……
(3)

Q6. Bert has gone on a 28 km bike ride. He has completed ¾ of the journey. How far has he cycled so far?

……
(2)

Q7. I think of a number. I double it, add one, and divide by three. I now have 19. What was the number I first thought of?

……
(2)

Q8. A car is worth £20 000 before VAT is added. If VAT is charged at 20%, how much VAT will be added onto the price of the car?

……
(3)

Q9. In a survey in which 5000 people take part, 1500 incorrectly identify 1 as being a prime number. What percentage of the people who took part in the survey incorrect identified 1 as being a prime number?

……
(3)

Q10. Calculate the answers to the following. Ensure that your answer is simplified fully:

(a) $\frac{3}{4}+\frac{1}{2}$

……

(b) $1\frac{1}{2}-\frac{3}{8}$

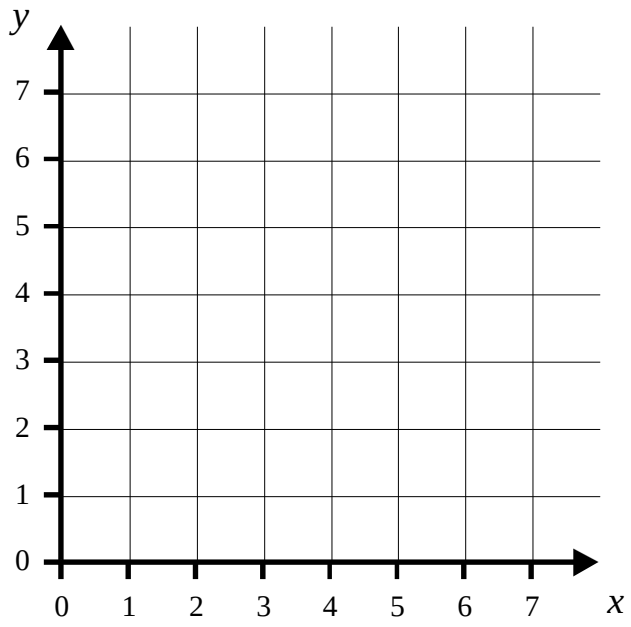
……
(4)

Q11. A triangle has a base of 45cm and a height of 10cm. Find its area

……..
(3)

Q12. Plot the following co-ordinates on the grid below:

P (2, 1) Q (6, 2) R (5, 6)



A fourth coordinate, S, is needed in order to be able to join the 4 points to make a square. Find this coordinate.

(…… , ……)
(4)

Q13. Ten teams took part in a mathematics quiz. Their scores are as follows:

16, 15, 16, 8, 15, 13, 17, 11, 14, 15,

Work out the mean score.

……
(3)

Q14. A rectangle measures 12cm by 3cm. A square has an equal area to the rectangle. Find its perimeter.

……
(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) [5 → 13] [11 → 19] [6 → ?] **answer...** (a) 9 (b) 12 (c) 14 (d) 16 (e) 18

2) [9 → 3] [12 → 4] [27 → ?] **answer...** (a) 5 (b) 9 (c) 13 (d) 19 (e) 21

3) [8 → 2] [12 → 6] [16 → ?] **answer....** (a) 4 (b) 6 (c) 8 (d) 10 (e) 12

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

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

***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) **4 5 8 13 20** → **answer...** (a) 25 (b) 26 (c) 27 (d) 28 (e) 29

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

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

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

***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) **2 3 4 + -** → **answer...** (a) 0 (b) 2 (c) 4 (d) 5 (e) 7

2) **2 5 8 × ÷** → **answer...** (a) 2 (b) 5 (c) 10 (d) 20 (e) 40

3) **9 9 9 + -** → **answer...** (a) 0 (b) 3 (c) 9 (d) 18 (e) 27

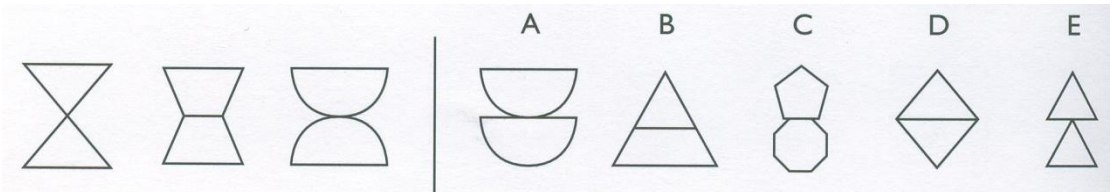
4) **2 5 5 8 × ÷ ÷** → **answer...** (a) 2 (b) 4 (c) 5 (d) 10 (e) 40

5) **5 9 13 × - ( )** → **answer...** (a) 20 (b) 27 (c) 30 (d) 45 (e) 65

6) **2 5 7 10 - - +** → **answer...** (a) -14 (b) -11 (c) -9 (d) -6 (e) -3

***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)



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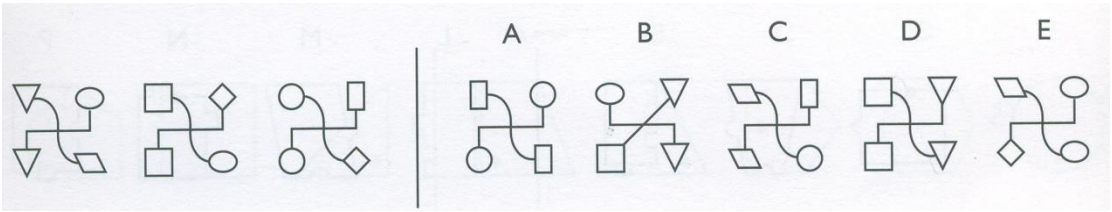

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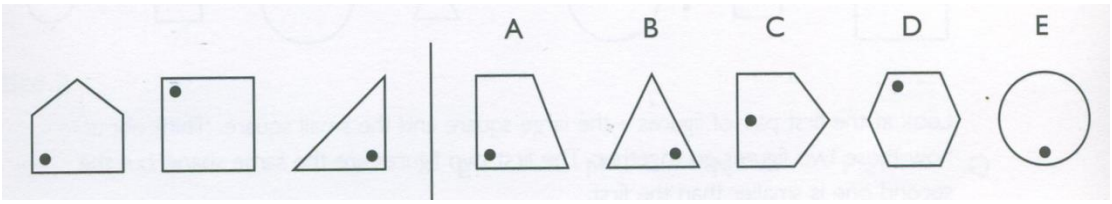
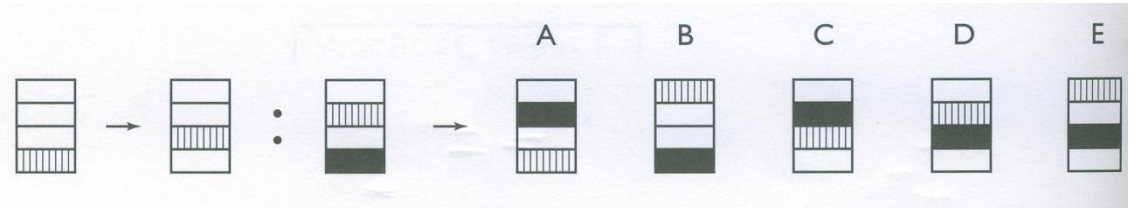


***Figure Analogy**: look at the first two figures in each question. These go together in some way. The **third** figure goes with one of the answer choices. Decide which is the correct answer from the five lettered options and circle your answer.*

1)



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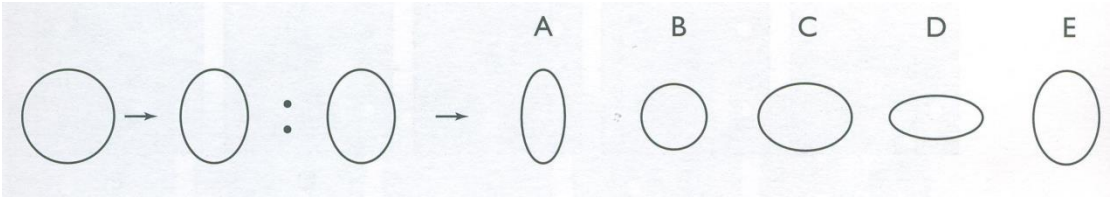
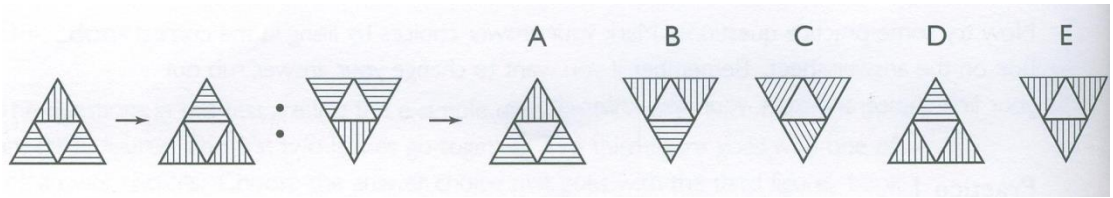


3)



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

1) This year's summer holiday starts on 2nd July 2010 and the children go back on 7th September 2010. How many days' holiday is this?

a) 64 b) 65 c) 66 d) 67 e) 68

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

(a) $\frac{1}{6}+\frac{1}{3}$ (b) $\frac{1}{3}-\frac{1}{6}$ (c) $\frac{1}{3}\times\frac{1}{6}$ (d) $\frac{1}{3}\div\frac{1}{6}$ (e) $\frac{1}{6}\div\frac{1}{3}$

3) If you are told that

$$73 \times 29 = 2117$$

then which of the following is true?

a) $7.3 \times 2.9 = 211.7$

b) $211.7 \div 2.9 = 73$

c) $0.73 \times 0.29 = 2.117$

d) $21.17 \div 73 = 2.9$

e) none of the above.

END OF MULTIPLE CHOICE SECTION
TOTAL = 25 MARKS