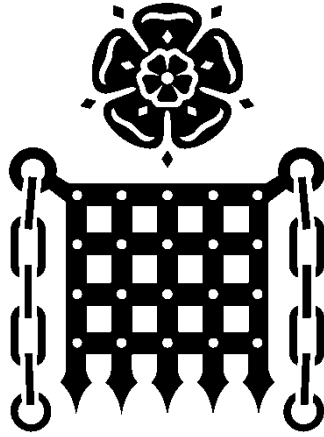


# EMANUEL SCHOOL



## Mathematics

**Autumn term 2013**  
**6<sup>th</sup> form entrance paper**  
**30 minutes**

### Information for pupils

You must show your working clearly in the spaces provided.

This is a multiple choice paper – enter your answers (A, B, C, D or E) in the box provided after each question

Attempt all questions. Do not spend too long on any one question.

**Calculators not allowed.**

At the end of the exam hand in this question paper with all your workings.

Name-

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School-

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1. You are given that  $2786 \times 231 = 643566$ . What is the value of  $643566 \div 27.86$ ?

- A 23100      B 2310      C 231      D 23.1      E 2.31

2. The sum of two numbers is 2. The difference between them is 4. What is their product?

- A -8      B -3      C 0      D 3      E 8

3. Think of a number, double it, then add 3. Multiply your answer by 4 and from this take away 5. Now also take away the number you first thought of. No matter what your first number was, your answer will be a multiple of:

- A 2      B 3      C 5      D 7      E 11

4.  $2x + 1 - 3(2 - x)$  simplifies to:

- A  $5x - 5$       B  $-x - 5$       C  $x - 5$       D  $5 - x$       E  $8x - 5$

5.  $(0.3)^3 - (0.2)^2$  equals:

- A 0.5      B 0.23      C -0.13      D -0.013      E 0.05

6. A rhombus has diagonals of length 2cm and 3cm. What is its area (in  $\text{cm}^2$ )?

- A 2                  B 3                  C 4                  D 5                  E 6

7. A chord of length 10cm is drawn in a circle of diameter 26cm. The distance, in centimetres, of the midpoint of the chord from the centre of the circle is:

- A 13                  B 12                  C 10                  D 24                  E 5

8. The average (mean) of five giant dates was 50g. Kate ate one and the average (mean) weight of the four remaining dates was 40g. What was the weight of the date that Kate ate?

- A 10g                  B 50g                  C 60g                  D 90g                  E more information is needed

9. The equation of a line is  $2y + 3x = 20$ . What is its gradient?

- A 3                  B -3                  C  $2/3$                   D  $-3/2$                   E 2

10. My bargain settee cost me £240 in a sale offering 25% reduction on all items. How much did I save?

- A £25                  B £40                  C £60                  D £80                  E £100

11. If  $a + b = 7$ ,  $b + c = 9$ ,  $a + c = 8$ , then  $abc$  is:

- A 60          B 63          C 64          D 27          E 120

12. A rectangular co-ordinate system has axes with scale 1cm as the unit of length.

$\Delta PQR$  has vertex P at (0,3), Q at (4,0) and vertex R at (k,5)

where  $0 < k < 4$ . If the area of this triangle is  $8\text{cm}^2$ , then the value of k is:

- A 1          B  $2\frac{2}{3}$           C 2          D  $3\frac{1}{4}$           E  $3\frac{1}{2}$

13. I walk to the bike shop at 3 miles per hour and cycle back along the same route at 12 miles per hour. What is my average speed, in miles per hour, for the time I am actually travelling on the route?

- A 3.75          B 4.8          C 6          D 8          E 9

14. What is the largest power of 2 that divides  $127^2 - 1$ ?

- A  $2^1$           B  $2^7$           C  $2^8$           D  $2^{63}$           E  $2^{127}$

15. Given that  $4^x + 4^x + 4^x + 4^x = 4^{16}$ , what is the value of x?

- A 2          B 4          C 8          D 12          E 15

**The end. Check your answers carefully.**