SEVENOAKS SCHOOL

YEAR 7 (11+) ENTRANCE EXAMINATION
January 2017
for entry in September 2017

MATHEMATICS

Name: _____

School: _____

Time allowed: 1 hour

Equipment needed: Pen, pencil, eraser, ruler.

Information for candidates:

1. Calculators are NOT allowed.
2. Write your name and school on this sheet.
3. Write your answers on the question paper in the space provided.
4. There are 19 questions in this paper, try to answer all of them, but don't worry if you don't complete the paper. If you get stuck, just go on to the next question and if you have time at the end come back to the one(s) you left.
5. There are 60 marks in total available for this paper. Marks for each question are shown in square brackets [ ] after the question.
6. Show all your working. You may be awarded marks for correct working even if your final answer is incorrect, and a correct answer unsupported by correct working may not receive full marks.

1. In one week, the hens on the Billings family farm lay 389 eggs. The eggs are packaged in boxes of twelve.

   a) How many boxes can be filled?

   _____ [1 mark]

   b) How many eggs are left over?

   _____ [1 mark]

   The family keep eight of the filled boxes to give to friends. The rest are sold in the farm shop.

   c) What percentage of the filled boxes are sold in the farm shop?

   _____ [1 mark]

2. The cost of one original glazed doughnut is £1.45.

   a) Find the cost of twelve doughnuts.

   _____ [2 marks]

   The doughnut seller is offering customers a special deal: "Twelve doughnuts for £9.45"

   b) How much will each customer save?

   _____ [1 mark]

3. Write down the next **two** numbers in each of the following sequences.

a) $-2.0\ ,\ -1.7\ ,\ -1.4\ ,\ -1.1\ ,$

_____ [1 mark]

b) $15\ ,\ 11\ ,\ 7\ ,\ 3\ ,$

_____ [1 mark]

c) $0\ ,\ \frac{3}{5}\ ,\ 1\frac{1}{5},\ 1\frac{4}{5}\ ,$

_____ [1 mark]

d) $5\ ,\ 8\ ,\ 13\ ,\ 20\ ,$

_____ [1 mark]

4. a) Calculate $5 + 8 \times -7 - 9$

_____ [1 mark]

b) Calculate $(48 \div 8) - (7 - 12)$

_____ [1 mark]

5. To make eight 200ml glasses of squash, Yasmin needs 320ml of cordial; the rest is water.

a) How much cordial does Yasmin need to make three glasses of squash?

_____ [2 marks]

b) How much water does Yasmin need to make ten glasses of squash?

_____ [2 marks]

6. a) Cameron has four cards, each with a fraction written on it.

$\frac{7}{12}$	$\frac{1}{2}$	$\frac{6}{8}$	$\frac{2}{3}$

Arrange the cards in descending order (largest first).

[2 marks]

b) Freddie has eight cards, each with a fraction written on it.

$\frac{1}{8}$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{2}{5}$	$\frac{3}{4}$	$\frac{7}{10}$	$\frac{6}{9}$	$\frac{1}{16}$

Use these cards to complete each of the following equations.

(i) $\square + \square = 1$

[2 marks]

(ii) $\square - \square = \frac{1}{5}$

[2 marks]

(iii) $\square \times \square = \frac{3}{10}$

[2 marks]

(iv) $\square \div \square = \frac{1}{2}$

[2 marks]

7. Complete the table below by placing ticks in all the correct boxes.

	Square number	**Cube number**	**Prime number**	**Factor of 24**	**Multiple of 8**
4					
5					
8					
16					

[4 marks]

8. a) Express 36 as a product of its prime factors.

_____ [1 mark]

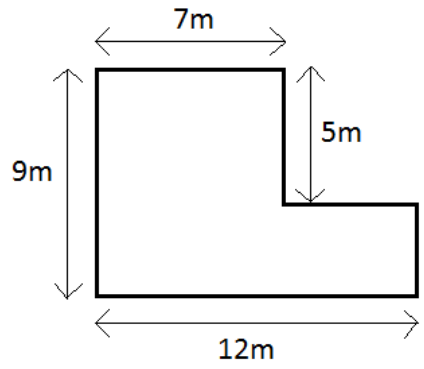
b) What is the largest of the common factors of 24 and 36?

_____ [1 mark]

9. A shop has an end-of-season sale. Everything is reduced by 15%. A dress is originally priced at €48 (full price). What is the sale price of the dress?

_____ [2 marks]

10. Mr Howden is landscaping his garden, the shape of which is illustrated below.



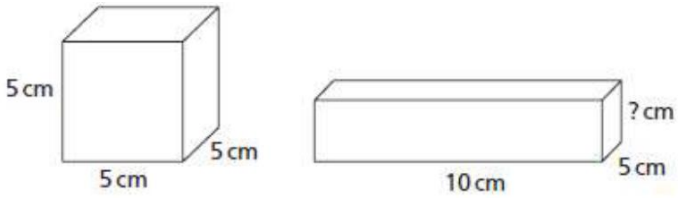
a) Find the total perimeter of the garden.

_____ [1 mark]

b) Find the total area of the garden.

_____ [2 marks]

11. This cube and cuboid have the same volume.



a) Find the volume of the cube.

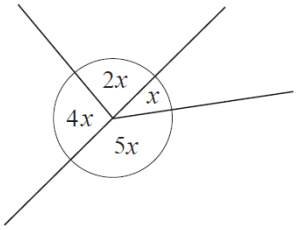
_____ [1 mark]

b) Find the height of the cuboid.

_____ [2 marks]

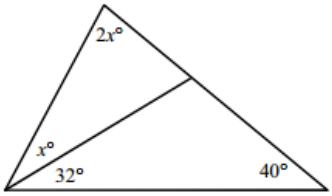
12. Calculate the value of x in each of the diagrams below.

a)



_____ [2 marks]

b)



_____ [2 marks]

13. Eight apples are placed in a bag. The mean weight of the eight apples is 50g. When an extra apple is added the mean weight increases to 52g.

What is the weight of the extra apple?

_____ [2 marks]

14. Rex has 80 books altogether. They are arranged on three shelves. If Rex moved seven books from the top shelf to the middle shelf and took eight books away from the bottom shelf, there would be an equal number of books on each shelf.

How many books are on the middle shelf originally?

_____ [2 marks]

15. How many seconds are there in $\frac{1}{4}$ of $\frac{1}{6}$ of $\frac{1}{8}$ of a day?

_____ [2 marks]

16. A square piece of paper is folded exactly in half and then in half again.

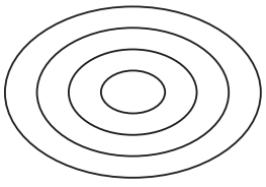
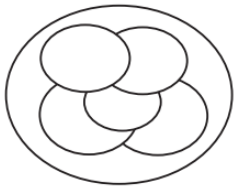
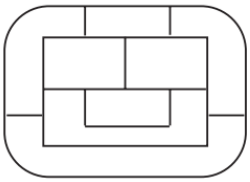
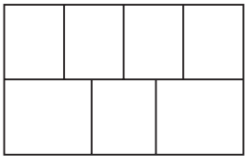
Which of the following could **not** be the resulting shape?

A  B  C  D  E 

_____ [2 marks]

17. Matteo colours the maps below using the smallest number of colours possible. Adjacent countries must not have the same colour but countries with the same colour can meet at a point.

For which map will Matteo require the most colours?

A  B  C  D 

_____ [2 marks]

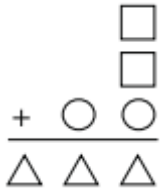
18. A book costs £3.40 and a magazine costs £1.60.
Clara spends exactly £23 on books and magazines.

How many magazines does she buy?

_____ [3 marks]

19. In the sum shown, different shapes represent different digits.

What digit does the square represent?



_____ [3 marks]

Total: 60 marks