Name:

OUNDLE
School

Non Common Entrance Examination 2013
Third Form Entry

Mathematics

Section A: 30 minutes **No calculators allowed**

- Write ALL your working and answers on this paper. Show enough working on each question to make it clear how you reached your answer. **Underline your answers.**

- Do not spend too long working on any particular question. Do not worry if you do not manage to complete every question in each section.

- You may work in pen or pencil.

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Section A NO CALCULATORS

1. Work out:

(a) $6.91 + 39.5$

(b) 68×39

(c) 6000×1.2

(d) 0.12×0.8

(e) $1169.6 \div 8$

(f) $14 + 8 \div 2 - 2 \times 5$

(g) 80% of 80

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(h) $\frac{7}{12} + \frac{3}{8}$

(i) $4\frac{1}{6} \div 1\frac{2}{3}$

2. If $a = 3,\ b = -5$, and $c = -2,$ find the value of the following expressions:

(a) ab

(b) b^2

(c) $2a + b - c$

3. Find the value of x in the following equations:

(a) $3x + 17 = 50$

(b) $3x + 4(x - 3) = 37$

(c) $2x^2 = 72$

(d) $5x - 4 = 3x + 8$

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4. Complete the following table:

Fraction (in its simplest form)	Percentage	Decimal
$\frac{1}{5}$		0.2
	65%	
$1\frac{3}{4}$		
		0.003

5. My train was scheduled to leave at 16:20 and to arrive at 17:05.
However, it left 6 minutes late and the journey took 3 minutes less than it was scheduled to. What time did I arrive?

6. Fill in the next three terms of the following sequences:

(a) 4, 7, 10, 13, ...

(b) 95, 87, 79, 71, ...

(c) 32, 16, 8, 4, ...

(d) 2, 3, 5, 7, 11, ...

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Section B: 30 minutes **Calculators may be used**

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- Do not spend too long working on any particular question. Do not worry if you do not manage to complete every question in each section.

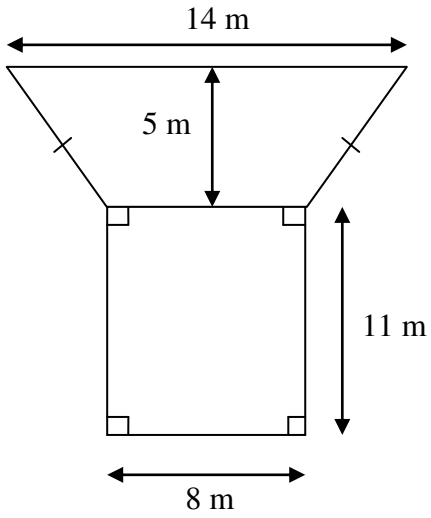
- You may work in pen or pencil.

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Section B You may use a calculator for this section.

7. (a) Name the two shapes in the diagram below: ..... and .....

(b) Find the area of the shape below (which is not drawn to scale):



8. The sizes of the first eleven pairs of shoes sold in a shop one morning are

6 4 8 6 9 12 8 7 11 3 6

(a) What is the mode of the data?

(b) What is the median shoe size?

(c) Calculate the mean of the data? (to 2 decimal places)

(d) Which is the most useful value to the shopkeeper, the mode or the median? Explain your reasoning.

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9. A chocolate cake recipe contains several ingredients, including cocoa powder and butter.
All the ingredients used together weigh 580g.
The ratio of cocoa : butter : other ingredients is 1 : 3 : 16.

(a) How much butter is in the cake?

(b) If there is 261g of flour in the cake, what is the ratio of flour to butter?

10. (a) If I score 38 out of 75 in a Chemistry test, what percentage did I score?
Give your answer correct to one decimal place.

(b) Decrease £820 by 12.5%.

(c) If my weight increased from 67 kg to 71.5 kg, what is the percentage increase?
Give your answer correct to one decimal place.

11. A model car travels 1800 m in 36 minutes.

How long would it take to travel 1 km?

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12. If m and n are prime numbers, and

$m^2n^3 = 108$

Find the values of m and n.

13. A factorial (which has a symbol !) can be defined as follows:

$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1$

$10! = 10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

Work out the following:

(a) $5!$

(b) $6! - 5!$

(c) $\frac{8!}{6!}$

(d) $\frac{100!}{99!2!}$

(e) $\frac{(x+1)!}{x!}$

THE END

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