Name:

2016 Non Common Entrance
Third Form Entry

# Mathematics

Time Allowed: 60 minutes

**Instructions**

- **Calculators are NOT permitted**
- Write ALL your working and answers on this paper. Show enough working on each question to make it clear how you reached your answer.
- Do not spend too long working on any particular question. Do not worry if you do not manage to complete every question.
- You may work in pen or pencil.

1. Work out the following

(a) The lengths of two pencils are 9.76cm and 14.57cm. If the pencils are laid end to end, what is the total length?

Answer ……

(b) In a shop there are 43 bags of potatoes. Each bag contains 37 potatoes. What is the total number of potatoes in the bags?

Answer ……

(c) There are 1.6 kilometers in a mile. How many kilometres are in 31240 miles?

Answer ……

(d) There are 0.91 metres in 1 yard. How many metres are there in 0.075 yards?

Answer ……

(e) The total length of five cars is 16.35 metres. What is the average length of these cars?

Answer ……

(f) Work out $13 + 54 \div 6 - 5 \times 7$

Answer ……

(g) 16% of gift cards that are bought are never redeemed. In Oundle Beans sells 730 gift cards one year. How many of these should it expect to be redeemed?

Answer ……

2. (a) John and Daisy share a pizza. John eats $\frac{1}{5}$ of it and Daisy eats $\frac{7}{12}$ of it. What fraction remains?

Answer ……

(b) Water is transferred from small bottles to large bottles. Each small bottle is $1\frac{1}{4}$ pints. Each large bottle is $3\frac{4}{7}$ pints.

(i) If there are 14 small bottles, how many large bottles will be needed?

(ii) What fraction of a pint of water will be in the last large bottle that gets used?

Answer ……

3. If $a = 9$, $b = -2$ and $c = -7$, find the value of the following expressions

(a) $abc$

Answer ……

(b) $bc^2$

Answer ……

(c) $3a - 2b + 4c$

Answer ……

4. Albert has five times as many apples as Bertie. If Albert gives Bertie 26 apples, they will each have the same number of apples.
How many apples do they have in total between them?

Answer ……

5. For the questions below, form an equation from the given information and solve it to find the answer.

(a) I think of a number, add five and then divide by two. My answer is −19.
What number was I thinking of?

Answer ……

(b) Twice a number added to half of the same number gives 250.
What was the number?

Answer ……

(c) When eighteen is added to twice the square of a number, the result is 50.
What are the two possible starting numbers?

Answer ……

(d) When three tenths of a number is subtracted from ninety-five hundreds of the same number, the result is 1.95.
What was the original number?

Answer ……

6. Calculate 6% of six plus 8% of eight.

Answer ……

7. In March 1998 a book called "The Shadow of the East" was returned to a library in Sussex. It had been borrowed on January 3rd 1924! The library charges a fine of 60p per week for overdue books. Approximately how big a fine should the person who returned the book have paid?

Answer ……

8. Which is smallest? Circle your answer.

A $\frac{(2 + 3)}{(4 + 6)}$ B $\frac{(2 \div 3)}{(4 \div 6)}$ C $\frac{23}{46}$ D $\frac{(2 - 3)}{(4 - 6)}$ E $\frac{(2 \times 3)}{(4 \times 6)}$

9. A number is said to be "eighted" if the number 8 is added to the start and end.

For example when 3 is "eighted" the result is 838.

(a) Which one-digit numbers produce multiples of 3 when they are "eighted"?

(b) How many times must the number 85 be "eighted" to produce 8 888 858 888?

(c) How many odd two-digit numbers are divisible by four when they are "eighted"?

10. 356 241 is a number which contains the digits from one to six, each appearing once, with no other digits.

    (a) What is the smallest and largest number with this same property?

    Answer ……

    (b) How many odd numbers greater than 300 000 exist with this same property?

    Answer ……

    (c) How many numbers with this same property are divisible by 3?

    Answer ……