

Name:



2019 Non Common Entrance
Third and Fourth 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.

Question 1

- (a) Tanveer gets £55 for Christmas.
He buys a toy dragon for £31.97 and a Lego set for £21.31.
After his purchases, how much money does he have left?

Answer

- (b) A box contains 48 oranges.
How many oranges are there in 13 of these boxes?

Answer

- (c) Apples are sold at a price of £2.63 per kilogram.
Some apples are selected and weighed and put in a bag.
If the bag of apples weighs 0.65 kilograms, how much will it cost?

Answer

- (d) Twenty-three 1 penny coins weigh 39.1 grams.
What does a single 1 penny coin weigh?

Answer

Question 2 Work out the following, obeying the correct order of operations.

(a) $-1 + 0$

Answer

(b) 0×-3

Answer

(c) $4 - 3 \times 0$

Answer

(d) $3 + 0 \div 3$

Answer

(e) $-1 \times 4 + 4 \times 2$

Answer

(f) $6 - 6 \div 6 + 6$

Answer

(g) $4 - (4 - 4 \times 4)$

Answer

(h) $18 \div 2 \div 3 \times 4$

Answer

(i) $1 \div 3 - 4 \div 6$

Answer

Question 3 Where possible, fully simplify the following algebraic expressions

(a) $x - x$

Answer

(b) $x + x$

Answer

(c) $x + 3x - 5 - 4x + 7$

Answer

(d) $3x \times x \times 5x$

Answer

Question 4 Write down, in ascending order, the factors of the following numbers.

(a) 18

Answer

(b) 52

Answer

Question 5 Write down the prime factorisation of the following numbers

(a) 90

Answer

(b) 350

Answer

Question 6 Calculate the following:

(a) $\frac{1}{6} \times \frac{5}{3}$

Answer

(b) $\frac{1}{6} - \frac{5}{3}$

Answer

(c) $\frac{1}{6} \div \frac{5}{3}$

Answer

(d) $\frac{35}{40} \times \frac{20}{21}$

Answer

Question 7

Nicky has to choose 7 different positive whole numbers whose mean is 7.
What is the largest possible such number she could choose?

Answer

Question 8 Solve the following equations, leaving your answers as improper fractions where necessary.

(a) $6x - 14 = 34$

Answer

(b) $\frac{x}{3} - 4 = \frac{1}{3}$

Answer

(c) $2 + \frac{2x-3}{7} = 9$

Answer

(d) $5x - 9 = 11 - 7x$

Answer

(e) $5(2x - 9) = 35$

Answer

(f) $4x - 2 = \frac{1}{3}x + \frac{1}{6}$

Answer

Question 9

If $a = 3$, $b = -1$ and $c = -3$, find the value of the following expressions

(a) abc

Answer

(b) bc^2

Answer

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

Answer

Question 10

You should solve the following questions by defining an unknown, forming an equation and solving it using an algebraic method.

- (a) Six times a number is ten less than eight times the number.
Find the number.

The number is

- (b) John thought of a number. He added twenty-four and then divided by three.
The result was the same as when multiplying the original number by three and then adding four.
What number did John think of?

John's number was

Question 11

The pages of a book are numbered 1, 2, 3,
In total, it takes 852 digits to number all the pages of the book.
What is the number of the last page?

Number of last page =