Name:

OUNDLE
School

2017 Non Common Entrance
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) The perimeter of a rectangle is 13.2 cm.
What is the area if the one side is 4 cm long?

Answer .....

(b) It is estimated that 37 average sized houses could be built on a football pitch.
How many average sized houses could be built on 49 football pitches?

Answer .....

(c) Calculate a half plus a quarter plus an eighth.

Answer .....

(d) There are 0.0034 waggles in a boggle.
How many waggles are there in 57 boggles?

Answer .....

(e) A lego set has 3588 pieces. These pieces are shared equally amongst 13 people.
How many does each person get?

Answer .....

(f) Work out $19 + 14 \div 2 - 8 - 9 \times 3$

Answer .....

Question 2

Work out

(a) One thirds plus six ninths

Answer ……

(b) Six and a half divided by three fifths

Answer ……

Question 3

If $a = 4$, $b = -9$ and $c = -5$, find the value of the following expressions

(a) $a - b$

Answer ……

(b) b^2

Answer ……

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

Answer ……

Question 4

Find the value of x in the following equations

(a) $3x - 0.46 = 1.04$

Answer .....

(b) $6x + 4(2x + 3) = 2$

Answer .....

(c) $5x^2 = 180$

Answer .....

(d) $0.52x - 15 = 0.02x$

Answer .....

Question 5

Simplify these expressions, removing the brackets where they appear.

(a) $6(3x + 7)$

Answer .....

(b) $a^4bc^2 \times ab^4cd$

Answer .....

(c) $\dfrac{315y^9z^{21}}{35xy^4z^{17}}$

Answer .....

(d) $51 - 3(x - 12) - 4(2x + 7)$

Answer .....

Question 6

Factorise these expressions completely

(a) $12xy - 48x^2$

Answer .....

(b) $36y^2 + 9yz$

Answer .....

(c) $x^2 + 5x + 6$

Answer .....

(d) $x^3 - 4x^2 + 3x$

Answer .....

Question 7

Forty-two cubes with 1 cm edges are glued together to form a solid rectangular block.
The perimeter of the base of the block is 18 cm.
Find the height, in cm.

Answer .....

Question 8

A different digit is inserted into each of the two boxes to make the following equation true.

$$15.2 + 1.52 + 0.15\square + \square.128 = 20$$

Calculate the sum of the digits in the two boxes.

Answer ……

Question 9

Write $\dfrac{1}{1+\dfrac{1}{1+\dfrac{1}{2}}}$ in the form $\dfrac{a}{b}$ where a and b are positive integers.

Answer ……

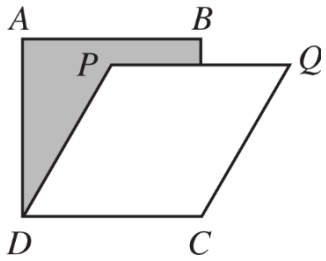
Question 10

In her backyard garden, Gabriella has 12 tomato plants in a row. As she walks along the row, she notices that each plant in the row has one more tomato than the plant before. If she counts 186 tomatoes in total, how many tomatoes are there on the last plant in the row?

Answer ……

Question 11

In the diagram, ABCD is a square with area 25 cm^2 and PQCD is a rhombus with area 20 cm^2.
Calculate the area of the shaded region, in cm^2.



Answer ……

Question 12

On Tony's map, the distance from Saint John, NB to St. John's, NL is 21 cm. The actual distance between these two cities is 1050 km. What is the scale of Tony's map? Give your answer in the form 1 : *n*.

Answer ……

Question 13

Chloe has made a code out of the alphabet by assigning a numerical value to each letter. She then assigns a numerical value to a word by adding up the numerical values of the letters in the word. Using her code, the numerical value of BAT is 6. Also, her code gives numerical values of 8 to CAT and 12 to CAR.

Using her code, what is the numerical value of BAR?

Answer ……