

PRIMARY SCHOOL
CHALLENGE 2017

LEVEL 2 CHALLENGE
GRADE 6 AND 7 ROUND TWO

INSTRUCTIONS

1. The time allocated for this paper is $1\frac{1}{2}$ hours.
All participants must remain for the full allocated time.
Under no circumstances may extra time be given.
2. This paper consists of two sections.
Section A consists of 10 multiple choice questions.
Section B consists of 5 questions where working out must be shown.
3. Question 1 – 10 are worth 2 marks each.
Question 11 – 15 are worth 4 marks each.
4. Negative marking will not be applied.
5. Calculators (and other calculating devices) and geometry instruments are not allowed.
6. Figures are not necessarily drawn to scale.
7. Answer all questions on the answer sheet provided.
8. Circle the letter you have chosen as your answer in pen for Section A (questions 1 – 10).
Should you wish to change an answer, put a cross over the letter and then circle your new chosen letter.
9. For Section B (questions 11 – 15), full working must be shown in the space provided.
Your final answer must be written in the allocated space.
10. Paper may be used for rough working.

SECTION A

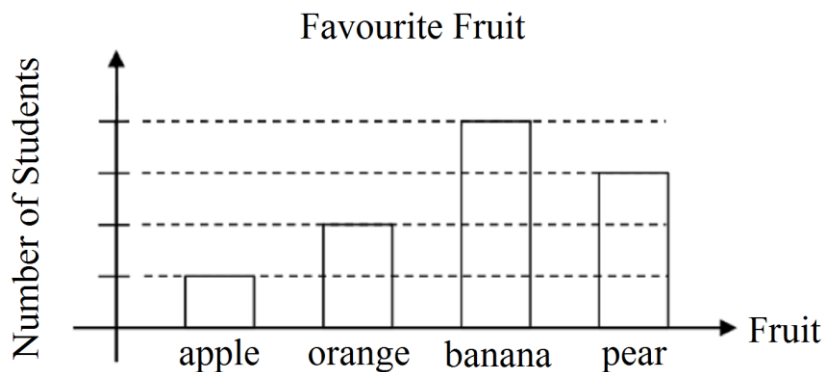
1. A bag contains some sweets that can be divided equally among 3, 4 or 6 children with no remainder. The smallest possible number of sweets in the bag is
 (A) 6 (B) 12 (C) 18 (D) 24 (E) 72

2. Suppose $m \times n$ is greater than zero and m is the square root of n . If $m + n = 20$, then the value of $n - m$ is
 (A) 25 (B) 16 (C) 12 (D) 9 (E) 4

3. Some people are standing equally spaced around a circle, and they were numbered starting from the number 1 in an anticlockwise direction. If the person numbered 3 is directly opposite the person numbered 10, how many people are there?
 (A) 10 (B) 12 (C) 14 (D) 16 (E) 18

4. If a and b are positive whole numbers such that $a \times b = 47$, the largest prime factor of $a + b$ is
 (A) 2 (B) 3 (C) 17 (D) 23 (E) 47

5. The following bar graph shows the favourite fruit of a class of 40 students (each student chooses exactly one fruit). The marks on the vertical axis are equally spaced. How many students' favourite fruit is a pear?




- (A) 4 (B) 8 (C) 12 (D) 16 (E) 20

SECTION B

- 11.** The game below is similar to the well-known SUDUKU. However, in this game the sum of certain numbers in rows and columns is important.

The number in the lower half of the block  is the sum of the numbers in

the column and the number in the top right half of the block  is the sum of the numbers in the row.

Using only the numbers 1 to 9 (you can use any number more than once as long as it is not repeated in any row or column), determine the value of $A + B + C + D$.

			10	3
		4	10	A
	6	B	C	
	4	3	D	
7	D	7		
7				

- 12.** Every year, an interesting observation can be made. For example, 2017 is a prime number and $2018 = 2 \times 1009$.

In the following equation, x , y and z are different digits, and yz and zy are two-digit numbers.

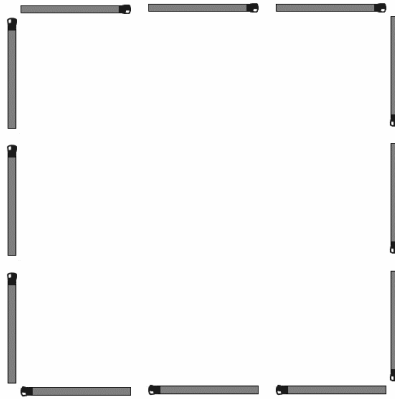
$$2015 = x \times yz \times zy$$

Find the value of $x + y + z$.

- 13.** Find the unit digit of

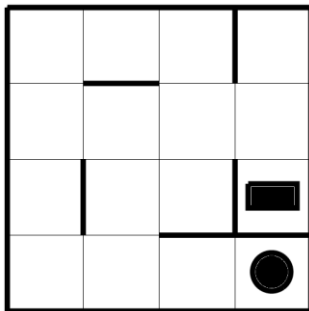
$$1 \times 1 + 2 \times 2 + 3 \times 3 + \dots + 2015 \times 2015 + 2016 \times 2016 + 2017 \times 2017.$$

14. The diagram below shows 12 identical match sticks, each of length one unit, forming a square with an area of 9 square units.



Use the same 12 match sticks to form a figure with an area of 4 square units. The entire length of each match stick must be used.

15. Below is a maze. Inside the maze are a circle and a rectangle.



Your task is to work out how to get from the circle to the rectangle, by the following rules.

RULE 1: you are only allowed to move horizontally or vertically; you cannot move diagonally.

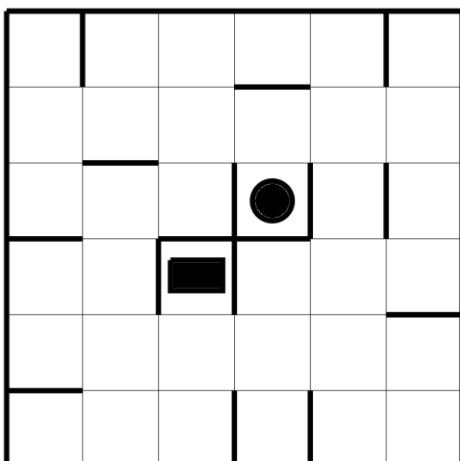
RULE 2: any move must continue in the same direction until a bold line reached.

For example, the solution for the maze shown above is:

LEFT	UP	RIGHT	DOWN	LEFT	UP	RIGHT	DOWN
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Use the space provided to write a solution for the maze shown below, following the same rules above.

Your solution must have the same number of steps as there are boxes.



1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	