

PRIMARY SCHOOL  
CHALLENGE 2020

**LEVEL 2 CHALLENGE**  
**GRADE 7 ROUND ONE**

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**INSTRUCTIONS**

1. The time allocated for this paper is 1 hour.  
Under no circumstances may extra time be given.
2. This paper consists of 20 multiple choice questions.  
Each question only has one correct answer.
3. Questions 1-15 are each worth 1 mark. Questions 16-20 are each worth 2 marks.
4. Negative marking will not be applied.
5. Calculators (and other calculating devices) and geometry instruments are not allowed.
6. Figures are not drawn to scale.
7. Answer all questions on the answer sheet provided.
8. Circle the letter you have chosen as your answer in pen. Should you wish to change an answer, put a cross over the letter and then circle your new chosen letter.
9. Paper may be used for rough working.

1. What is the value of  $6 \times 2 + 6 \div 2 + 6 + 2$ ?

- (A) 17      (B) 26      (C) 16      (D) 23      (E) 22

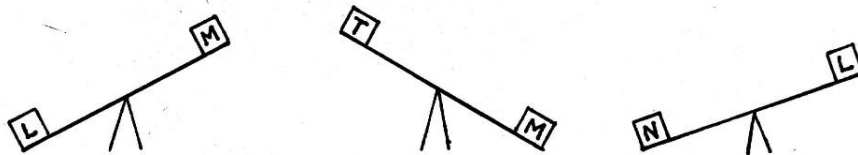
2. The average of four numbers is 14. A number is removed and the average of the three remaining numbers is 15. What is the value of the number removed?

- (A) 10      (B) 14      (C) 9      (D) 11      (E) 12

3.  $12345 \times 54321 - 3$  is equal to one of the numbers listed below. Which number is it?

- (A) 670592742                      (B) 670592740                      (C) 670592745  
 (D) 670592741                      (E) 670592744

4. In the diagram, different weights L, M, N, and T are placed at the end of seesaws as shown. Written down left to right, lightest to heaviest, these are :



- (A) T,N,L,M      (B) M,L,N,T      (C) L,M,T,N      (D) N,L,T,M      (E) T,M,L,N

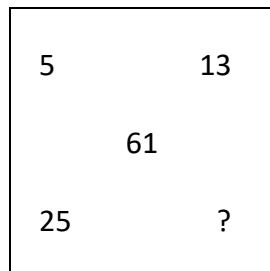
5. What is the value of  $4 \times 2 + \left(4 \div \frac{1}{2}\right) - \frac{1}{2}(10)$ ?

- (A) 5      (B) 13      (C) 11      (D) 10      (E) 9

6. Below, two numbers (not shown) on the far left are the beginning of a list of seven numbers. Moving left to right from these two numbers, every new number in the list is the product of the previous two numbers. The last four numbers are shown. What is the sum of the three missing numbers?

— — — 2 2 4 8

- (A) 2      (B)  $2\frac{1}{4}$       (C) 3      (D)  $3\frac{1}{2}$       (E)  $1\frac{1}{4}$
7. The diagram shows a number pattern. What is the missing number?



- (A) 37      (B) 39      (C) 29      (D) 41      (E) 45

8. A new operation  $\odot$  is defined by  $x \odot y = x^2 - \frac{y}{4}$   
 What is the value of  $3 \odot 14$ ?

- (A)  $\frac{9}{2}$       (B)  $\frac{23}{4}$       (C)  $\frac{11}{2}$       (D) 6      (E)  $\frac{21}{4}$

9. A high school pupil noticed that the product of her age and her mothers age is 774. What is the sum of their ages?

- (A) 77      (B) 54      (C) 74      (D) 65      (E) 61

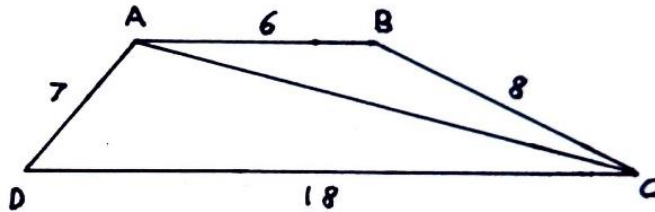
10. Using only prime numbers under 17 as side lengths, how many triangles may be constructed without repeating any number in any one triangle? No two triangles may have three identical length sides.

- (A) 5      (B) 3      (C) 4      (D) 6      (E) 7

11. Brenda uses her calculator to perform a calculation. She makes a mistake and multiplies a number by 5 instead of dividing it by 5. The answer on the calculator is 600. What should the correct answer have been?

- (A) 25      (B) 30      (C) 24      (D) 100      (E) 46

12. The quadrilateral ABCD is shown below.  $AB = 6\text{cm}$ ,  $BC = 8\text{cm}$ ,  $CD = 18\text{cm}$ ,  $DA = 7\text{cm}$ . The length of  $AC$  is a whole number. What is the sum of all possible lengths of  $AC$ ?



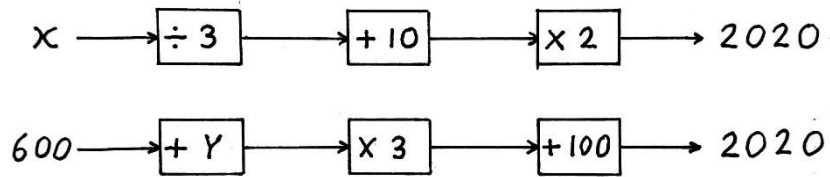
- (A) 50cm      (B) 25cm      (C) 37cm      (D) 22cm      (E) 38cm

13. What is the value of:

$$1 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2}}}$$

- (A)  $\frac{17}{12}$       (B)  $\frac{5}{2}$       (C)  $\frac{5}{12}$       (D)  $\frac{7}{5}$       (E)  $\frac{12}{5}$

14. In the two flow diagrams, what is the value of  $x - y$ ?



- (A) 1960      (B) 2940      (C) 2400      (D) 3040      (E) 2960

15. P, Q, and R are three integers. If  $P \times Q \times R$  is negative, which of the following statements must be true? (integers are: ..... -2, -1, 0, 1, 2, 3, .....)

- (A) Only one of P, Q, or R is negative.  
 (B) Q is positive.  
 (C) Only one of P, Q, or R is negative or all three of P, Q, and R are negative.  
 (D) Q and R are positive.  
 (E) There is not enough information to answer the question.

16. The sum below has a correct answer of 6948, but exactly four of the digits in the numbers being added together are not written in their correct places. All digits are in their correct rows. What is the sum of the four digits which are not in their correct places?

$$\begin{array}{r} 25 \\ 931 \\ + \underline{8764} \\ 6948 \end{array}$$

- (A) 25      (B) 24      (C) 18      (D) 21      (E) 32

17. In the sum below, each of the seven letters of NUMBERS is represented by a different digit 1 – 8. Which of the eight digits is not used in the sum?

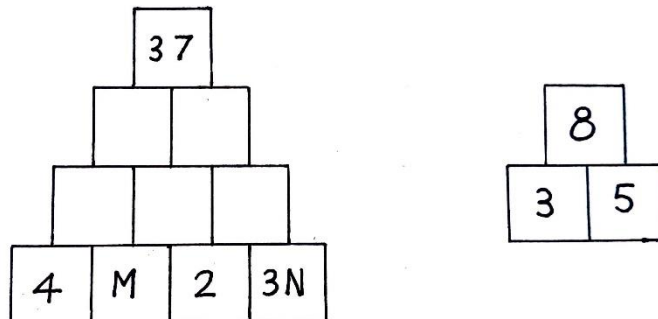
$$\begin{array}{rcccc}
 & & & N & U & M & & \\
 + & B & E & R & S & & & \\
 \hline
 & 2 & 0 & 2 & 0 & & & 
 \end{array}$$

- (A) 5      (B) 3      (C) 7      (D) 4      (E) 8

18. If  $m$  can equal 0 or 1 or 2, and  $n$  can equal 2 or 3 or 4, what is the sum of all possible different values of  $m \times n$ ?

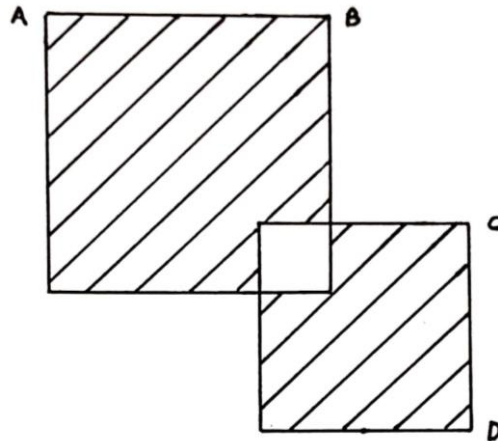
- (A) 23      (B) 27      (C) 20      (D) 14      (E) 32

19. In the drawing, the sum of the numbers in any two lower boxes is equal to the number in the box directly above them. Shown in the example is  $3 + 5 = 8$ . What is the value of  $M + N$ ?



- (A) 12      (B) 9      (C) 10      (D) 8      (E) 7

20. Two squares overlap forming a small square as shown.  $AB = 8\text{cm}$  and  $CD = 6\text{cm}$ . The area of the small square formed by the overlap is  $\frac{1}{5}$  of the average area of the two larger squares. What is the area of the shaded portion in  $\text{cm}^2$ ?



- (A) 70                      (B) 90                      (C) 80                      (D) 60                      (E) 55

\*\*\*\*\* END \*\*\*\*\*