

# PRIMARY SCHOOL CHALLENGE 2021

## **LEVEL 1 CHALLENGE GRADE 4 AND 5 ROUND TWO**

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### **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, and part marks are possible.
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. Let  $GRADE = 2021$ .

What is the value of:  $GRADE + 4 + GRADE + 5$  ?

- A. 2030      B. 4050      C. 2051      D. 4051      E. 4151

2. If  $3m + 6 > 19$ , what is the smallest whole number value of  $3m - 6$  ?  
(Note:  $>$  means "greater than")

- A. 6      B. 9      C. 5      D. 8      E. 7

3. In the table below, each row has the same pattern. What is the value of  $x$  ?

$$7 \otimes 2 = 12$$

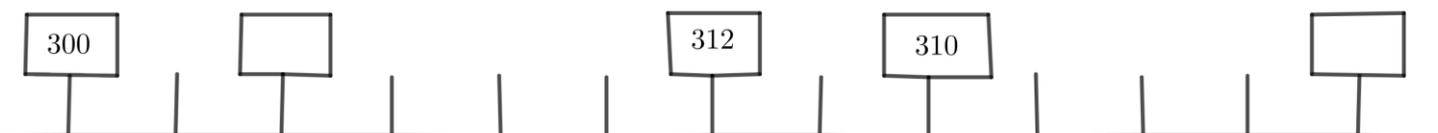
$$5 \otimes 3 = 7$$

$$4 \otimes 1 = 7$$

$$3 \otimes 3 = x$$

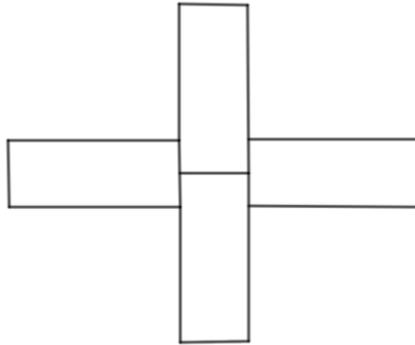
- A. 2      B. 3      C. 4      D. 5      E. 6

4. In the diagram below, the pattern of whole numbers in the boxes either side of 312 is different. The number 312 belongs to both patterns. Both patterns are arithmetically uniform (regular). What is the sum of the two numbers in the two empty boxes?



- A. 604      B. 614      C. 608      D. 600      E. 610

5. Four identical rectangles, each of area  $100 \text{ cm}^2$  are placed symmetrically together as shown. All angles are right angles. Each rectangle has a length of  $20 \text{ cm}$ , being its longest side. What is the outside perimeter of the given shape? (Hint: The Area of a rectangle is its Length times its Breadth)



- A.  $180 \text{ cm}$     B.  $190 \text{ cm}$     C.  $170 \text{ cm}$     D.  $160 \text{ cm}$     E.  $200 \text{ cm}$

6. How many natural numbers from  $1 - 100$  are multiples of 2; 3; 5; and 10?

- A. 0    B. 1    C. 2    D. 3    E. 4

7. A group of Grade 4 and Grade 5 pupils played in a chess competition. Two more Grade 5's played than Grade 4's. The competition was in round robin format where each player played a game against every other player. Two points were awarded for a win, one point for a draw, and no points for a loss. The combined score of all the players in the competition was 182. How many Grade 5's played in the competition?

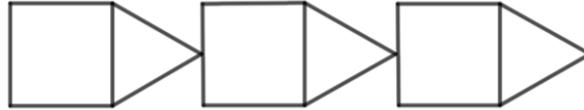
- A. 6    B. 8    C. 10    D. 12    E. 14

8. If  $G \oplus 4 = G + 5$ , and  $G \triangle 5 = G + 4$ , what is the value of:

$$(5 \oplus 4) + (4 \triangle 5) ?$$

- A. 9    B. 5    C. 14    D. 18    E. 15

9. Each of the three identical shapes in the pattern below is made up of a square and an equilateral triangle. The total outside perimeter of the pattern is  $195\text{ cm}$ . What is the area of the square? (Hint: The sides of an equilateral triangle are equal in length)



- A.  $225\text{ cm}^2$       B.  $121\text{ cm}^2$       C.  $169\text{ cm}^2$       D.  $144\text{ cm}^2$       E.  $100\text{ cm}^2$
10. Usha is out with two friends. Usha's friends have all forgotten to bring any money with them.
- Usha gives  $\frac{1}{2}$  of the money in her purse to Megan.
  - She then gives  $\frac{1}{2}$  of the money left in her purse to Maya.
  - Usha then had R30 in her purse.
- How much did Usha originally have in her purse?

- A. R140      B. R90      C. R60      D. R120      E. R100

## **SECTION B**

**NB : Show all working and write your final answer in the allocated space.**

11. The sum of two natural numbers is 19. What is the difference between the Biggest possible product of these two numbers and the Smallest possible product of these two numbers? (That is, the value of: Biggest possible product – Smallest possible product) (Hint: Natural numbers are 1, 2, 3, 4, ..... ) (Show all working)

12. A piece of rope is cut into 6 equal lengths. If the same piece of rope was cut into 5 equal lengths, then each length would be 1 metre longer than before. How long is the rope? (Show all working)
13. In the sum below, each letter stands for a different digit 0 – 9. The 4-digit number  $TRIG$  is odd, and the letter  $R = 3$ . What is the value of the word  $ALAN$ ? (Show all working)

$$\begin{array}{r} T R I G \\ + T R I G \\ \hline A L A N \end{array}$$

14. Make a 4-digit number, a 3-digit number, a 2-digit number, and a 1-digit number using each of the digits 0 – 9 only once such that the sum of the four numbers is a minimum. (The sum is the smallest possible) What is the value of this number? (Show all working)
15. Twenty-five boxes are placed in a row as shown below.
- Each box contains at least 1 toy.
  - The 2<sup>nd</sup> box from the left contains 6 toys.
  - The 16<sup>th</sup> box from the left contains 2 toys.
  - Any four consecutive boxes (four boxes next to each other) contain a sum of 20 toys.

What is the maximum possible number of toys in the 21<sup>st</sup> box? (Show all working)

