

PRIMARY SCHOOL CHALLENGE 2020

LEVEL 2 CHALLENGE GRADE 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. What is the value of $8 \times 2 - \left(4 \div \frac{1}{4}\right) + 3$?

- A. 18 B. 20 C. 0 D. 12 E. 3

2. If $2 ; 4 ; 3 = 26$
 and $3 ; 3 ; 4 = 33$
 and $4 ; 3 ; 5 = 47$

What is the value of $1 ; 6 ; 4$?

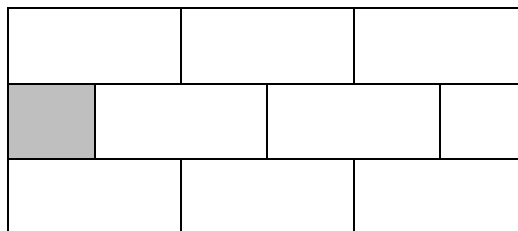
- A. 21 B. 11 C. 34 D. 26 E. 36

3. If $\frac{a}{b} = 2$ and $\frac{b}{c} = 3$, what is the value of $\frac{a+c}{b-c}$?

- A. 3,5 B. 2 C. 2,25 D. 3 E. 1,75

4. Eight bricks and two half bricks form the pattern of a wall as shown below. A half brick is half the length of a full brick, and is itself a square.

If the outside perimeter of the shown pattern is 180cm, what is the area of the shaded half brick in cm^2 ?



- A. 100 B. 90 C. 180 D. 120 E. 200

5. The only way that 10 may be written as the sum of four different natural numbers is $1+2+3+4$. In how many different ways may 15 be written as the sum of four different natural numbers?

- A. 4 B. 6 C. 3 D. 7 E. 5

6. A number is divisible by 3 if the sum of the digits of the number are divisible by 3. (Divisible by 3 means that there is no remainder after dividing the number by 3) Let $M = 81426E$, where E is the last digit of the 6-digit number M . If M is divisible by 3, how many different values can E have?

- A. 1 B. 2 C. 3 D. 4 E. 5

7. A family has five children, 3 girls and 2 boys. The children are to sit on a bench for a photograph. How many different ways can they be seated if the boys sit separately on either end of the bench?

- A. 12 B. 6 C. 10 D. 8 E. 15

8. What is the 36th term in the following number pattern:

2; 3; 3; 4; 4; 4; 5; ?

- A. 28 B. 8 C. 24 D. 9 E. 10

9. If $\frac{2020}{2019} \div \square = \frac{2019}{2018}$ then $\square = ?$

- A. $\frac{2019 \times 2019}{2018 \times 2020}$ B. $\frac{2019}{2020}$ C. $\frac{2018}{2019}$ D. $\frac{2018 \times 2020}{2019 \times 2019}$ E. $\frac{2018 \times 2019}{2019 \times 2020}$

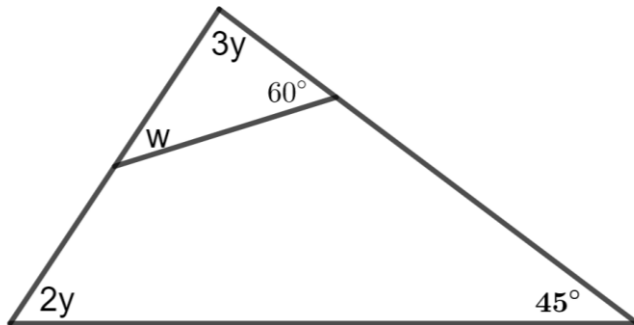
10. A six-sided dice is thrown and keeps landing heads up on the same number each time. The repeating number is added in a sum each time. The sum finally reaches 2020. How many different numbers (1 to 6) on the dice could achieve this?

A. 2 B. 4 C. 1 D. 5 E. 3

SECTION B

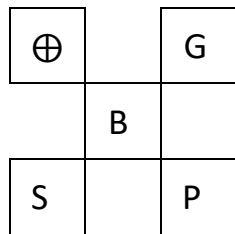
NB : Show all working and write your final answer in the allocated space.

11. In the figure below, all lines are straight, and angles of 45° , 60° , $2y$, $3y$, and w are shown. What is the value of the angle marked w ?



12. Boxes 1 and 2 each contain oranges. The total number of oranges is 300. When 15 oranges are moved from Box 1 to Box 2, Box 1 has three times as many oranges in it than Box 2. How many oranges were in each box before the 15 oranges were moved?

13. I'm thinking of a number. I multiply the number by 8 and then add 5 to get a new number. When I divide this new number by 7, the answer is 11. What number did I think of?
14. The average of five different 2-digit natural numbers is 40. Three of the numbers are 56, 13, and 32. The two remaining numbers have the same digits as each other. (If the one number is ab then the other is ba where a and b are digits)
How many pairs of remaining natural numbers are possible?
15. In the diagram below the diagonals SBG and $PB\oplus$ form a pattern using the following information: $A=5$, $B=6$,....., $Z=30$.



There are two possible letters of the alphabet which replace \oplus ?

Determine either one of them.