

# PRIMARY SCHOOL CHALLENGE 2016

## LEVEL 2 CHALLENGE GRADE 6 AND 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. Question 1 – 15 are worth 1 mark each.  
Question 16 – 20 are worth 2 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 necessary drawn to scale.
7. Answer all questions on the answer sheet provided.
8. Circle the letter you have chosen as your answer in pen.
9. Should you wish to change an answer, put a cross over the letter and then circle your new chosen letter.
10. Paper may be used for rough working.

1. A certain photocopy machine makes 12 copies every 5 seconds. The number of copies it can make in 4 minutes is

(A) 864 (B) 720 (C) 648 (D) 576 (E) 240

2. There is a pattern to the given sequence of figures below:



Which of the following will be the 201<sup>st</sup> figure of the sequence?



3. The sum of all the prime numbers less than 13 is

(A) 17 (B) 26 (C) 27 (D) 28 (E) 41

4. If the 12<sup>th</sup> May is on a Thursday, then which of the following days will occur more than four times in that month?

(A) Wednesday (B) Thursday (C) Friday (D) Saturday (E) Sunday

5. The six-digit number 12345P is divisible by 3. How many such numbers are divisible by 3?

(A) 4 (B) 3 (C) 2 (D) 1 (E) 0

6. The value of  $99 \times 999$  is

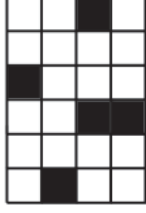
(A) 10999 (B) 98001 (C) 97902 (D) 97803 (E) 96003

7. A wine barrel weighs 500 kg when full, but 300 kg when half full. The weight of the (empty) container itself is



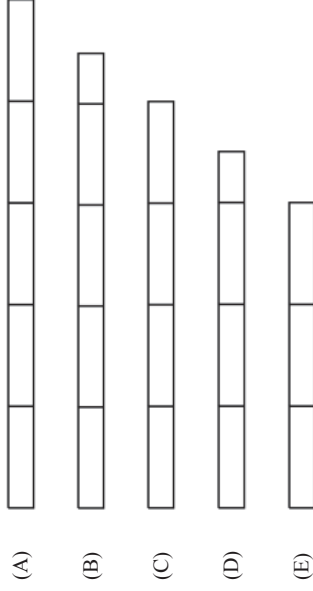
(A) 250 kg (B) 200 kg (C) 150 kg (D) 100 kg (E) 50 kg

8. Some of the squares in the rectangle below are shaded. More squares need to be shaded so that the number of shaded squares is half the number of unshaded squares. The number of additional squares which need to be shaded are



(A) 3 (B) 4 (C) 6 (D) 8 (E) 11

9. If the rectangle shown below represents  $\frac{2}{3}$ , which picture best represents 3?



10.  $\frac{36}{45} = \frac{A}{5} = \frac{12}{B} = \frac{8}{C}$ . The value of  $A+B+C$  is

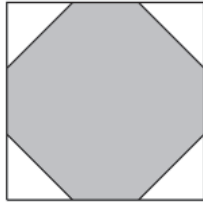
(A) 30 (B) 29 (C) 25 (D) 20 (E) 15

11. The desks in a classroom are arranged in straight rows. Sanjeev is in the third row from the front and the fourth row from the back. He is also third from the left end of the row and fifth from the right.

The number of desks in the classroom is

(A) 24 (B) 30 (C) 35 (D) 42 (E) 56

12. Each side of a square is divided equally into three equal parts. If the area of the square is  $81 \text{ cm}^2$ , the area of the shaded part is



- (A)  $75 \text{ cm}^2$  (B)  $70 \text{ cm}^2$  (C)  $63 \text{ cm}^2$  (D)  $53 \text{ cm}^2$  (E)  $45 \text{ cm}^2$

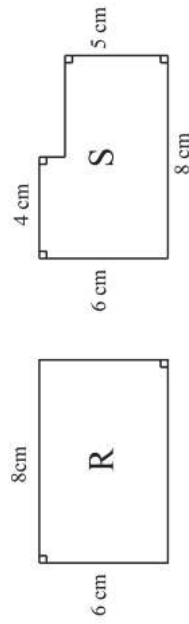
13. All the whole numbers from 1 to 2016 are written out in a long line.

123456789101112.....20152016

How many digits are written out altogether?

- (A) 6958 (B) 6957 (C) 6956 (D) 6955 (E) 2016

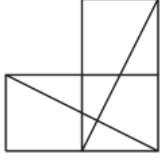
14. Siphso cut rectangle R from a sheet of paper. A smaller rectangle is then cut from the large rectangle R to produce figure S.



Which of the following statements below is true?

- (A) the area and perimeter both decrease.  
 (B) the area decreases and the perimeter increases.  
 (C) the area and perimeter both increase.  
 (D) the area increases and the perimeter decreases.  
 (E) the area decreases and the perimeter stays the same.

15. In the game 'SQUARES and TRIANGLES', 2 points are given for each triangle (of any size) and 3 points for each square.



The highest number of points that can be awarded for the figure alongside is

- (A) 45 (B) 42 (C) 39 (D) 36 (E) 33

16. If  $P \uparrow$  means  $P + 2$  and  $P \downarrow$  means  $P - 3$ , then  $(4 \uparrow) \times (5 \downarrow)$  is equal to

- (A)  $11 \downarrow$  (B)  $10 \uparrow$  (C)  $20 \downarrow$  (D)  $12 \uparrow$  (E)  $13 \downarrow$

17. Tom knows that  $2^1 = 2$ ,  $2^2 = 4 = 2 \times 2$ , and  $2^3 = 8 = 2 \times 2 \times 2$ . He was asked to find the value of  $2^{22} = 419430B$ .

He found all the digits correctly except the last digit, represented by B. The value of B is

- (A) 0 (B) 2 (C) 4 (D) 6 (E) 8

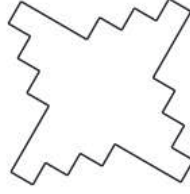
18. Four people have dinner together at a restaurant. They pay equal portions of the cost, in rands, of the dinner,  $d$ , and the R40 tip. Which expression represents the amount of money each person pays?

- (A)  $d \div 4 + 40$  (B)  $d + 4 \div 40$  (C)  $d + 40 \div 4$  (D)  $(d + 40) \div 4$  (E)  $4 \div (d + 40)$

19. The product  $\left(1 + \frac{1}{2}\right) \times \left(1 + \frac{1}{3}\right) \times \left(1 + \frac{1}{4}\right) \times \dots \times \left(1 + \frac{1}{n}\right)$  is a whole number when

- (A)  $n$  is even (B)  $n$  is odd (C)  $n$  is a multiple of 3 (D)  $n$  is a multiple of 4 (E)  $n$  is a multiple of 5

20. In the figure below all edges are at right angles to each other. All short edges are equal in length and all long edges are also equal in length. If the area of the shape is  $297 \text{ cm}^2$ , then the perimeter is



- (A) 108 cm (B) 120 cm (C) 145 cm (D) 190 cm (E) 200 cm