

GRADE:  
NAME:  
SURNAME:

# HMC 2016 - FIRST ROUND

FOR MATHEMATICS TEACHER  
LEARNER'S   
MARK

## HORIZON MATHEMATICS COMPETITION

1. Solve:  $27 - 14 + 11 - 9 - 12 = ?$   
A) 8      B) 4      C) 3      D) 1      E) 0

2. Solve:  $\frac{9}{4} - \frac{5}{2} + \frac{3}{8} = ?$   
A)  $\frac{1}{4}$       B)  $\frac{1}{2}$       C)  $\frac{1}{8}$       D)  $\frac{3}{4}$       E)  $\frac{3}{8}$

3. Simplify  $(2^2 + 2)^2$   
A) 8      B) 64      C) 36      D) 256      E) 12

4. What is the next term on the given series?  
40, 33, 26, 19, 12, 5, ?, ...  
A) 0      B) 2      C) 1      D) -2      E) 3

5. Which of the following is the largest?  
A) 0,10101      B) 0,100101  
C) 0,010001      D) 0,0101  
E) 0,101101

6. Evaluate  $\sqrt{41 - \sqrt{25}}$   
A) 7      B) 6      C) 5      D) 4      E) 3

7. Which of the given numbers below is the smallest?  
A) 0,77      B)  $\frac{7}{10}$       C)  $\frac{77}{100}$       D)  $\frac{3}{4}$       E)  $\frac{19}{25}$

8. There are 200 cows and sheep in a farm. If there are 4 times as many sheep as cows, the number of sheep is...  
A) 40      B) 50      C) 100      D) 150      E) 160

9. If the sum of two natural numbers is 11 then find the greatest product of these two numbers?  
A) 11      B) 121      C) 25      D) 101      E) 30

10. The length of a rectangle is twice the length of its breadth. Calculate the area (in  $\text{cm}^2$ ) of the rectangle if its perimeter is 24 cm?  
A) 36      B) 48      C) 20      D) 32      E) 72

11. A car travels from city A to city B in 3 hours with an average speed of 60 km/h. How long does it take if the car increases its average speed to 90 km/h?  
A) 3 h      B) 4 h      C) 2,5 h      D) 2 h      E) 1 h

12. Which of the following numbers has the most factors?  
A) 24      B) 36      C) 18      D) 77      E) 79

13. If a number is multiplied by 9, the result is 207. Find the result if that number is multiplied by 12.  
A) 144      B) 148      C) 252      D) 254      E) 276

14. The sum of two numbers is 120. If the bigger one is 24 more than the other, find the smaller one.  
A) 44      B) 48      C) 52      D) 56      E) 60

15. The sum of the numbers on each diagonal is 41.

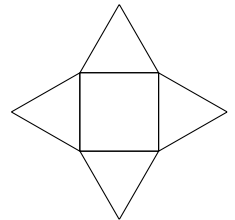
|    |     |    |
|----|-----|----|
| 19 |     | 13 |
|    | ... |    |
| x  |     | 7  |

Find x.

A) 17      B) 15      C) 16      D) 13      E) 11

16. a, b and c are consecutive odd numbers. If  $a + b + c = 39$ , what is the biggest number?  
A) 5      B) 11      C) 13      D) 15      E) 17

17. A square joined by 4 identical Equilateral triangles as shown in the figure. The area of the square is  $49 \text{ cm}^2$ . Calculate the perimeter of the figure.



A) 56 cm      B) 35 cm      C) 19 cm      D) 114 cm      E) 28 cm

18. Bottle A contains 300 ml of water and bottle B contains 250 ml of water. Certain amount of water must be poured from bottle B to bottle A so that amount of water in bottle A should contain 4 times more than bottle B. How much water must be poured?

A) 100 ml      B) 140 ml      C) 400 ml      D) 50 ml      E) 15 ml

19. What is the difference between the largest 3-digit number and smallest 3-digit number if they are both divisible by 3?  
A) 991      B) 888      C) 897      D) 899      E) 998

20.  $n$  is a natural number. If  $\frac{n}{36-n}$  is also a natural number, how many possible values of  $n$  are there?  
A) 9      B) 8      C) 7      D) 6      E) 5