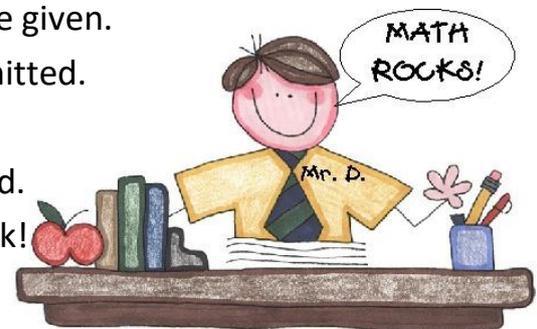


WCED-HMC 2020 - SECOND ROUND

INSTRUCTIONS

- Before you start, make sure that your details are filled in accurately.
- Do not open this booklet until you are told to do so.
- This examination paper consists of 30 multiple choice questions. Each question is followed by answers marked A, B, C, D and E. Only one of them is correct.
- The final answers must be entered in the correct box on the ANSWER SHEET which is supplied separately.
- Each correct answer is worth:
 - 4 marks in Part 1 (Questions from 1 to 10)
 - 5 marks in Part 2 (Questions from 11 to 20)
 - 6 marks in Part 3 (Questions from 21 to 30)
- There is a penalty, **-1 mark**, for every incorrect answer.
- Exam duration is **75 minutes** and no extra time will be given.
- Calculators and geometric instruments are NOT permitted.
- Diagrams are NOT necessarily drawn to scale.
- Rough paper, pen, pencil, and an eraser are permitted.
- Start when the invigilator tells you to do so. Good luck!



PART – 1**4 marks each**

1. $\frac{2020}{2} + \frac{2020}{10} + \frac{2020}{20} = ?$

- A) 1313 B) 1213 C) 1221 D) 1223 E) 2112

2. If $3 \times 6 = a \times 9$, $3 \times 6 = b + 9$, and $3 \times 6 = c - 9$ then find the value of $a + b + c$.

- A) 38 B) 16 C) 83 D) 45 E) 54

3. N is a digit and 2N2N is a four digit number which is divisible by 4.

The sum of possible values for N is...

- A) 10 B) 11 C) 13 D) 12 E) 14

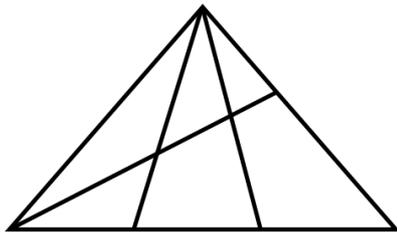
4. A prime is a whole number (larger than 1) whose only factors are 1 and itself. How many primes less than 99 have 9 as a digit?

- A) 4 B) 6 C) 5 D) 8 E) 7

5. In each of the numbers 24, 37 and 58 the second digit is larger than the first digit. In how many 2-digit numbers will the second digit be larger than the first digit?

- A) 25 B) 36 C) 40 D) 45 E) 50

6. How many triangles can be found in the figure below?



- A) 11 B) 12 C) 13 D) 15 E) 17

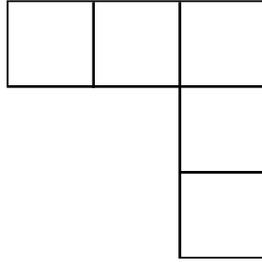
7. The number 9 can be written as the sum of consecutive numbers in two different ways:

$$4+5=9 \text{ and } 2+3+4=9$$

In how many different ways can 30 be written as the sum of consecutive numbers?

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

8. Using each of the digits 1 to 5 once, it is possible to place them in the grid so that the row and column have the same total.



How many different totals can this be done with?

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

9. The pages of a book are numbered from 1 to 216. How many digits are used to number the book?

- A) 543 B) 541 C) 540 D) 537 E) 536

10. A cage contains bird and hamsters. There are 31 heads and 96 feet. How many birds are in the cage?

- A) 18 B) 17 C) 16 D) 15 E) 14

11. In a class of 27 learners, the number of boys are twice as many as the number of girls. One third of the boys wear glasses. The total number of learners who wear glasses is one fewer than the number of boys in this classroom. How many girls do not wear glasses?

- A) 5 B) 7 C) 6 D) 11 E) 4

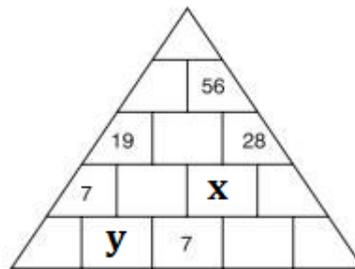
12. 1; 1; 2; 3; 5; 8; 13; 21; 34; 55; is the list of famous Fibonacci numbers. How many Fibonacci numbers must be written to have 100 of them odd?

- A) 149 B) 150 C) 299 D) 300 E) 151

13. A number X rounded to the nearest tens is 350 and the nearest hundreds is 300. Another number Y rounded to the nearest tens is 350 and the nearest hundreds is 400. What is the minimum difference between these two numbers, X and Y?

- A) 10 B) 9 C) 5 D) 2 E) 1

14. Each number in the pyramid is the sum of the two numbers immediately below it. Calculate the value of $x + y$.



- A) 14 B) 21 C) 20 D) 17 E) 23

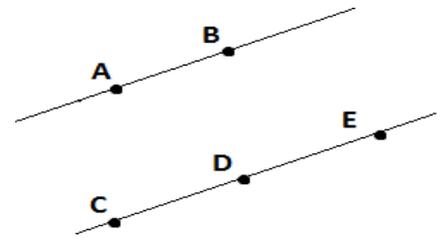
15. In an examination 33% of total students failed in Maths, 17% in History and 6% in both. Find the percentage of those who passed in both the subjects.

- A) 22 B) 60 C) 44 D) 50 E) 56

16. The total value of the numbers printed on some labels is 520. Each label is printed with a different 3-digit odd number such as 357; 135; 123; 345; 567; 789, etc. The average value of all the numbers is 130. The difference between the greatest and smallest number is 6. What is the smallest number printed on the label?

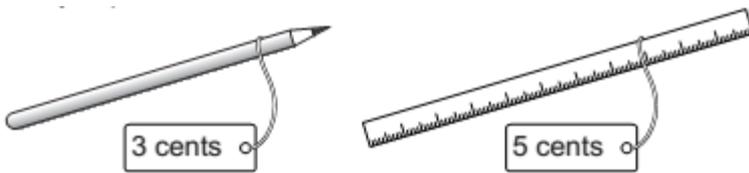
- A) 123 B) 125 C) 127 D) 129 E) 131

17. There are five points on two parallel lines shown in the diagram. Determine the number of different triangles that can be drawn by using any three points of A, B, C, D and E.



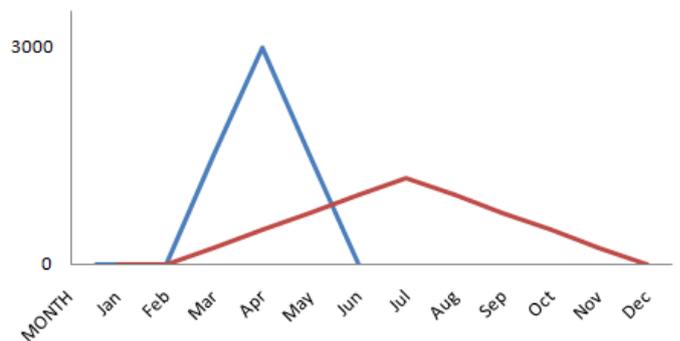
- A) 9 B) 8 C) 7 D) 6 E) 5

18. Shaheen bought 9 pencils, 4 rulers and 7 erasers while Chikoni bought 2 pencils, 7 rulers and 3 erasers. If Chikoni paid 14 cents less than Shaheen, how many easers can be bought with R2 according to the prices in the picture?



- A) 100 B) 50 C) 40 D) 25 E) 20

19. The diagram aside is showing two triangles with the same area. This can give an idea about flattening the curve by observing health protocols, physical distancing and wearing masks. Both triangles start from the end of February, first one reaches its peak value at the end of April with 3000 cases and finishes at the end of June while the second triangle finishes at the end of December. What will be the maximum number of cases in the flattened triangle?



- A) 750 B) 900 C) 1000 D) 1200 E) 1350

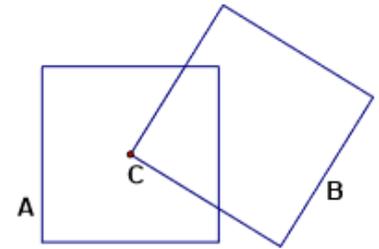
20. A simple lock on a safe uses two numbers. Each can be from 1 to 6. To enter the safe, any even number and any odd number is needed (in any order). How many different combinations can open the safe?

- A) 5 B) 6 C) 30 D) 18 E) 36

21. How many one, two, three or four digit numbers can be written if we can only use a maximum of 2 zeros and 2 twos?

- A) 9 B) 10 C) 11 D) 12 E) 13

22. Squares A and B are identical 19 cm by 19 cm squares. One corner of square B is at the centre of square A at point C. What area of the part of square B that overlaps square A.?



- A) 90,15 B) 90,25 C) 90,50 D) 90,75 E) 90,85

23. All the houses on Parell Alley are identical and equally spaced. They are numbered 1, 2, 3, ... along one side and then back down the other side (so that the highest numbered house is opposite house number 1). Two houses, number 46 and number 145, are directly opposite each other. What is the number of the house opposite house number 1?

- A) 189 B) 190 C) 191 D) 99 E) 95

24. Six girls are sitting in a circle facing to the centre of the circle. They are P, Q, R, S, T and V. T is not between Q and S but some other one. P is next to the left of V. R is 4th to the right of P.

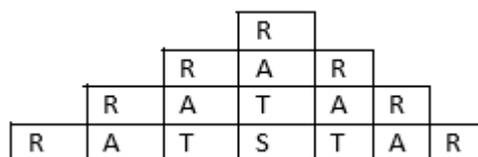
Which one is sitting just right to V?

- A) P B) T C) R D) S/Q E) T/Q

25. 7; 16; 26; 38; 54; 78; x; is given. The value of x is:

- A) 128 B) 102 C) 114 D) 118 E) 126

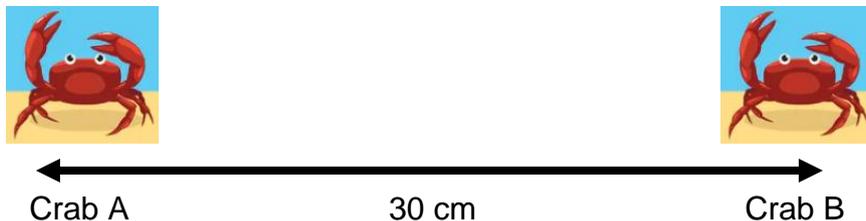
26. Find the number of words “STAR” in all directions.



- A) 15 B) 16 C) 18 D) 14 E) 13

27. Crab A and Crab B started walking at the same time from the opposite ends of a 30 – cm box. Each crab would turn in the opposite direction and continue walking upon reaching the end of the box. The average speed of crab A was 1 cm/s and the average speed of Crab B was 0,6 cm/s.

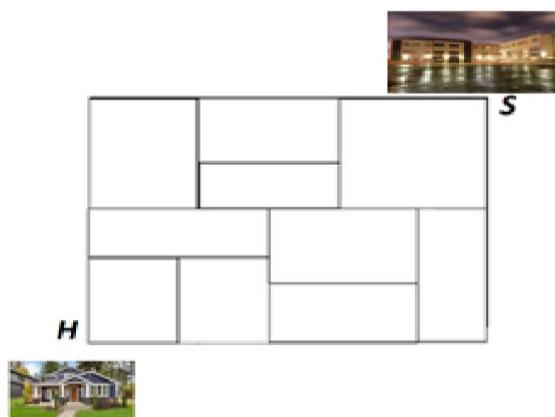
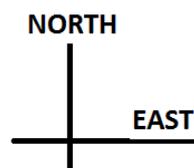
(Assume that their turning time is negligible)



How many times did they meet each other if they walked for 20 minutes?

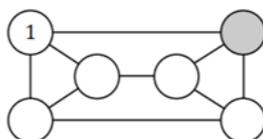
- A) 24 times B) 36 times C) 40 times D) 42 times E) 45 times

28. Star College Bridgetown maths teacher wants to go to the school for extra lesson. In how many different ways can he go to school along the streets, if it is allowed to go only north and east?



- A) 14 B) 16 C) 12 D) 8 E) 10

29. The five blank circles in the diagram must be filled with the numbers 2, 3, 4, 5 and 6 so that the difference between any two numbers connected by a line is always greater than 1. Which number has to go into the shaded circle?



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

30. A pair of fair 8-sided dice, named as **octahedron**, are each numbered with the following integers { - 3; -2 ; -1; 0; 1; 2; 3; 4}. If two such dice are rolled, what is the probability that sum of the values showing on top will be zero?

- A) $\frac{1}{6}$ B) $\frac{7}{36}$ C) $\frac{1}{8}$ D) $\frac{3}{32}$ E) $\frac{7}{64}$

THE END