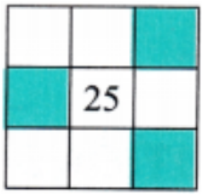
*** Choose The Right Answer From The Given Options.[1 Marks Each]** **[2]**

1. The next term of the Virahanka Fibonacci series: 1,2, 3, 5,8, 13,21,34,__ is-

   (A) 52 (B) 53 (C) 54 (D) 55

   Ans. : (D) 55

2. In the given magic square, what will be the total of each side?



   (A) 50 (B) 65 (C) 75 (D) 100

   Ans. : (C) 75

*** a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.** **[1]**

3. **Assertion (A):** The sum of two even numbers is always an even number.
   Reason (R): The product of an even number and any number is always an even number.

   (A) Both assertion and reason are true and the reason is the correct explanation of assertion.

   (B) Both assertion and reason are true but the reason is not the correct explanation of the assertion.

   (C) Assertion is true and the reason is false.

   (D) Assertion is false and the reason is true.

   Ans. : (B) Both assertion and reason are true but the reason is not the correct explanation of the assertion.

*** Fill In The Blanks With Correct Alternative.[1 Marks Each]** **[3]**

4. The sum of two odd numbers is always _____.

   Ans. : even

5. The sum of an even and an odd number is always _____.

   Ans. : odd

6. The product of an even and an odd number is always _____.

   Ans. : even

*** Answer The Following Questions In One Sentence.[1 Marks Each]** **[7]**

7. Choose the correct option: Parity of the sum of numbers from 1-20 is (even/odd).

   Ans. : even

8. Choose the correct option: The expression (4a + 2), (always/never) gives an even number.

   Ans. : always

9. Choose the correct option: Parity of the 10th term of the Virahanka numbers is (even/odd).

   Ans. : odd

10. Choose the correct option: The expression (2m – 1) always has an (even/odd) parity.

    Ans. : odd

11. Create a magic square using 9 non-consecutive numbers whose magic sum is 18.

    Ans. :

12	–2	8
2	6	10
4	14	0

12. A lamp is ON. Ravi toggles its switch 23 times. Will the lamp be lighted or not?

    Ans. : OFF

13. Prerna was living on the first floor of an apartment. The first floor can be reached by walking up a staircase consisting of 7 steps. Prema usually climbs up by taking either 1 step each time or a maximum of 2 steps at a time. In how many ways can Prema reach her floor?

    Ans. : 21 ways

*** Questions With Calculation.[2 Marks Each]** **[14]**

14. Below you will find a set of magic number puzzles. Fill in the blanks to solve the puzzle for the given magic sum:
    (a) The magic sum is 27

10		
11		7
	13	

Ans. :

10	5	12
11	9	7
6	13	8

15. Below you will find a set of magic number puzzles. Fill in the blanks to solve the puzzle for the given magic sum:
(b) The magic sum is 42

15		
16		12
	18	

Ans. :

15	10	17
16	14	12
11	18	13

16. Solve this cryptarithm:

(a)
$$\begin{array}{r} B\ B \\ +\ \ A \\ \hline A\ C\ C \\ \hline \end{array}$$

(b)
$$\begin{array}{r} \ \ \ \ A \\ \ \ B\ B \\ +\ C\ C\ C \\ \hline B\ A\ B \\ \hline \end{array}$$

Ans. :

(a)
$$\begin{array}{r} 99 \\ +\ \ 1 \\ \hline 100 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} \ \ 4 \\ \ 77 \\ +666 \\ \hline 747 \\ \hline \end{array}$$

17. Find out the parity for the product of two (a) odd numbers and (b) even numbers.

Ans. : (a) Product of two odd numbers: The parity for the product of two odd numbers is always odd.

Example: 3 × 5 = 15 (odd number).

(b) Product of two even numbers: The parity for the product of two even numbers is always even.

Example: 4 × 6 = 24 (even number).

18. What is the parity of the sum of numbers from 1 to 200?

Ans. : The sum from 1 to 200 is given by :

$$1+2=\frac{2\times3}{2}=3$$
$$1+2+3=\frac{3\times4}{2}=6$$
$$1+2+3+4=\frac{4\times5}{2}=10$$
$$\vdots$$
$$1+2+3+\ldots+200=\frac{200\times201}{2}=20100$$

19. Fill in the grids below :

(a)

2			15
	4		14
		6	16
14	16	15	

(b)

	8		27
9	14		33
	15		39
27	37	35	

Ans. : (a)

2	5	8	15
9	4	1	14
3	7	6	16
14	16	15	

(b)

7	8	12	27
9	14	10	33
11	15	13	39
27	37	35	

20. Solve these cryptarithms :

(a)
$$\begin{array}{cccc} & A & B \\ + & C & B \\ \hline B & B & A \end{array}$$

(b)
$$\begin{array}{cccc} & A & B \\ + & B & C \\ & C & A \\ \hline A & B & C \end{array}$$

Ans. : (a)

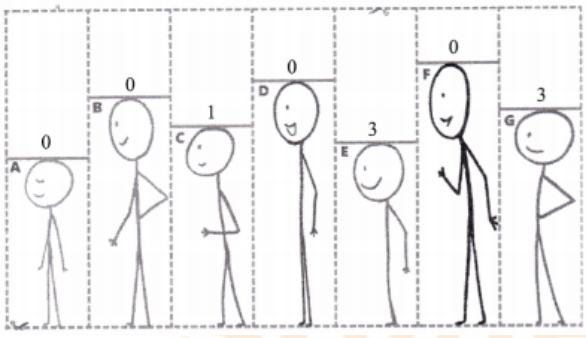
$$\begin{array}{cccc} & 2 & 1 \\ + & 9 & 1 \\ \hline 1 & 1 & 2 \end{array}$$

(b)

$$\begin{array}{cccc} & 1 & 9 \\ + & 9 & 8 \\ & 8 & 1 \\ \hline 1 & 9 & 8 \end{array}$$

*** Questions With Calculation.[3 Marks Each]** **[9]**

21. Find the number sequence formed when the given arrangements are changed as mentioned below.



(a) BFECDAG
(b) FBCEADG
(c) FDGBCEA

Ans. : (a) 0022153
(b) 0123413

(c) 0122456

22. Find the parity of the number of small squares in grids of the given dimensions without calculating the product.
(a) 23 × 19
(b) 62 × 26
(c) 124 × 271

Ans. : (a) Both 23 and 19 are odd numbers, and Odd × Odd = Odd.
So, the parity of the number of small squares is odd.

(b) Both 62 and 26 are evfen numbers, and Even × Even = Even.
So, the parity of the number of small squares is even.

(c) 124 is even, 271 is odd, and Even × Odd = Even.
So, the parity of the number of small squares is even.

23. Create a magic square whose magic sum is 51.

Ans. :

20	13	18
15	17	19
16	21	14

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