2 Marks

Q 2. Find the sum of the first odd numbers:-

Solution:-

STEP 1:- First, list the first 5 odd numbers: 1, 3, 5, 7, 9

STEP 2:- Now, we have to sum the odd numbers

$1 + 3 = 4$

$4 + 5 = 9$

$9 + 7 = 16$

$16 + 9 = 25$

STEP 3: The total sum the odd number is 25

Q 3. What numbers comes next in the pattern: 1, 2, 4, 8, 16..?

Solution:-

Step 1:- First, observe the pattern

Step 2: $1 \times 2 = 2$

$2 \times 2 = 4$

$4 \times 2 = 8$

$8 \times 2 = 16$

STEP 3: Next, 16 by 2

$16 \times 2 = 32$

STEP 4: The next number is 32

Q5. What shape comes after a hexagon in regular polygon sequence?

Solution:-

STEP 1 : A hexagon has 6 sides

STEP 2 : We are moving forward by 1.

STEP 3 : 4 sides is hexagon.

Q7. What is the 4^{th} cube number?

Solution:-

Step 1 : We have to find the cube of 4

Step 2 : The 4^{th} cube number is 64

Q10 What is the sum of 1+2+3+2+1?

Solution:-

STEP 1 : Pattern:

$1 + 2 = 3$

$3 + 3 = 6$

$6 + 2 = 8$

$8 + 1 = 9$

STEP 2 : The sum is 9

5 MARKS

Q1. Prove that the sum of the first n odd number is a square number using 6 terms.

SOLUTION:

STEP 1: We have the list of first 6 odd number 1, 3, 5, 7, 9, 11

STEP 2: From the sequence we have to show that the sum of the first n odd numbers is a square number.

STEP 3: $1+3 = 4$

$4+5 = 9$

$9+7 = 16$

$16+9 = 25$

$25+11 = 36$

STEP 4: The sum of first 6 odd numbers form a sequence 4, 9, 16, 25, 36

STEP 5: The sum of odd numbers form the square number

STEP 6: We have proved the adding odd numbers gives us square numbers each time

Q 3. Find the sum of the first 10 even numbers and identify the pattern.

SOLUTION:

STEP 1 : We start by 10 even numbers

2, 4, 6, 8, 10, 12, 14, 16, 18, 20

STEP 2 : Let's add them,

$2+4 = 6$

$6+6 = 12$

$12+8 = 20$

$20+10 = 30$

$30+12 = 42$

$42+14 = 56$

$56+16 = 72$

$72+18 = 90$

$90+20 = 110$

STEP 3 : The total sum is 110

Q 6. Determine the number of the line Segments in the Koch Snowflake for 4 Stages.

SOLUTION:-

STEP 1: It have 3 line Segment.

STEP 2: Initial value is 0, line 3.

STEP 3: Each segment is split into 4.

STEP 5: $3 \times 4 = 12$

$12 \times 4 = 48$

$48 \times 4 = 192$

$192 \times 4 = 768$ Segments

Q 8. Add first 5 triangular numbers, 1, 3, 6, 10, 15

SOLUTION:-

STEP 1: observe the pattern

STEP 2: Now, we have to add values of pattern

STEP 3: we have to add $1 + 3 = 4$

$4 + 6 = 10$

$10 + 10 = 20$

$20 + 15 = 35$

STEP 4: The sum of the triangle number is 35

Q 10. Multiply first 5 triangular numbers by 6 and add 1.

SOLUTION:-

STEP 1 : The triangular numbers are

1, 3, 6, 10, 15

STEP 2 : $1 \times 6 = 6$

$3 \times 6 = 18$

$6 \times 6 = 36$

$10 \times 6 = 60$

$15 \times 6 = 90$

STEP 3: Adding 1, 7, 19, 36, 61, 91

STEP 4: This is called Centered Hexagonal Numbers.