Atomic Energy Central School, Mysore.

Class :   VI   Subject: Mathematics

WORKSHEET

Name of the chapter: Patterns in Mathematics.

SECTION A

1. Which is the next number in the sequence 1,2,3,5,8,___

   a) 12   (b) 13   (c) 15   (d) 9

2. What is the series 1,3,9,27,81,__,__ called as

   a) triangular numbers   (b) powers of 3   (c)Virahanka numbers   (d)odd numbers

3. What will be the 9th term in the sequence 1,3,5,7,9,-,-,-,-

   a) 13   (b) 17   (c)21   (d) 18

4. What is the sequence 1,3,6,10,15,-,- called as?

   a) triangular numbers   (b)square numbers   (c) odd numbers   (d) none

5. Choose the hexagonal series

   a) 2,4,6,8,-,-,-   (b)1.7,19,37,-,-,-   (c) 1,3,9,27,-,-,-   (d) none

6. What is the sum of first 10 odd natural numbers

   a) 100   (b) 10   (c) 1000   (d) 50

7. Which sequence do you get when you start adding up hexagonal numbers?

   a) square numbers   (b) cubes   (c) odd numbers   (d) none

8. Which shape will come next in the given below sequence?

   a)   (b)   (c)   (d)none
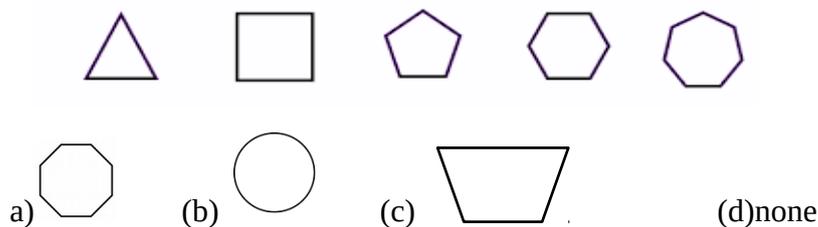
9. If u count the number of corners in each shape in the sequence of regular polygons given in the Q.No.33 which number sequence do you get?

   a) odd number   (b)squares   (c) even number   (d) counting number

10. Which sequence do you get when you start adding the counting numbers up?

   (a) hexagonal sequence   (b) squares   (c) triangular numbers   (d)cubes

11. Which of the following is an example of a repeating pattern?

    a) 2, 4, 6, 8   b) 1, 3, 5, 7   c) ABABAB   d) 1, 1, 2, 3, 5

12. Identify the next number in the pattern: 2, 4, 8, 16, 32, ____.

    a) 48   b) 50   c) 64   d) 62

13. Which pattern rule describes the sequence: 5, 10, 15, 20, 25?

    a) Add 2 each time   b)Add 3 each time   c)Add 5 each time   d)Multiply by 2 each time

14. Find the missing number in the pattern: 3, 6, __, 12, 15.

    a) 7   b) 8   c) 9   d) 10

15. If the pattern is 2, 4, 8, 16, 32, what operation is used to go from one number to the next?

    a) Addition   b) Subtraction   c) Multiplication   d) Division

16. What comes next in the pattern: 1A, 2B, 3C, 4D, ____?

    a) 5E   b) 5A   c) 5F   d) 5D

17. In a pattern, the first term is 3, the second term is 9, and the third term is 27.

    What is the pattern rule?

    a) Add 6   b) Multiply by 3   c) Subtract 3   d) Divide by 3

18. Which of the following number patterns shows the Fibonacci(Virahanka) sequence?

    a) 1, 2, 3, 4, 5   b) 1, 2, 3, 5,8   c) 2, 4, 6, 8, 10   d) 5, 10, 15, 20

19. If a pattern starts with 2 and follows the rule "multiply by 2 and add 1",what is the fourth term?

    a) 8   b) 23   c) 14   d) 15

20. What sequence do you get when you add the All 1's sequence up?

    a) triangular numbers   b)odd numbers   c)counting numbers   d)none

SECTION B

21. Start with the number 3 and create a pattern by adding 4 each time. Write the first five numbers in the pattern.

22. Identify the rule for the following shape pattern:

    ■, ■■, ■■■, ____, ____ (Rule: _____)

23. If the pattern 2, 4, 6, 8 continues, what will be the 10th number in the sequence?

24. A shape pattern has 3 triangles, 6 triangles, 9 triangles... How many triangles will be in the 5th pattern?

25. Represent 36 pictorially both as a triangular number and a square number.

26. Why are 1,3,6,10,15…called triangular numbers? Why are 1,4,9,16,25,…. called square numbers?

27.Draw the next shape in the sequence:

    i. ▲ , ■ , ▲ , ■, _____, _____, _____

    ii. ■, ■■, ■■■, _____, _____, _____

28. Look at the following patterns and write the rule:

    i. 3, 6, 9, 12, _____, _____ (Rule: _____)

    ii. 1, 3, 6, 10, _____, _____ (Rule: _____)

    iii. 2, 4, 8, 16, _____, _____ (Rule: _____)

29. What will be the next picture in the given sequences

a)

30. Write the next three numbers in each sequence and also write the rule for it

    a)1,4,9,16,__,__,__

    b)1,2,3,5,8,__,__,__

31. a) Write and name the number sequence that we will get when we start to add up powers of 2 starting with 1 and then add 1 to each of these numbers.

   b)Which number sequence do you get when we add the counting numbers up and then down?

32. How many sides does a pentagon have?

33.What is the sum of the first 10 odd numbers?

34. Why are 1, 8, 27, 64, 125…called cubes?

35. Find the next two numbers in the sequence 1, 4, 9, 16…

36.What is hexagonal numbers? Represent it pictorially.

SECTION C

Complete the following number sequences:

37. 1+3+5+___+9+11=_____

38. 1+___+3+4+3+2+1=_____

39. 2+4+6+____+10+12=_____

40. 1+3+6+10+___+21=_____