

ACTIVITY NO. - 5

Subject	Mathematics
Class	X
Chapter/Unit	Arithmetic Progression
Topic	Sum to n terms
Time	20 minutes
Nature of Activity	Individual

What will I learn (Learning Outcome)?

The sum of first n odd natural numbers, $1 + 3 + 5 + \dots + (2n - 1) = n^2$.

Skills: Applying, Analyzing and Creating

What I have to do?

To verify that the sum of first n odd natural numbers $= n^2$ by paper activity.

What do I require?

Squared paper, coloured paper, sketch pens, geometry box, glue stick.

What do I need to know?

Natural number system, Formula to find the nth terms of an AP i.e., $a_n = a + (n - 1)d$,

Area of squares and rectangles.

➤ Teacher's Activity

Teacher will revise Number System and the concept of A.P and nth term of an A.P.

How will I proceed?

➤ Student's Activity

Let us consider the sum of first 6 odd natural numbers i.e. $1 + 3 + 5 + 7 + 9 + 11$.

- 1) Take a squared paper of size 6 units X 6 units (Take $n = 6$).
- 2) Paste it on a white sheet.
- 3) Color the first square starting from the top left corner.
- 4) Next, color 3 squares surrounding the first colored square in the step 3 above with different color.
- 5) Now color 5 squares surrounding the squares colored in the step 4 above with different color.
- 6) Continue the same process till all the squares are colored.
- 7) Put a dot on each colored square.

What have I observed?

no.	color	No. of squares	Sum of all the squares starting from extreme left	n^2
1	red	1	1	1^2
2	blue	3	$1 + 3$	2^2
3	green	5	$1 + 3 + 5$	3^2
4				
5				
6				

What have I learnt?

$1 + 3 + 5 + 7 + 9 + 11 = \underline{\hspace{2cm}}$.

What am I curious to learn?

Perform the steps above to find $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15$.

Let me evaluate myself

1) Find the 22nd term of the A.P: 8, 3, -2, ...

2) Determine an A.P. whose third term is 16 and seventh term exceeds the fifth term by 12.

3) If the 8th term of an A.P. is 37 and the 15th term is 15 more than the 12th term, find the A.P. Hence find the sum of first 15 terms of the A.P.
