

ARITHMETIC PROGRESSION

Activity – 5(ii)

1. What we have to do?

To verify that the sum of first n natural numbers is $\frac{n(n+1)}{2}$, i.e. $\sum n = \frac{n(n+1)}{2}$.

2. What is required?

Squared paper, coloured paper, sketch pens, geometry box, glue stick, a pair of scissors

3. Time required: 35 min

4. What do we need to know?

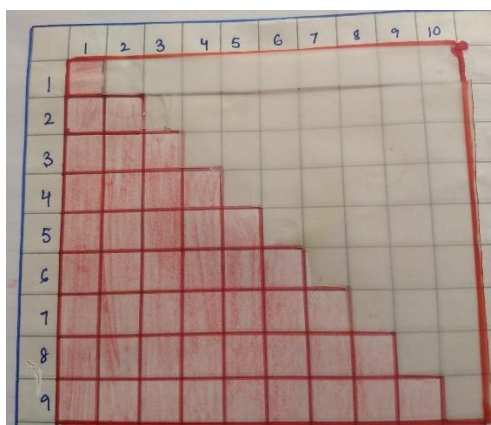
Natural number system, Area of squares and rectangles

5. How will you proceed?

Let us consider the sum of natural numbers say from 1 to 9, i.e. $1 + 2 + 3 + \dots + 9$.

Here $n = 9$ and $n + 1 = 10$.

- 1) Take a squared paper of size 9×10 squares and paste it on a chart paper.
- 2) On the left side vertical line, mark the squares by 1, 2, 3, ... 9 and on the horizontal line, mark the squares by 1, 2, 3, ... 10.
- 3) With the help of sketch pen, shade rectangles of length equal to 1 cm, 2 cm, ..., 9 cm and of 1 cm width each.
- 4) Trace the shaded portion using tracing paper.
- 5) Put the trace of shaded portion on the remaining part of the grid.



6. What have you observed?

Area of the whole squared paper = _____

Area of the shaded portion = _____

The shaded area is _____ the whole area of the squared paper taken.

7. What have you learnt?

8. What would you be interested in doing?

Perform the above activity for $n = 7$ and verify the result.

Real Life Application:

The above concept is used in our day to day life incidents viz. charges at the Parking, Taxi fare, buying of groceries from a whole sale market and Fibonacci series, Golden Ratio to name a few...