



കൈ കഴുകുക



സാനിറ്റൈസർ ഉപയോഗിക്കുക



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## Online Class Supporting Materials

### MALAPPURAM EDUCATIONAL DISTRICT

### X Maths(EM)-1.04

## ARITHMETIC SEQUENCES

### Sums and Terms

#### Activity -1

In the following table a few consecutive terms of some arithmetic sequences are given. Complete the table suitably.

Sl. No.	Terms of sequence	No. of terms	Middle term	Number of terms $\times$ middle term	Sum of the terms
1	5, 8, 11	3	8	$3 \times 8 = 24$	$5 + 8 + 11 = 24$
2	3, 5, 7, 9, 11				
3	10, 15, 20, 25, 30, 35, 40				
4	$x-d, x, x+d$				
5	$x-2d, x-d, x, x+d, x+2d$				

**In an arithmetic sequence with odd number of terms, the sum of the terms is the product of the number of terms and the middle term.**

#### Activity -2

Consider the arithmetic sequence 10, 15, 20, 25, 30, 35, 40, 45, 50 (9 terms)

Middle term is = 30

Let's add the terms that are equidistant from both ends

$$x_1 + x_9 = 10 + 50 = 60$$

$$x_2 + x_8 = \dots + \dots = \dots \text{(Complete suitably)}$$

$$x_3 + x_7 = \dots + \dots = \dots \text{( ,, )}$$

$$x_4 + x_6 = \dots + \dots = \dots \text{( ,, )}$$

How the sums of each pair of terms are related ? How these sums are related to the middle term ?

**In an arithmetic sequence with odd number of terms, the sum of each pair of terms equidistant from both ends is equal and it is double the middle term.**

**Activity -3**

Consider the arithmetic sequence 2, 5, 8, 11, 14, 17, 20, 23, 26, 29 (10 terms)  
Let's add the terms that are equidistant from both ends

$$x_1+x_{10} = 2 + 29 = 31$$

$$x_2+x_9 = \dots\dots\dots + \dots\dots\dots = \dots\dots\dots(\text{Complete suitably})$$

$$x_3+x_8 = \dots\dots\dots + \dots\dots\dots = \dots\dots\dots( \quad \text{,,} \quad )$$

$$x_4+x_7 = \dots\dots\dots + \dots\dots\dots = \dots\dots\dots( \quad \text{,,} \quad )$$

$$x_5+x_6 = \dots\dots\dots + \dots\dots\dots = \dots\dots\dots( \quad \text{,,} \quad )$$

How the sums of each pair of terms are related ?

**In an arithmetic sequence with even number of terms, the sum of each pair of terms equidistant from both ends is equal.**

**(OR)**

**In an arithmetic sequence if the sum of positions of two terms are equal, then the sum of the terms are also equal**

**WORKSHEET 1.04**

1. In the following arithmetic sequences find the missing terms using the idea of pair sum and middle term relation.

(a) 3, ....., 11

(b) 10, ....., ....., ....., 34

(c) 17, ....., ....., ....., ....., ....., ....., ....., ....., 65

2. The following steps are used to write four arithmetic sequences with the sum of first five terms is 40. fill in the blanks suitably.

Sum of first 5 terms = 40

The middle term ( $x_3$ ) = .....

If Common difference (d) is 1

Sequence is .....

If Common difference (d) is 2

Sequence is .....

If Common difference (d) is 3

Sequence is .....

If Common difference (d) is 4

Sequence is .....

3. In an arithmetic sequence sum of 4<sup>th</sup> and 6<sup>th</sup> terms is 20.
- What is the sum of 1<sup>st</sup> and 9<sup>th</sup> terms ?
  - Find two more pairs of terms with the same sum.
  - Find the 5<sup>th</sup> term.
  - if 3<sup>rd</sup> term of the sequence is 7, find the 7<sup>th</sup> term.
4. The sum of first four terms of an arithmetic sequence is 60
- What is the sum of first and last terms ?
  - What is the sum of second and third terms ?
  - Write two numbers having this sum .
  - What is the difference between these two numbers ?
  - Write an arithmetic sequence with this difference as 'd' and the sum of first four terms is 60.
  - Write two more arithmetic sequences with different common differences and sum of their first four terms is 60.
5. In an arithmetic sequence sum of first five terms is 200. and sum of first ten terms is 500.
- What is its third term ?
  - Find its eighth term.
  - Find its common difference.
  - What is the first term ?
  - Write the algebra of the sequence.
  - Is 600 a term of the sequence ?
6. The angles of a hexagon are in arithmetic sequence. Its largest angle is 140<sup>o</sup>.
- What is the sum of all the angles ?
  - What is the sum of smallest and largest angles?
  - What is the smallest angle ?
  - What is the common difference of the sequence ?
  - Write the angles of the hexagon.
  - Can the smallest angle be 60<sup>o</sup> ? Why ?
  - What property can you Suggest about the measure of the smallest angle ?



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