

# MATHEMATICS WORKSHEET

## CLASS-X

### Ch – 5 (ARITHMETIC PROGRESSIONS)

#### Very Short Answer Type Questions (1 Mark)

- 1) The  $n$ th term of an AP is  $7-4n$ . Find its common difference. (Ans: -4)
- 2) Which term of the AP 2, 18, 15, ... is zero? (Ans: 8)
- 3) For what value of  $p$ , are  $2p + 1$ , 13,  $5p - 3$  three consecutive terms of an AP? (Ans: 4)
- 4) If  $a_n = n(n-3) / n+4$ , then find 18<sup>th</sup> term of this sequence. (Ans: 135/11)
- 5) If the sum of first  $m$  terms of an AP is  $2m^2 + 3m$ , then what is its second term? (Ans: 9)
- 6) If the sum of first  $p$  terms of an AP is  $ap^2 + bp$ , find its common difference. (Ans: 2a)

#### Short Answer Type Questions I (2 Marks)

- 7) Is -150 a term of the AP 17, 12, 7, 2...? (Ans: 172/5)
- 8) In an AP, the sum of first  $n$  terms is  $5n^2/2 + 3n/2$ . Find its 20<sup>th</sup> term. (Ans: 99)
- 9) Find the common difference of an AP whose first term is 4, the last term is 49 and the sum of all its terms is 265. (Ans: 5)
- 10) The sum of three numbers of an AP is 27 and their product is 405. Find the numbers. (Ans: 3, 9, 15 and 15, 9, 3)
- 11) Find  $k$ , if the given value of  $x$  is the  $k$ th term of the given AP: 25, 50, 75, 100, ...,  $x = 1000$  (Ans : 40)

#### Short Answer Type Questions II (3 Marks)

- 12) If  $m$  times the  $m$ th term of an AP is equal to  $n$  times its  $n$ th term, find the  $(m+n)$ th term of the AP. (Ans : 0)
- 13) If 9<sup>th</sup> term of an AP is zero, prove that its 29<sup>th</sup> term is double of its 19<sup>th</sup> term.
- 14) Which term of the progression 19, 18 $\frac{1}{2}$ , 17 $\frac{1}{2}$ , ... is the first negative term. (Ans: 25<sup>th</sup> term)

15) If the  $p$ th,  $q$ th,  $r$ th terms of an AP be  $x, y, z$  respectively, show that

$$x(q - r) + y(r - p) + z(p - q) = 0$$

16) How many terms of the AP  $-6, -11/2, -5, \dots$  are needed to give the sum  $-25$ ? Explain the double answer. (Ans:  $n = 5, 20$ )

17) If the  $p$ th term of an AP is  $1/q$  and the  $q$ th term is  $1/p$ , show that the sum of  $pq$  terms is  $\frac{1}{2}(pq + 1)$ .

### Long Answer Type Questions (4 Marks)

18) If the sum of first 4 terms of an AP is 40 and that of first 14 terms is 280, find the sum of its first  $n$  terms. (Ans :  $n(n + 6)$ )

19) The first and the last terms of an AP are 8 and 350 respectively. If its common difference is 9, how many terms are there and what is their sum? (Ans : 6981)

20) How many multiples of 4 lie between 10 and 250? Also find their sum. (Ans : 7800)

21) Find the common difference of an AP whose first term is 5 and the sum of its first four terms is half the sum of the next four terms. (Ans : 2)

22) Find the sum of the integers between 100 and 200 that are

i) divisible by 9

ii) not divisible by 9

(Ans : 1683, 13167)

23) The students of a school decided to beautify the school on the Annual Day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2m. The flags are stored at the position of the middle most flag. Ruchi was given responsibility of placing the flags. Ruchi kept her books where the flags were stored. She could carry only one flag at a time. How much distance did she cover in completing the job and returning back to collect her books. What is the maximum distance she travelled carrying a flag?

(Ans : 728m, 26m)

24) If  $S_1, S_2, S_3$  are the sum of  $n$  terms of three APs, the first term of each being unity and the respective common difference being 1, 2, 3; prove that  $S_1 + S_3 = 2S_2$