ARITHMETIC PROGRESSIONS

ASSIGNMENT NO. 3

1. The ratio of the sum of n terms of A.P.'s is $(7n + 1) : (4n + 27)$. Find the ratio of their m^{th} terms.
2. The ratio of the sums of m and n terms of an A.P. is $m^2 : n^2$, show that the ratio of m^{th} and n^{th} terms is $(2m - 1) : (2n - 1)$.
3. If there are $(2n + 1)$ terms in A.P., then prove that the ratio of the sum of odd terms and the sum of even terms is $(n + 1) : n$.
4. Two cars start together in the same direction from the same place. The first goes with uniform speed of 10 km/h. The second goes at a speed of 8 km/h in the first hour and increases the speed by $\frac{1}{2}$ km in each succeeding hour. After how many hours will the second car overtake the first car if both cars go non – stop?
5. 150 workers were engaged to finish a piece of work in a certain number of days. Four workers dropped the second day, four more workers dropped the third day and so on. It takes 8 more days to finish the work now. Find the number of days in which the work was completed.
6. In an A.P., the sum of first ten terms is (– 150) and the sum of its next ten terms is (– 550). Find the A.P.
7. Along a road lies an odd number of stones placed at intervals of 10 metres. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stones by carrying them in succession. In carrying all the stones he covered a distance of 3 km. Find the number of stones.
8. Interior angles of a polygon are in A.P. If the smallest angle is 120^0 and the common difference is 5^0, find the number of sides of the polygon.
9. $a_1, a_2, a_3, \ldots\ldots\ldots, a_{24}$ are in A.P. and $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 300$, find the sum of the first 24 terms of the A.P.
10. Raghav buys a shop for Rs. 120000. He pays half of the amount in cash and agrees to pay the balance in 12 annual instalments of Rs. 5000 each. If the rate of interest is 12% and he pays with the instalment the interest due on the unpaid amount, find the total cost of the shop.