

INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet for the Academic Year 2024-25

CLASS: X SUBJECT: MATHEMATICS DATE: 10-10-2024

LESSON: 05 ARITHMETIC PROGRESSIONS

Level1:

- Write the first three terms of each of the following sequence:
 - $a_n = 3n + 2$
 - $a_n = 2n^2 - 3n + 1$ (Ans: a) 5,8,11 b) 0,3,10)
- The n^{th} term of an AP is $6n + 2$. Find the common difference (Ans: 6)
- For what value of k will the consecutive terms $2k + 1, 3k + 3$ and $5k - 1$ form an AP (Ans: $k = 6$)
- Write an AP whose first term is 4 and common difference is (-3) (Ans: 4,1,-2,-5.....)
- Find the common difference of the AP $\frac{1}{2x}, \frac{1-4x}{2x}, \frac{1-8x}{2x}, \dots$ (Ans: -2)
- The first term of an AP is (-7) and the common difference is 5. Find its 18th term (Ans: 78)
- Is 184 a term of the AP 3,7, 11,..... (Ans: No)
- If the 10th term of an AP is 52 and the 17th term is 20 more than the 13th term, find the AP (Ans: 7,12,17,22.....)
- Find the middle term of the AP 6, 13, 20,216 (Ans: 111)
- Find the 7th term from the end of the AP 7, 10, 13,184 (Ans: 166)
- If 10 times of the 10th term of an AP is equal to 15 times the 15th term, show that 25th term of the AP is zero
- If the p^{th} term of an AP is q and the q^{th} term is p , prove that its n^{th} term is $(p + q - n)$
- In an AP $a = 2$, and $S_n = 335$, then find its 10th term (Ans: 65)
- The ratio of the 11th term to the 18th term of an AP is 2:3. Find the ratio of the 5th term to the 21st term, also find the ratio of the sum of the first 5 terms to the sum of the first 21 terms (Ans: 1:3, 5:49)
- Find the sum of even positive integers between 1 and 200 (Ans: 9900)
- The sum of the first three terms of an AP is 33. If the sum of the twice of the first and the third term exceeds the third term by 28, then find the AP. (Ans: 14, 11, 8,.....)
- A man saved ₹16500 in 10 years. In each year after the first he saved ₹100 more than he did in the preceding year. How much did he save in the first year (₹1200)
- The sum of first n terms of three APs are S_1, S_2, S_3 . The first term of each is 5 and their common differences are 2, 4, 6 respectively. Prove that $S_1 + S_3 = 2S_2$
- The sum of the first 7 terms of an AP is 63 and the sum of its next 7 terms is 161. Find the 28th term of this AP (Ans: 57)

Level 2:

- Find the sum of all 11 terms of an AP whose middlemost term is 30 (Ans: 330)
- Solve the equation
 $(-4) + (-1) + 2 + \dots + x = 437$ (Ans: 50)

22. The p^{th} , q^{th} , and r^{th} terms of an AP are a, b, and c respectively. Show that
 $a(q - r) + b(r - p) + c(p - q) = 0$
23. Which term of the AP 120, 116, 112, ... is the first negative term (Ans: 32nd)
24. An AP consists of 37 terms. The sum of the three middlemost terms is 225 and the sum of the last three terms is 429. Find the AP (Ans: 3, 7, 11, 15, ...)
25. If m times the m^{th} term of an AP is equal to n times its n^{th} term, show that the $(m + n)^{th}$ term of an AP is zero.
