



INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

Arithmetic Progressions(DTQ)

Q. No.	Questions of 2 marks each
1.	Find the value of $a_{25} - a_{15}$ for the AP: 6, 9, 12, 15,
2.	If the sum of first m terms of an AP is the same as the sum of its first n terms, show that the sum of its first $(m + n)$ terms is zero.
3.	If $3k - 2$, $4k - 6$ and $k + 2$ are three consecutive terms of AP, then find the value of k .
4.	Which term of the progression $20, 19\frac{1}{4}, 18\frac{1}{2}, 17\frac{3}{4}, \dots$ is the first negative term.
5.	How many terms of AP 3, 5, 7, 9, must be taken to get the sum 120?
6.	How many two digits numbers are divisible by 3?
7.	In a certain AP 32^{th} term is twice the 12^{th} term. Prove that 70^{th} term is twice the 31^{st} term.
8.	Find the middle term of the AP 213, 205, 197, 37.
9.	The sum of first terms of an AP is given by $S_n = 2n^2 + 3n$. Find the sixteenth term of the AP.
10.	In an AP of 50 terms, the sum of the first 10 terms is 210 and the sum of its last 15 terms is 2565. Find the AP.
Questions of 3 marks each	
11.	Find the sum of all two digits odd positive numbers.
12.	How many three-digit numbers are such that when divided by 7, leave a remainder 3 in each case?
13.	Find the sum of the following series: $5 + (-41) + 9 + (-39) + 13 + (-37) + 17 + \dots + (-5) + 81 + (-3)$
14.	The n^{th} term of an AP is given by $(-4n) + 15$. Find the sum of first 20 terms of this AP.
15.	The 13^{th} term of an AP is four times its 3^{rd} term. If the fifth term is 16, then find the sum of its first ten terms.
16.	The tenth term of an AP, is -37 and the sum of its first six terms is -27. Find the sum of its first eight terms.

17.	The sum of first n terms of three arithmetic progressions are S_1 , S_2 and S_3 respectively. The first term of each AP is 1 and common differences are 1, 2 and 3 respectively. Prove that $S_1 + S_3 = 2S_2$.
18.	A man repays his loan of ₹3250 by paying ₹20 in the first month and then increases the payment by ₹15 every month. How long will it take him to clear the loan?
Questions of 5 marks each	
19.	Three numbers are in AP such that their sum is 18 and the sum of their squares is 158. Find the greatest number of the AP?
20.	Find the sum of 25 terms of an A.P., in which the third term is 7 and 7 th term is two more than thrice of its third term.
21.	Solve the equation: $-4 + (-1) + 2 + \dots + x = 437$
22.	The sum of first and eighth terms of an AP is 32 and their product is 60. Find the first term and common difference of the AP. Hence, also find the sum of its first 20 terms.
23.	In an AP of 40 terms, the sum of first 9 terms is 153 and the sum of last 6 terms is 687. Determine the first term and common difference of AP. Also, find the sum of all the terms of the AP.
CASE STUDY QUESTIONS	
24.	<p>A road roller (sometimes called a roller-compactor, or just roller) is a compactor-type engineering vehicle used to compact soil, gravel, concrete, or asphalt in the construction of roads and foundations. Similar rollers are used also at landfills or in agriculture. Road rollers are frequently referred to as steamrollers, regardless of their method of propulsion.</p> <p>RCB Machine Pvt Ltd started making road roller 10 years ago. Company increased its production uniformly by fixed number every year. The company produces 800 rollers in the 6th year and 1130 roller in the 9th year.</p>

	<p>Keeping the above situation in mind answer the following questions:</p> <p>(i) Form the AP showing the production of the company.</p> <p>(ii) What was the company's total production of the first 6 years?</p>							
								
25.	<p>Your elder brother wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of ₹118000 by paying every month starting with the first instalment of ₹1000. If he increases the instalment by ₹100 every month, answer the following.</p> <p>(i) After how many instalments will he repay his loan?</p> <p>(ii) Find the amount paid in the last instalment?</p>							
								
Answers	1	30	3	3	4	28	5	10
	6	30	8	125	9	65	10	3, 7, 11...
	11	2475	12	129	13	420	14	-540
	15	175	16	-76	18	20 months	19	11
	20	1175	20	1175	21	1175	22	2 and 4 or 30 and -4, -160
	23	a = 5, d = 3, 2540		(i) 250, 360, 470... (ii) 3150		(i) 40 (ii) 4900		