INDIAN SCHOOL AL WADI AL KABIR

Department: Mathematics

Class X **Worksheet – Arithmetic Progressions**

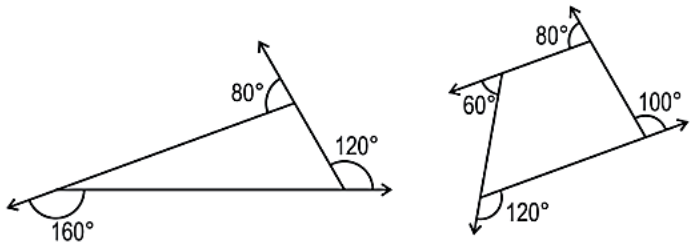
01 – 11 -2023

Questions of 2 marks each

Q.1.	Which term of the AP 120, 116, 112, … is its first negative term.
Q.2.	Find the sum of all the natural numbers lying between 100 to 200 which are divisible by 4.
Q.3.	The sum of 5^{th} and 7^{th} terms of an AP is 52 and the 10^{th} term is 46. Find the common difference.
Q.4.	Animation is a method in which a sequence of images is manipulated to appear as moving objects. An animation specialist wants to show the growth of a sapling into a tree through animation. She follows the steps below: • She develops the second image by adding 15 leaves to the first image. • She develops the third image by adding 22 leaves to the second image. • Then the fourth image by adding 29 leaves to the third image and so on. If she continues the process in the same manner, how many leaves will she be adding to the 25^{th} image to develop the 26^{th} image? Show your work. (CFQ)
Q.5.	14, 21, 28, 35, … and 26, 39, 52, 65, … are two arithmetic progressions such that the p^{th} term of the arithmetic progression is the same as the q^{th} term of the second arithmetic progression. Derive a relationship between p and q. Show your work. (CFQ)
Q.6.	Find a and b so that the numbers a, 7, b, 23 are in AP.

Questions of 3 marks each

Q.7.	Find the sum of the following series: 5 +(-41) + 9 +(-39) + 13 +(-37) + 17 + …. +(-5) + 81 +(-3)
Q.8.	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.

Q.9.	A man repays a loan of ₹ 3250 by paying ₹ 20 in the first month and then increases the payment by ₹ 15 every month. How long will it take to clear the loan?
Q.10.	The exterior angles marked in each of the polygons below are in Arithmetic Progression.  Minal drew one such polygon with n sides. The smallest exterior angle is 8° and each subsequent angle is 4° more than the previous angle. Find the number of sides of the polygon that Minal had drawn. Show your steps. (CFQ)

Questions of 5 marks each

Q.11.	In an A.P, the sum of the first 'n' terms is $3n^2$ + n. Find the first term and the common difference of the A.P. Hence, find its 15^{th} term.
Q.12.	If the sum of the first 7 terms of an AP is -21 and that of the first 17 terms is -221, then find the sum of its first 'n' terms.
Q.13.	The sum of first q terms of an A.P is 63q - $3q^2$. If its p^{th} term is -60, find the value of p. Also, find the 11^{th} term of this A.P.
Q.14.	The ratio of the 11^{th} term to 17^{th} term of an A.P is 3: 4. Find the ratio of 5^{th} term to 21^{st} term of the same A.P. Also, find the ratio of the sum of the first 5 terms to that of first 21 terms.
Q.15.	The sum of three numbers in an A.P is 12 and the sum of their cubes is 288. Find the numbers. (CFQ)

ANSWERS

Q.1	32nd	**Q.2**	3600	**Q.3**	d = 5	**Q.4**	183
Q.5	7p – 13q = 6	**Q.6**	a = -1, b = 15	**Q.7**	420	**Q.9**	20 months
Q.10	12	**Q.11**	4, 6, 88	**Q.12**	4n - n^2	**Q.13**	p = 21, a_{11} = 0
Q.14	3: 7, 25: 189	**Q.15**	2, 4, 6 or 6, 4, 2				