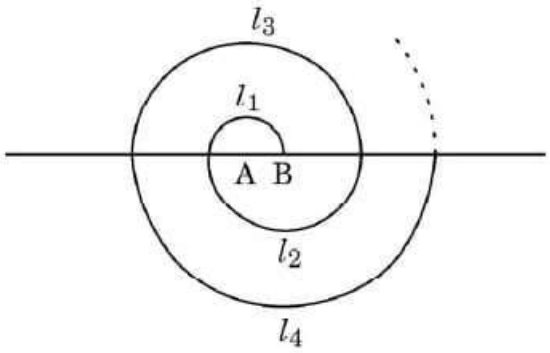
INDIAN SCHOOL AL WADI AL KABIR

WORKSHEET 2026-27

CLASS X **ARITHEMATIC PROGRESSIONS**

	Questions of 2 mark each
Q.1	In an A.P., the first term is 32 and the last term is −10. If the common difference is −2, then find the number of terms and their sum.
Q.2	Find the sum of the first 28 terms of an A.P. whose nth term is given by $a_n = 3n - 2$.
Q.3	The angles of a triangle are in A.P., the least being half the greatest. Find the angles.
Q.4	Find whether -150 is a term of the A.P. 17,12,7,2, ... ?
Q.5	The 4^{th} term of an A.P. is zero. Prove that the 25th term of the A.P. is three times its 11^{th} term.
Q.6	How many natural numbers are there between 200 and 500, which are divisible by 7?
	Questions of 3 marks each
Q.7	In an A.P., it is given that $a = 2, d = 8$ and $S_n = 90$. Find the value of n.
Q.8	How many 4-digit numbers are divisible by 7?
Q.9	In an A.P., the 15th term exceeds the 8th term by 21. If the sum of the first 10 terms is 55, then form the A.P.
Q.10	The sum of the first n terms of an A.P. is $2n^2 + 13n$. Find its nth term and hence the 10th term.
Q.11	If the sum of first 7 terms of an A.P is 49 and that of its first 17 terms is 289, find the sum of first n terms of the A.P.
Q.12	The sum of the first seven terms of an AP is 182. If its 4^{th} and the 17^{th} terms are in the ratio $1:5$, find the AP.
Q.13	If S_n, denotes the sum of first n terms of an A.P., prove that $S_{12} = 3(S_8 - S_4)$.
	Questions of 5 marks each
Q.14	An AP consists of 21 terms. The sum of the three terms in the middle is 129 and of the last three is 237. Find the AP.
Q.15	The sum of four consecutive numbers in A.P. is 32 and the ratio of the product of the first and last terms to the product of two middle term is 7 : 15. Find the numbers.
Q.16	If a, b, c are p^{th} , q^{th} and r^{th} terms of an A.P. then prove that $a(q - r) + b(r - p) + c(p - q) = 0$.

Q.17	Two cars start together in the same direction from the same place. The first goes with uniform speed of 10kmph. The second goes at a speed of 8kmph 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 nonstop?
Q.18	A ladder has rungs 20.5cm apart. The rungs decrease uniformly in length from 50cm at the bottom to 30cm at the top. If the top and bottom rungs are 3.075m apart, what is the length of the wood required for the rungs?
	CASE STUDY QUESTION (4 MARK)
Q.19	In a garden, saplings of rose flowers were planted at equal intervals to form a spiral pattern. The spiral is made up of successive semicircles, with centers alternatively at A and B, starting with center at A, of radii 50 cm, 100 cm, 150 cm, …, as shown in the figure. Spiral 1 has 10 flowers, Spiral 2 has 20 flowers, Spiral 3 has 30 flowers and so on.   Based on the above information, answer the following questions: **(i)** What is the radius of the 13th spiral? **[1 Mark]** **(ii)** If the radius of the nth spiral is 500 cm, find the value of n. **[1 Mark]** **(iii)(a)** Find the total number of saplings till the 11th spiral. **[2 Marks]** OR **(iii)(b)** Till which spiral will there be a total of 450 saplings?
Q.20	Mohan is an auto driver. His autorickshaw was too old and he had to spend a lot of money on repair and maintenance every now and then. One day he got to know about the EV scheme of the Government of India where he can not only get a good exchange bonus but also avail heavy discounts on the purchase of an electric vehicle. So, he took a loan of 1,18,000 from a reputed bank and purchased a new autorickshaw. Mohan repays his total loan of 118000 rupees by paying every month starting with the first instalment of 1000 rupees.



(i)If he increases the instalment by 100 rupees every month, then what amount will be paid by him in the 30th instalment?
(ii) If he increases the instalment by 100 rupees every month, then what amount of loan does he still have to pay after 30th instalment?

OR

(ii) If he increases the instalment by 200 rupees every month, then what amount would he pay in 40th instalment?
(iii) If he increases the instalment by 100 rupees every month, then what amount will be paid by him in the 100th instalment

ANSWER KEY					
Q.1	Number of terms: 22 Sum of the terms: 242	**Q.9**	$-8,-5,-2,1,4,7,10,13,16,19,\ldots$	**Q.17**	9 hours
Q.2	1162	**Q.10**	$a_n = 4n + 11, a_{10} = 51$	**Q.18**	640cm (or 6.4m)
Q.3	$40°, 60°, 80°$	**Q.11**	$S_n = n^2$	**Q.19**	I. 650 cm II. 10 III. (a)660 OR (b) 9
Q.4	No, - 150 is not a term of the A.P.	**Q.12**	2,10,18,26,34,42,50, ...	**Q.20**	(i) 3900 (ii) 44500 OR (ii) 8800 (iii)10900
Q.5	PROOF	**Q.13**	$S_{12} = 3(S_8 - S_4)$		
Q.6	43	**Q.14**	3, 7, 11, 15, 19, 23,…		
Q.7	$n = 5$	**Q.15**	2, 6, 10, 14		
Q.8	1286	**Q.16**	PROOF		