



INDIAN SCHOOL AL WADI AL KABIR

Class X, Mathematics

Topic wise Practice for Board Examination

Arithmetic Progressions

08 – 01 - 2023

SECTION A

Q. No.

Section A consists of Questions of 1 Mark each.

1. The value of k for which $k + 9$, $2k - 1$ and $2k + 7$ are the consecutive terms of an AP is:

A	18	B	16	C	14	D	12
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2. In an AP, if the common difference is -4 and the seventh term is 4 , the first term is:

A	24	B	20	C	8	D	28
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3. The number of terms in the AP $18, 15\frac{1}{2}, 13, \dots, -47$ is:

A	25	B	26	C	27	D	28
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4. The sum of first ten multiples of 6 is:

A	60	B	330	C	120	D	240
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5. The 9th term from the end of the AP $5, 9, 13, \dots, 185$ is:

A	153	B	181	C	170	D	145
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6. The sum of first 100 natural numbers is:

A	1010	B	5050	C	5010	D	1050
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7. If the sum of first n terms of an AP is $5n^2 + 2n$, then its second term is:

A	16	B	17	C	$\frac{27}{14}$	D	$\frac{56}{15}$
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8. The first term of an AP is 5 and the last term is 45 . If sum of all the terms is 400 , the number of terms is:

A	20	B	8	C	10	D	16
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9. The sum of all two-digit odd numbers is:
- A** 2475 **B** 2530 **C** 4905 **D** 5049

10. If the sum of p terms of an AP is q and the sum of q terms is p , then the sum of $p + q$ terms is:
- A** 0 **B** $p - q$ **C** $-(p + q)$ **D** $p + q$

DIRECTION: In the question number 11 and 12, a statement of **assertion (A)** is followed by statement of **Reason (R)**. Choose the correct option.

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
- (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

11. Assertion:
Common difference of the AP -5, -1, 3, 7, is 4.

Reason:

Common difference of the AP $a, a + d, a + 2d, \dots$ is given by $d = 2^{\text{nd}} \text{ term} - 1^{\text{st}} \text{ term}$.

12. Assertion:
If three consecutive terms $2k + 1, 3k + 3$ and $5k - 1$ form an AP, then k is equal to 6.

Reason: In an AP $a, a + d, a + 2d, \dots$, the sum to first n terms of the AP is

$$S_n = \frac{n}{2}(2a + (n - 1)d)$$

SECTION B

Questions of 2 marks each

13. Find the middle term of the AP 213, 205, 197,, 37.
14. If the ratio of the first m and n terms of an AP is $m^2:n^2$, show that the ratio of its m^{th} and n^{th} terms is $(2m - 1):(2n - 1)$.
15. If the 17^{th} term of an AP exceeds its 10^{th} term by 7, find the common difference.
16. The first and the last term of an AP are 5 and 45 respectively. If sum of all its terms is 400, find its common difference.

Section C

Questions of 3 marks each

17. Find a, b and c if it is given that the numbers a, 7, b, 23, c are in AP.
18. The sum of first 30 terms of an AP is 1920. If the fourth term is 18, find its 11th term.
19. Split 207 into 3 parts such that these are in AP and the product of the two smaller parts is 4623.

SECTION D

Question of 5 marks

20. A thief runs with a uniform speed of 100 m/minute. After 1 minute a policeman runs after the thief to catch him. He goes with a speed of 100m/minute in the first minute and increases his speed by 10m/minute every succeeding minute. After how many minutes will the policeman catch the thief?
- 21 Find the sum of the following series:
 $5 + (-41) + 9 + (-39) + 13 + (-37) + 17 + \dots + (-5) + 81 + (-3)$

SECTION E

Case Study Based Question

22.

India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.



Based on the above information answer the following questions:

I	What is the production during first year?	1m
II	What is the fixed number by which the production increases every year?	1m
III	What is the total production during the first 3 years?	2m
OR		
	In which year will the production reach 29200?	

	Answers							
Answers	1	A	2	D	3	C	4	B
	5	A	6	B	7	B	8	D
	9	A	10	C				
	11	a	12	b	13	125	15	1
	16	$\frac{8}{3}$	17	-1, 15, 31	18	46	19	67, 69, 71
	20	5minutes	21	420	22	(I)5000 (II) 2200 (III)21600 OR 12 th year		