ABHYAS FOR A.P. O1

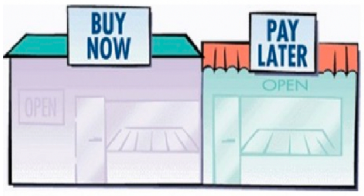
Class 10 - Mathematics

Section A

Question No. 1 to 4 are based on the given text. Read the text carefully and answer the questions: **[4]**

Deepa has to buy a scooty. She can buy scooty either making cashdown payment of ₹ 25,000 or by making 15 monthly instalments as below.

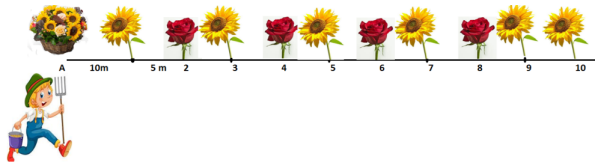
Ist month - ₹ 3425, IInd month - ₹ 3225, IIIrd month - ₹ 3025, IVth month - ₹ 2825 and so on



1. Find the amount of 6th instalment.
2. Total amount paid in 15 instalments.
3. Deepa paid 10th and 11th instalment together find the amount paid that month.
4. If Deepa pays ₹2625 then find the number of instalment.

Question No. 5 to 8 are based on the given text. Read the text carefully and answer the questions: **[4]**

In a school garden, Dinesh was given two types of plants viz. sunflower and rose flower as shown in the following figure.



The distance between two plants is to be 5m, a basket filled with plants is kept at point A which is 10 m from the first plant. Dinesh has to take one plant from the basket and then he will have to plant it in a row as shown in the figure and then he has to return to the basket to collect another plant. He continues in the same way until all the flower plants in the basket. Dinesh has to plant ten numbers of flower plants.

5. Write the above information in the progression and find first term and common difference.
6. Find the distance covered by Dinesh to plant the first 5 plants and return to basket.
7. Find the distance covered by Dinesh to plant all 10 plants and return to basket.
8. If the speed of Dinesh is 10 m/min and he takes 15 minutes to plant a flower plant then find the total time taken by Dinesh to plant 10 plants.

Section B

9. The sum of first n terms of an AP is $(3n^2 + 6n)$. The common difference of the AP is **[1]**

a) 15 b) 9

c) 6 d) -3

10. If the common difference of an A.P. is 5, then the value of $a_{20} - a_{13}$ is **[1]**

a) 35 b) 25

c) 40 d) 30

11. If 9 times the 9th term of an A.P. is equal to 11 times the 11th term , then its 20th term is **[1]**

a) 3 b) 1

c) 0 d) 2

12. Two A.P's have the same common difference. The first term of one of these is 8 and that of the other is 3. The difference between their 30th terms is **[1]**

a) 8 b) 11

c) 3 d) 5

13. If the sum of n terms of an A.P. is $3n^2 + 5n$ then which of its term is 164? **[1]**

a) 27th b) none of these.

c) 28th d) 26th

14. The next term of the A.P. $\sqrt{18}$, $\sqrt{32}$ and $\sqrt{50}$ is **[1]**

a) $\sqrt{72}$ b) $\sqrt{84}$

c) $\sqrt{64}$ d) $\sqrt{80}$

15. The value of x for which 2x, (x + 10) and (3x + 2) are the three consecutive terms of an AP, is: **[1]**

a) 18 b) -18

c) 6 d) -6

16. The value of p for which (2p + 1), 10 and (5p + 5) are three consecutive terms of an AP is: **[1]**

a) 1 b) -2

c) -1 d) 2

17. If four numbers in A.P. are such that their sum is 50 and the greatest number is 4 times the least, then the numbers are **[1]**

a) 3, 7, 11, 15 b) none of these

c) 5, 10, 15, 20 d) 4, 10, 16, 22

18. In an A.P., if $a_m = \frac{1}{n}$ and $a_n = \frac{1}{m}$, then a_{mn} = **[1]**

a) 1 b) 2

c) -1 d) 0

Section C

19. Find the sum of first n natural numbers. **[1]**

20. Find the Arithmetic Mean of (a - b) and (a + b). **[1]**

21. If S_n denotes the sum of first n terms of an AP, prove that $S_{12}=3(S_8- S_4)$. **[1]**

22. Show that $(a-b)^2$, $(a^2 + b^2)$ and $(a+b)^2$ are in AP. **[1]**

23. If the numbers (2n -1), (3n + 2) and (6n-1) are in AP, find n and hence find these numbers. **[1]**

24. The nth term of an AP cannot be $n^2 + 1$. Justify your answer. **[1]**

25. The sum of first six terms of an arithmetic progression is 42. The ratio of its 10th term to its 30th term is 1 : 3. Calculate the first and the thirteenth term of the A.P. **[2]**

26. Find the next five terms of the sequence given by: $a_1 = 4$, $a_n = 4a_{n-1} + 3$, $n > 1$ **[2]**

27. Find the sum of the A.P. $(x - y)^2$, $(x^2 + y^2)$, $(x+ y)^2$ ...., to n terms. **[2]**

28. Find the sum of all three-digit numbers each of which leaves the remainder 2, when divided by 3. **[2]**

29. Find the value of the middle most term (s) of the AP: –11, –7, –3,..., 49 **[2]**

30. The sum of three numbers of an AP is 27 and their product is 405. Find the numbers. **[2]**

31. Resham wanted to save at least ₹6500 for sending her daughter to school next year (after 12 months). She saved ₹450 in the first month and raised her savings by ₹20 every next month. How much will she be able to save in next 12 months? Will she be able to send her daughter to the school next year? **[3]**

32. The digits of a positive three digit number are in A.P and their sum is 15. The number obtained by reversing the digits is 594 less then the original number. Find the number. **[3]**

33. Find the value of a, b and c such that the numbers a, 7, b, 23 and c are in A.P. **[3]**

34. If $(m +1)^{th}$ term of an A.P. is twice the $(n +1)^{th}$ term, prove that $(3m + 1)^{th}$ term is twice the $(m + n + 1)^{th}$ term. **[3]**

35. The 4^{th} term of an AP is zero. Prove that its 25^{th} term is triple its 11^{th} term. **[3]**

36. Along a road lie an odd number of stones placed at intervals of 10 metres. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stones by carrying them in succession. In carrying all the stones he covered a distance of 3 km. Find the number of stones? **[5]**

37. A man arranges to pay off a debt of Rs.3600 by 40 annual installments which form an arithmetic series. When 30 of the installments are paid, he dies leaving one-third of the debt unpaid, find the value of the first installment. **[5]**

38. A man is employed to count ₹10710. He counts at the rate of ₹180 per minute for half an hour. After this he counts at the rate of ₹3 less every minute than the preceding minute. Find the time taken by him to count the entire amount. **[5]**

39. In an AP of 50 terms, the sum of first 10 terms is 210 and the sum of its last 15 terms is 2565. Find the AP. **[5]**

40. Solve the equation: 1 + 4 + 7 + 10 + ...+ x = 287. **[5]**