1. If p – 1, p + 3, 3p – 1 are in AP, then p is equal to
    (a) 4   (b) – 4 (c) 2   (d) – 2

2. The sum of all terms of the arithmetic progression having ten terms except for the first term is 99 and except for the sixth term 89. Find the third term of the progression if the sum of the first term and the fifth term is equal to 10
    (a) 15   (b) 5   (c) 8   (d) 10

3. If in any decreasing arithmetic progression, sum of all its terms, except the first term is equal to - 36, the sum of all its terms, except for the last term is zero and the difference of the tenth and the sixth term is equal to - 1 6 , then first term of the series is
    (a) 15   (b) 14 (c) 16 (d) 17

4. If the third term of an AP is 12 and the seventh term is 24, then the 10th term is
    (a) 33   (b) 34 (c) 35 (d) 36

5. The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this AP ?
    (a) 4551   (b) 10091   (c) 7881   (d) 13531

6. A number 15 is divided into three parts which are in AP and sum of their squares is 83. The smallest part is
    (a) 2   (b) 5   (c) 3   (d) 6

7. How many terms of an AP must be taken for their sum to be equal to 120 if its third term is 9 and the difference between the seventh and second term is 20 ?
    (a) 7   (b) 8   (c) 9   (d) 6

8. 9th term of an AP is 499 and 499th term is 9. The term which is equal to zero is
    (a) 507th   (b) 508th   (c) 509th   (d) 510th

9. The sum of all two digit numbers which when divided by 4 yield unity as remainder is
    (a) 1012   (b) 1201   (c) 1212   (d) 1210

10. An AP consist of 31 terms if its 16th term is m, then sum of all the terms of this AP is
    (a) 16 m   (b) 47 m   (c) 31 m   (d) 52 m

11. If a clock strikes once at one O'clock, twice at two O'clock, thrice at 3 O'clock and so on and again once at one O'clock and so on, then how many times will the bell be struck in the course of 2 days ?
    (a) 156   (b) 312   (c) 78 (d) 288

12. In a certain AP, 5 times the 5th term is equal to 8 times the 8th term, then its 13th term is equal to
    (a) 5   (b) 1   (c) 0   (d) 13

MCQ WORKSHEET-II
CLASS X: CHAPTER – 5
ARITHMETIC PROGRESSION

1. The sum of 5 numbers in AP is 30 and sum of their squares is 220. Which of the following is the third term ?
   (a) 5   (b) 6   (c) 7   (d) 8

2. If a, b, c, d, e and f are in AP, then e – c is equal to
   (a) 2(c – a)   (b) 2(f – d)   (c) 2(d – c)   (d) d – c

3. The sum of n terms of the series 2, 5, 8,11,.... is 60100, then n is
   (a) 100   (b) 150   (c) 200   (d) 250

4. The value of the expression 1 - 6 + 2 - 7 + 3 - 8 + ... to 100 terms
   (a) –225   (b) –250   (c) –300   (d) –350

5. Four numbers are inserted between the numbers 4 and 39 such that an AP results. Find the biggest of these four numbers
   (a) 30   (b) 31   (c) 32   (d) 33

6. The sum of the first ten terms of an AP is four times the sum of the first five terms, then the ratio of the first term to the common difference is
   (a) 1/2   (b) 2   (c) 1/4   (d) 4

7. Two persons Anil and Happy joined D. W. Associates. Aniland Happy started with an initial salary of Rs. 50000 and Rs. 64000 respectively with annual increment of Rs.2500 and Rs. 2000 each respectively. In which year will Anil start earning more salary than Happy ?
   (a) 28th   (b) 29th   (c) 30th   (d) 27th

8. A man receives Rs. 60 for the first week and Rs. 3 more each week than the preceeding week. How much does he earns by the 20th week ?
   (a) Rs. 1760   (b) Rs. 1770   (c) Rs. 1780   (d) Rs. 1790

9. Find 10th term whose 5th term is 24 and difference between 7th term and 10th term is 15
   (a) 34   (b) 39   (c) 44   (d) 49

10. Find the sum of first n terms of odd natural number.
    (a) n^2 (b) $n^2 – 1$ (c) $n^2 + 1$ (d) $2n – 1$

11. Common difference of an A.P. is -2 and first term is 80. Find the sum if last term is 10.
    (a) 1600   (b) 1620   (c) 1650   (d) 1700

12. Find the sum of first 30 terms of an A. P. whose n^{th} term is $2 + 1/2n$
    (a) 292.5   (b) 290.5   (c) 192.5   (d) none of these

13. Find 15th term of -10, -5, 0, 5, ------
    (a) 55   (b) 60   (c) 65   (d) none of these

14. If the numbers a, b, c, d, e form an AP, then the value of a - 4b + 6c - 4d + e is
    (a) 1   (b) 2   (c) 0   (d) none of these

MCQ WORKSHEET-III
CLASS X: CHAPTER – 5
ARITHMETIC PROGRESSION

1. 7th term of an AP is 40. The sum of its first 13th terms is
   (a) 500   (b) 510   (c) 520   (d) 530

2. The sum of the first four terms of an AP is 28 and sum of the first eight terms of the same AP is 88. Sum of first 16 terms of the AP is

   (a) 346   (b) 340   (c) 304   (d) 268

3. Which term of the AP 4, 9, 14, 19, ….. is 109?
   (a) 14th   (b) 18th   (c) 22nd   (d) 16th

4. How many terms are there in the arithmetic series $1 + 3 + 5 + …….. + 73 + 75$?
   (a) 28   (b) 30   (c) 36   (d) 38

5. $51 + 52 + 53 + 54 + ……. + 100 = ?$
   (a) 3775   (b) 4025   (c) 4275   (d) 5050

6. How many natural numbers between 1 and 1000 are divisible by 5?
   (a) 197   (b) 198   (c) 199   (d) 200

7. If a, a – 2 and 3a are in AP, then the value of a is
   (a) –3   (b) –2   (c) 3   (d) 2

8. How many terms are there in the AP 7, 10, 13, …. , 151?
   (a) 50   (b) 55   (c) 45   (d) 49

9. The 4th term of an AP is 14 and its 12th term is 70. What is its first term?
   (a) –10   (b) –7   (c) 7   (d) 10

10. The first term of an AP is 6 and the common difference is 5. What will be its 11th term?
    (a) 56   (b) 41   (c) 46   (d) none of these

11. Which term of the AP 72, 63, 54, ……. is 0?
    (a) 8th   (b) 9th   (c) 11th   (d) 12th

12. The 8th term of an AP is 17 and its 14th term is –29. The common difference of the AP is
    (a) –2   (b) 3   (c) 2   (d) 5

13. Which term of the AP 2, –1, –4, –7, ……. is –40?
    (a) 8th   (b) 15th   (c) 11th   (d) 23rd

14. Which term of the AP 20, 17, 14,………… is the first negative term?
    (a) 8th   (b) 6th   (c) 9th   (d) 7th

15. The first, second and last terms of an AP are respectively 4, 7 and 31. How many terms are there in the given AP?
    (a) 10   (b) 12   (c) 8   (d) 13

MCQ WORKSHEET-IV
CLASS X: CHAPTER – 5
ARITHMETIC PROGRESSION

1. The common difference of the A. P. whose general term $a_n = 2n + 1$ is
   (a) 1   (b) 2   (c) – 2   (d) – 1

2. The number of terms in the A.P. 2, 5, 8, …… , 59 is
   (a) 12   (b) 19   (c) 20   (d) 25

3. The first positive term of the A.P. –11, –8, –5,…. Is
   (a) 1   (b) 3   (c) – 2   (d) – 4

4. The 4th term from the end of the A.P. 2, 5, 8, ,,,,,,35 is
   (a) 29   (b) 26   (c) 23   (d) 20

5. The 11th and 13th terms of an A.P. are 35 and 41 respectively its common difference is
   (a) 38   (b) 32   (c) 6   (d) 3

6. The next term of the A.P. $\sqrt{8}, \sqrt{18}, \sqrt{32},.......$ is
   (a) $5\sqrt{2}$ (b) $5\sqrt{3}$ (c) $3\sqrt{3}$ (d) $4\sqrt{3}$

7. If for an A.P. $a_5 = a_{10} = 5a$, then a_{15} is
   (a) 71   (b) 72   (c) 76   (d) 81

8. Which of the following is not an A.P.?
   (a) 1, 4, 7, ….   (b) 3, 7, 12, 18, …..
   (c) 11, 14, 17, 20, …….   (d) –5, –2, 1, 4,…

9. The sum of first 20 odd natural numbers is
   (a) 281   (b) 285   (c) 400   (d) 421

10. The sum of first 20 natural numbers is
    (a) 110   (b) 170   (c) 190   (d) 210

11. The sum of first 10 multiples of 7 is
    (a) 315   (b) 371   (c) 385   (d) 406

12. If the sum of the A.P. 3, 7, 11, …. Is 210, the number of terms is
    (a) 10   (b) 12   (c) 15   (d) 22

13. Write the next term of the AP $\sqrt{8}, \sqrt{18}, \sqrt{32},.............$
    (a) $\sqrt{50}$ (b) $\sqrt{64}$ (c) $\sqrt{36}$ (d) $\sqrt{72}$

14. Which term of the AP 21, 18, 15, ……….. is zero?
    (a) 8th   (b) 6th   (c) 9th   (d) 7th

15. The sum of first 100 multiples of 5 is
    (a) 50500   (b) 25250   (c) 500   (d) none of these

16. The sum of first 100 multiples of 9 is
(a) 90900   (b) 25250   (c) 45450   (d) none of these

17. The sum of first 100 multiples of 6 is
(a) 60600   (b) 30300   (c) 15150   (d) none of these

18. The sum of first 100 multiples of 4 is
(a) 40400   (b) 20200   (c) 10100   (d) none of these

19. The sum of first 100 multiples of 3 is
(a) 30300   (b) 15150   (c) 300   (d) none of these

20. The sum of first 100 multiples of 8 is
(a) 20200   (b) 80800   (c) 40400   (d) none of these

PRACTICE QUESTIONS
CLASS X : CHAPTER – 5
ARITHMETIC PROGRESSIONS
"nth term of A.P."

Q1. Determine the AP whose 3rd term is 5 and the 7th term is 9.

Q2. The 8th term of an AP is 37 and its 12th term is 57. Find the AP.

Q3. The 7th term of an AP is – 4 and its 13th term is – 16. Find the AP.

Q4. If the 10th term of an AP is 52 and the 17th term is 20 more than the 13th term, find the AP.

Q5. If the 8th term of an AP is 31 and its 15th term is 16 more than the 11th term, find the AP.

Q6. Check whether 51 is a term of the AP 5, 8, 11, 14, ……?

Q7. The 6th term of an AP is – 10 and its 10th term is – 26. Determine the 15th term of the AP.

Q8. The sum of 4th term and 8th term of an AP is 24 and the sum of 6th and 10th terms is 44. Find the AP.

Q9. The sum of 5th term and 9th term of an AP is 72 and the sum of 7th and 12th terms is 97. Find the AP.

Q10. Find the 105th term of the A.P. $4, \ 4\frac{1}{2}, \ 5, \ 5\frac{1}{2}, \ 6,........$.

Q11. Find 25th term of the AP $5, 4\frac{1}{2}, 4, 3\frac{1}{2}, 3,.......$

Q12. Find the 37th term of the AP $6, 7\frac{3}{4}, 9\frac{1}{2}, 11\frac{3}{4},.......$

Q13. Find 9th term of the AP $\frac{3}{4}, \frac{5}{4}, \frac{7}{4}, \frac{9}{4},................$

Q14. An AP consists of 50 terms of which 3rd term is 12 and the last term is 106. Find the 29th term.

Q15. Determine the AP whose third term is 16 and the 7th term exceeds the 5th term by 12.

Q16. The 17th term of an AP exceeds its 10th term by 7. Find the common difference.

Q17. If the nth term of an AP is $(5n – 2)$, find its first term and common difference. Also find its 19th term.

Q18. If the nth term of an AP is $(4n – 10)$, find its first term and common difference. Also find its 16th term.

Q19. If $2x, x + 10, 3x + 2$ are in A.P., find the value of x.

Q20. If x + 1, 3x and 4x + 2 are in AP, find the value of x.

Q21. Find the value of x for which (8x + 4), (6x – 2) and (2x + 7) are in AP.

Q22. Find the value of x for which (5x + 2), (4x – 1) and (x + 2) are in AP.

Q23. Find the value of m so that m + 2, 4m – 6 and 3m – 2 are three consecutive terms of an AP.

Q24. Find the 20th term from the last term of the AP : 3, 8, 13, . . ., 253.

Q25. Find the 11th term from the last term (towards the first term) of the AP : 10, 7, 4, . . ., – 62.

Q26. Find the 10th term from the last term of the AP : 4, 9 , 14, . . ., 254.

Q27. Find the 6th term from the end of the AP 17, 14, 11, …… (–40).

Q28. Find the 8th term from the end of the AP 7, 10, 13, …… 184.

Q29. Find the 10th term from the last term of the AP : 8, 10, 12, . . ., 126.

Q30. Find the 31st term of an AP whose 11th term is 38 and the 16th term is 73.

Q31. If the 3rd and the 9th terms of an AP are 4 and –8 respectively, which term of this AP is zero?

Q32. Two APs have the same common difference. The difference between their 100th terms is 100, what is the difference between their 1000th terms?

Q33. For what value of n, are the nth terms of two APs: 63, 65, 67, . . . and 3, 10, 17, . . . equal?

Q34. For what value of n, are the nth terms of two APs: 13, 19, 25, . . . and 69, 68, 67, . . . equal?

Q35. The 8th term of an AP is zero. Prove that its 38th tem is triple its 18th term.

Q36. The 4th term of an AP is 0. Prove that its 25th term is triple its 11th term.

Q37. If the mth term of an AP be $\dfrac{1}{n}$ and its nth term be $\dfrac{1}{m}$, then show that its (mn)th terms is 1.

Q38. If m times the mth term of an AP is equal to n times the nth term and m ≠ n, show that its (m + n)th term is 0.

Q39. If the pth term of an AP is q and qth term of an AP is p, prove that its nth is (p + q – n).

Q40. If the pth, qth and rth terms of an AP is a, b, c respectively, then show that a(q – r) + b(r – p) + c(p – q) = 0.

Q41. If the pth, qth and rth terms of an AP is a, b, c respectively, then show that p(b – c) + q(c – a) + r(a – b) = 0.

Q42. If the nth term of a progression be a linear expression in n, then prove that this progression is an AP.

Q43. The sum of three numbers in AP is 21 and their product is 231. Find the numbers.

Q44. The sum of three numbers in AP is 27 and their product is 405. Find the numbers.

Q45. The sum of three numbers in AP is 15 and their product is 80. Find the numbers.

Q46. Find three numbers in AP whose sum is 3 and product is – 35.

Q47. Divide 24 in three parts such that they are in AP and their product is 440.

Q48. The sum of three consecutive terms of an AP is 21 and the sum of the squares of these terms is 165. Find the terms.

Q49. Find four numbers in AP whose sum is 20 and the sum of whose squares is 120.

Q50. Find four numbers in AP whose sum is 28 and the sum of whose squares is 216.

Q51. Find four numbers in AP whose sum is 50 and in which the greatest number is 4 times the least.

Q52. The angles of a quadrilateral are in AP whose common difference is 10^0. Find the angles.

Q53. Show that $(a – b)^2$, $(a^2 + b^2)$ and $(a + b)^2$ are in AP.

Q54. If 10th times the 10th term of an AP is equal to 15 times the 15th term, show that its 25th term is 0.

Q55. If 5 times the 5th term of an AP is equal to 8 times its 8th term, show that the 13th term is 0.

Q56. How many terms are there in the AP 7, 11, 15, ….. , 139?

Q57. How many terms are there in A.P. 7,11,15,…………..139?

Q58. How many terms are there in the AP 6, 10, 14, 18, ….. 174.

Q59. How many three-digit numbers are divisible by 7?

Q60. How many multiples of 7 between 50 and 500?

Q61. How many multiples of 4 lie between 10 and 250?

Q62. How many terms are there in the AP 41, 38, 35, …… , 8.

Q63. Which term of the AP : 3, 8, 13, 18, . . . ,is 78?

Q64. Which term of the A.P. 5, 13, 21, ………….. is 181?

Q65. Which term of the A.P. 5, 9, 13, 17,………….. is 81?

Q66. Which term of the AP 3, 8, 13, 18,…… will be 55 more than its 20th term?

Q67. Which term of the AP 8, 14, 20, 26,…. will be 72 more than its 41st term?

Q68. Which term of the AP 9, 12, 15, 18,…. will be 39 more than its 36th term?

Q69. Which term of the AP 3, 15, 27, 39,…. will be 120 more than its 21st term?

Q70. Which term of the AP 24, 21, 18, 15, …. Is first negative term?

Q71. Which term of the AP 3, 8, 13, 18, …… is 88?

Q72. Which term of the AP 72, 68, 64, 60, …… is 0?

Q73. Which term of the AP : 3, 15, 27, 39, . . . will be 132 more than its 54th term?

Q74. Which term of the AP $\frac{5}{6}, 1, 1\frac{1}{6}, 1\frac{1}{3}, \ldots$ is 3 ?

Q75. A sum of Rs. 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Does this interest form an AP? If so, find the interest at the end of 30 years.

Q76. In a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third, and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?

Q77. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.

Q78. Manish saved Rs. 50 in the first week of the year and then increased his weekly savings by Rs. 17.50 each week. In what week will his weekly savings be Rs. 207.50?

Q79. Subba Rao started work in 1995 at an annual salary of Rs 5000 and received an increment of Rs 200 each year. In which year did his income reach Rs 7000?

Q80. Ramkali saved Rs 5 in the first week of a year and then increased her weekly savings by Rs 1.75. If in the nth week, her weekly savings become Rs 20.75, find n.

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PRACTICE QUESTIONS
CLASS X : CHAPTER – 5
ARITHMETIC PROGRESSIONS
"SUM OF n TERMS OF AN A.P."

1. Find the sum of first 24 terms of the AP 5, 8, 11, 14,…….

2. Find the sum: $25 + 28 + 31 +$……….. $+ 100$.

3. Find the sum of first 21 terms of the AP whose 2nd term is 8 and 4th term is 14.

4. If the nth term of an AP is $(2n + 1)$, find the sum of first n terms of the AP.

5. Find the sum of first 25 terms of an AP whose nth term is given by $(7 – 3n)$.

6. Find the sum of all two-digit odd positive numbers.

7. Find the sum of all natural number between 100 and 500 which are divisible by 8.

8. Find the sum of all three digit natural numbers which are multiples of 7.

9. How many terms of the AP 3, 5, 7, 9,… must be added to get the sum 120?

10. If the sum of first n, 2n and 3n terms of an AP be S_1, S_2 and S_3 respectively, then prove that $S_3 = 3(S_2 – S_1)$.

11. If the sum of the first m terms of an AP be n and the sum of first n terms be m then show that the sum of its first $(m + n)$ terms is $–(m + n)$.

12. If the sum of the first p terms of an AP is the same as the sum of first q terms (where $p \neq q$) then show that the sum of its first $(p + q)$ terms is 0.

13. If the pth term of an AP is $\dfrac{1}{q}$ and its qth term is $\dfrac{1}{p}$, show that the sum of its first pq terms is $\dfrac{1}{2}(p+q)$.

14. Find the sum of all natural numbers less than 100 which are divisible by 6.

15. Find the sum of all natural number between 100 and 500 which are divisible by 7.

16. Find the sum of all multiples of 9 lying between 300 and 700.

17. Find the sum of all three digit natural numbers which are divisible by 13.

18. Find the sum of 51 terms of the AP whose second term is 2 and the 4th term is 8.

19. The sum of n terms of an AP is $(5n^2 – 3n)$. Find the AP and hence find its 10th term.

20. The first and last terms of an AP are 4 and 81 respectively. If the common difference is 7, how many terms are there in the AP and what is their sum?

21. If the sum of first 7 terms of AP is 49 and that of first 17 terms is 289, find the sum of first n terms.

22. Find the sum of the first 100 even natural numbers which are divisible by 5.

23. Find the sum of the following: $\left(1-\dfrac{1}{n}\right)+\left(1-\dfrac{2}{n}\right)+\left(1-\dfrac{3}{n}\right)$........ upto n terms.

24. If the 5th and 12th terms of an AP are -4 and -18 respectively, find the sum of first 20 terms of the AP.

25. The sum of n terms of an AP is $\left(\dfrac{5n^2}{2}+\dfrac{3n}{2}\right)$. Find its 20th term

26. The sum of n terms of an AP is $\left(\dfrac{3n^2}{2}+\dfrac{5n}{2}\right)$. Find its 25th term

27. Find the number of terms of the AP 18, 15, 12, ……. so that their sum is 45. Explain the double answer.

28. Find the number of terms of the AP 64, 60, 56, ……. so that their sum is 544. Explain the double answer.

29. Find the number of terms of the AP 17, 15, 13, ……. so that their sum is 72. Explain the double answer.

30. Find the number of terms of the AP 63, 60, 57, ……. so that their sum is 693. Explain the double answer.

31. The sum of first 9 terms of an AP is 81 and the sum of its first 20 terms is 400. Find the first term and the common difference of the AP.

32. If the nth term of an AP is $(4n + 1)$, find the sum of the first 15 terms of this AP. Also find the sum of is n terms.

33. The sum of the first n terms of an AP is given by $S_n = (2n^2 + 5n)$. Find the nth term of the AP.

34. If the sum of the first n terms of an AP is given by $S_n = (3n^2 – n)$, find its 20th term.

35. If the sum of the first n terms of an AP is given by $S_n = (3n^2 + 2n)$, find its 25th term.

36. How many terms of the AP 21, 18, 15,…. Must be added to get the sum 0?

37. Find the sum of first 24 terms whose nth term is given by $a_n = 3 + 2n$.

38. How many terms of the AP -6, $\dfrac{-11}{2}$, -5, ……. are needed to give the sum -25? Explain the double answer.

39. Find the sum of first 24 terms of the list of numbers whose nth term is given by $an = 3 + 2n$

40. How many terms of the AP : 24, 21, 18, . . . must be taken so that their sum is 78?

41. Find the sum of the first 40 positive integers divisible by 6.

42. Find the sum of all the two digit numbers which are divisible by 4.

43. Find the sum of all two digits natural numbers greater than 50 which, when divided by 7 leave remainder of 4.

44. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289 , find the sum of first n terms

45. If the sum of first n terms of an A.P. is given by $S_n = 3n^2 + 5n$, find the nth term of the A.P.

46. The sum of first 8 terms of an AP is 100 and the sum of its first 19 terms is 551. Find the AP.

47. How many terms are there in A.P. whose first terms and 6th term are –12 and 8 respectively and sum of all its terms is 120?

48. 200 logs are stacked in the following manner: 20 logs in the bottom row, 19 in the next row,18 in the row next to it and so on. In how may rows are the 200 logs placed and how many logs are in the top row?

49. A man repays a loan of Rs. 3250 by paying Rs. 20 in the first month and then increase the payment by Rs. 15 every month. How long will it take him to clear the loan?

50. Raghav buys a shop for Rs. 1,20,000. He pays half of the amount in cash and agrees to pay the balance in 12 annual installments of Rs. 5000 each. If the rate of interest is 12% and he pays with the installment the interest due on the unpaid amount, find the total cost of the shop.

51. A sum of Rs. 280 is to be used to give four cash prizes to students of a school for their overall academic performance. If each prize is Rs. 20 less than its preceding prize, find the value of each of the prizes.

52. A sum of Rs 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs 20 less than its preceding prize, find the value of each of the prizes.

53. A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows: Rs 200 for the first day, Rs 250 for the second day, Rs 300 for the third day, etc., the penalty for each succeeding day being Rs 50 more than for the preceding day. How much money the contractor has to pay as penalty, if he has delayed the work by 30 days?

54. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find : (i) the production in the 1st year (ii) the production in the 10th year (iii) the total production in first 7 years

55. How many terms of the AP : 9, 17, 25, . . . must be taken to give a sum of 636?

56. The first term of an AP is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

57. The first and the last terms of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?

58. Find the sum of first 22 terms of an AP in which $d = 7$ and 22nd term is 149.

59. Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.

60. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.

61. Show that $a_1, a_2, \ldots, a_n, \ldots$ form an AP where a_n is defined as below : (i) $a_n = 3 + 4n$ (ii) $a_n = 9 - 5n$ Also find the sum of the first 15 terms in each case.

62. If the sum of the first n terms of an AP is $4n - n2$, what is the first term (that is S1)? What is the sum of first two terms? What is the second term? Similarly, find the 3rd, the 10th and the nth terms.

63. Find the sum of the first 15 multiples of 8.

64. Find the sum of the odd numbers between 0 and 50.

65. In a school, students thought of planting trees in and around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant, will be the same as the class, in which they are studying, e.g., a section of Class I will plant 1 tree, a section of Class II will plant 2 trees and so on till Class XII. There are three sections of each class. How many trees will be planted by the students?

66. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, ... What is the total length of such a spiral made up of thirteen consecutive semicircles? (Take $\pi = 22/7$)