



MATHS

BOOKS - NAGEEN PRAKASHAN ENGLISH

ARITHMETIC PROGRESSION

Solved Examples

1. The n th term of a sequence is $a_n = 2n + 3$. Find its first four terms.

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2. The n th term of a sequence is $a_n = n^2 + 5$. Find its first three terms.

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3. Fibonacci sequence is defined as follows :

$a_1 = a_2 = 1$ and $a_n = a_{n-2} + a_{n-1}$, where $n > 2$. Find third, fourth and fifth terms.



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4. A sequence is defined as follows :

$a_1 = 3$, $a_n = 2a_{n-1} + 1$, where $n > 1$. Where $n > 1$. Find $\frac{a_{n+1}}{a_n}$ for $n = 1, 2, 3$.



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5. Which of the following are A.P's ? If they form an A.P., find the common difference 'd' and write two more terms :

(i) 2, 4, 8, 16, ... (ii) $2, \frac{5}{2}, 3, \frac{7}{2}, \dots$

(iii) -1.2, -3.2, -5.2, -7.2, (iv) $-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \dots$



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6. For the following A.Ps, write the first term a and the common difference

d (i) $3, 1, -1, -3, \dots$ (ii) $\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}, \dots$

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7. Write first four terms of the A.P., when the first term a and the common difference 'd' are given as follows :

(i) $a = 10, d = 10$ (ii) $a = -1, d = \frac{1}{2}$

(iii) $a = 4, d = -3$ (iv) $a = -2, d = 0$

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8. Find the 18th term of the A.P. $4, 7, 10, \dots$

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9. Find the 25th term of the A.P. $6, 10, 14, \dots$

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

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12. Find the number of terms in the following A.P. :

18, $15\frac{1}{2}$, 13. . . - 47.

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13. Which term of the A.P. 90, 87, 84, *is* zero ?

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14. Is -150 a term of the A.P. $11, 8, 5, 2, \dots$?

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15. If $2, a, b, c, d, e, f$ and 65 form an A.P., find the value of e .

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

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17. Which term of the A.P. $10, 9\frac{1}{3}, 8\frac{2}{3}, \dots, -\frac{2}{3}, \dots$ is the first negative term ?

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18. The 17^{th} term of an AP exceeds its 10^{th} term by 7. Find the common difference.



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19. If the 3rd and the 9^{th} terms of an AP are 4 and $\sqrt{8}$ respectively, which term of this AP is zero?



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20. The 26th, 11th and the last terms of an AP are, 0, 3 and $-\frac{1}{5}$, respectively. Find the common difference and the number of terms.



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21. Find the 20th term of the AP whose 7th term is 24 less than the 11th term, first term being 12.



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22. If the 9th term of an AP is zero, then prove that its 29th term is twice its 19th term.



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23. Find a, b and c such that the following numbers are in AP, a, 7, b, 23 and c.



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24. The nth term of a progression is $(3n + 5)$. Prove that this progression is an arithmetic progression. Also find its 6th term.

(b) The nth term of a progression is $(3 - 4n)$. Prove that this progression is an arithmetic progression. Also find its common difference.

(c) The nth term of a progression is $(n^2 - n + 1)$. Prove that it is not an A.P.



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26. For what value of n , are the with terms of two APs: $63, 65, 67, \dots$ and $3, 10, 17, \dots$ equal?

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27. Find how many integers between 200 and 500 are divisible by 8.

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28. If m times the m th term of an AP is equal to n times its n th term, then show that $(m + n)$ th term of an AP is zero.

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30. Find the 7th term from the end of the A.P. : 3,8,13,18,.....,98.

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31. If zeros of $x^3 - 3px^2 + qx - r$ are in A.P., then

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32. If x,y,z are real numbers satisfying the equation $25(9x^2 + y^2) + 9z^2 - 15(5xy + yz + 3zx) = 0$ then prove that x,y,z are in AP.

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33. Gate receipts at the show of film " Baghbaan " amounted to Rs. 9,500 on the first night and showed a drop of Rs. 250 every succeeding night. If the operational expenses of the show are Rs. 2,000 a day, find out on which night the show ceases to be profitable?

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34. Find the sum of the following A.P. 's :

(i) 2, 7, 12, to 10 terms. (ii) $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \dots$ to 11 terms.

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35. Find the sums given below : (i) $7 + 10\frac{1}{2} + 14 + \dots + 84$ (ii) $34 + 32 + 30 + \dots + 10$ (iii) $5 + (8) + (11) + \dots + (230)$

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36. find the sum of n terms of the series

$$\left(4 - \frac{1}{n}\right) + \left(4 - \frac{2}{n}\right) + \left(4 - \frac{3}{n}\right) + \dots$$

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37. Find the sum of the following series :

$$5 + (-41) + 9 + (-39) + 13 + (-37) + 17 + \dots + (-5) + 81 + (-$$

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38. If $a = 7$ and $a_{13} = 35$, then find d and S_{13} .

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39. given: $a_3 = 15, S_{10} = 125$, find d and a_{10}

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40. 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.

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

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42. Find the value of x if

$$2 + 4 + 6 + \dots + x = 650$$

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43. Solve for x :

$$5 + 13 + 21 + \dots + x = 2139$$

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44. How many terms of the A.P. $6, -\frac{11}{2}, -5, \dots$ are needed to give the sum 25?

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45. Find the sum of all odd numbers between 100 and 200.

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46. If $a_n = 3 - 4n$, then show that a_1, a_2, a_3, \dots form an AP. Also, find S_{20} .

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47. In an AP, if $S_n = 3n^2 + 5n$ and $a_k = 164$, then find the value of k .

A. $k = 17$

B. $k = 27$

C. $k = 37$

D. None

Answer: B

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48. If sum of first 6 terms of an AP is 36 and that of the first 16 terms is 256, then find the sum of first 10 terms.

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49. The sum of the first n terms of an AP whose first term is 8 and the common difference is 20 is equal to the sum of first $2n$ terms of another AP whose first term is -30 and the common difference is 8. Find n .

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50. Show that the sum of an AP whose first term is a , the second term b and the last term c , is equal to $\frac{(a + c)(b + c - 2a)}{2(b - a)}$.



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51. The p th and q th terms of an A.P. are x and y respectively. Prove that the sum of $(p + q)$ terms is.

$$\frac{p + q}{2} \left[x + y + \frac{x - y}{p - q} \right].$$



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52. Find the

(i) sum of those integers between 1 and 500 which are multiples of 2 as well as of 5.

(ii) sum of those integers from 1 to 500 which are multiples of 2 as well as

of 5.

(iii) sum of those integers from 1 to 500 which are multiples of 2 or 5.

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53. If the sum of first m terms of an A.P. is the same as the sum of its first n terms, show that the sum of its $(m + n)$ terms is zero.

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54. Sum of the first p , q and r terms of an A.P are a , b and c , respectively. Prove that $\frac{a}{p}(q - r) + \frac{b}{q}(r - p) + \frac{c}{r}(p - q) = 0$

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55. 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.



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56. The ratio between the sum of first n terms of two A.P.'s are in the ratio $(7n-5) : (5n+17)$. Find the ratio of their 10th terms.



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57. If the sum of first m terms of an A.P is n and sum of first n terms of the same A.P is m , show that sum of first $(m + n)$ terms of it is $-(m + n)$.



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58. Let the sum of n , $2n$, $3n$ terms of an A.P. be S_1 , S_2 and S_3 , respectively, show that $S_3 = 3(S_2 - S_1)$.



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59. The ratio of the sums of m and n terms of an A.P. is $m^2 : n^2$. Show that the ratio of m^{th} and n^{th} term is $(2m - 1) : (2n - 1)$.

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60. Find the middle term of the sequence formed by all three-digit numbers which leave a remainder 3, when divided by 4. Also find the sum of all numbers on both sides of the middle terms separately

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61. An AP consists of 37 terms. The sum of the three middle most terms is 225 and the sum of the last three terms is 429. Find the AP.

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62. Ramkali required Rs 2500 after 12 weeks to send her daughter to school. She saved Rs100 in first week and increased her weekly savings by Rs 20 every week. Find whether she will be able to send her daughter to school after 12 weeks. What value is generated in the above situation?

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63. The interior angles of a polygon are in arithmetic progression. The smallest angle is 120° and the common difference is 5° . Find the number of sides of the polygon.

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64. Let S_n denote the sum of n terms of an AP whose first term is a . If common difference d is given by $d = S_n - kS_{n-1} + S_{n-2}$, then k is :

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65. 25 trees are planted in a straight line 5 metre apart from each other. To water them the gardener must bring water for each tree separately from a well 10 metre from the first tree in line with the trees. The distance he will move in order to water all the trees beginning with the first if he starts from the well is :

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66. Sum of first 25 terms in A.P. is 525, sum of next 25 terms is 725, what is the common difference?

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67. The ratio of the sum of n terms of two A.P.'s be $5(2n + 1) : (97 - 2n)$. Find (i) the ratio of their n th terms. Hence, find the ratio of their 16th terms. (ii) If first term and common difference of first A.P. are 3 and 4 respectively, find the second A.P.

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68. A child puts one five-rupee coin of her saving in the piggy bank on the first day. She increases her saving by one five-rupee coin daily. If the piggy bank can hold 190 coins of five-rupees in all, find the number of days she can continue to put the five-rupee coins into it and find the total money she saved. Write your views on the habit of saving.

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69. Find the value of x for which $(x + 2)$, $2x(2x + 3)$ are three consecutive terms of A.P.

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70. Split 207 into three parts such that these are in A.P. and the product of the two smaller parts is 4623.

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71. The angles of a triangle are in AP. The greatest angle is twice the least.
Find all the angles of the triangle.

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72. The internal angles of quadrilateral are in A.P. and their common difference is 10° . Find them.

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73. There are m arithmetic means between 5 and -16 such that the ratio of the 7th mean to the $(m-7)$ th mean is 1:4. Find the value of m .

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74. The digits of a positive integer, having three digits, are in A.P. and their sum is 15. The number obtained by reversing the digits is 594 less

than the original number. Find the number.

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Problem From Ncert Exemplar

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

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2. In the following A.P.'s, find the missing terms in the boxes.

In the following A.P.'s, find the missing terms in the boxes.

(i) 2, , 26

(ii) , 13, , 3

(iii) 5, , , $9\frac{1}{2}$

(iv) -4, , , , , 6

(v) , 38, , , , -22

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3. 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.



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4. If the 2nd term of an AP is 13 and 5th term is 25, what is its 7th term ?

A. 30

B. 33

C. 37

D. 38

Answer: B



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5. If the first term of an AP is -5 and the common difference is 2, then the sum of the first 6 terms is

A. 0

B. 5

C. 6

D. 15

Answer: A

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6. The taxi fare after each km, when the fare is Rs. 15 for the first km and Rs 8 for each additional km, does not form an AP as the total fare (in Rs.) after each km is 15, 8, 8, 8, Is the statement true? Give reasons.

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7. The 26th, 11th and the last terms of an AP are, 0, 3 and $-\frac{1}{5}$, respectively. Find the common difference and the number of terms.

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8. If the n th terms of the two AP's 9, 7, 5, ... and 24, 21, 18, ... are the same, then find the value of n . Also, that term.

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9. The first term of an AP is -5 and the last term is 45. If the sum of the terms of the AP is 120, then find the number of terms and the common difference.

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10. The sum of the first five terms of an AP and the sum of the first seven terms of the same AP is 167. If the sum of the first ten terms of this AP is 235, find the sum of first twenty terms

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11. The eighth term of an AP is half its second term and the eleventh term exceeds one-third of its fourth term by 1. Find the 15th term.

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12. 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.

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13. 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

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14. For the AP $-3, -7, -11, \dots$ can we find directly $a_{30} - a_{20}$ without actually finding a_{30} and a_{20} ? Give reason for your answer.

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15. Find the sum of the two middle most terms of an AP $-\frac{4}{3}, -1, -\frac{2}{3}, \dots, 4\frac{1}{3}$.

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16. The ratio of the 11th term to the 18th term of an AP is $2 : 3$. Find the ratio of the 5th term to the 21st term and also the ratio of the sum of the first five terms to the sum of the first 21 terms.

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17. Jaspal Singh repays his total loan of $Rs. 118000$ by paying every month starting with the first installment of $Rs. 1000$. If he increases the installment by $Rs. 100$ every month, what amount will be paid by him in the 30th installment? What amount of loan does he still have to pay after the 30th installment?



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18. An AP consists of 37 terms. The sum of the three middle most terms is 225 and the sum of the last three terms is 429. Find the AP.



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19. Find the sum of all the 11 terms of an AP whose middle most term is 30.



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20. The students of a school decided to beautify the school on the annual day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2 m. The flags are stored at the position of the middle most flag. Ruchi was given the responsibility of placing the flags.

Ruchi kept her books where the flags were stored. She could carry only one flag at a time. How much distance she did cover in completing this job and returning back to collect her books? What is the maximum distance she travelled carrying a flag?

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Exercise 5 A

1. The n th term of a sequence is defined as follows. Find the first four terms:

(i)

$$a_n = 3n + 1 \quad (ii) a_n = n^2 + 3 \quad (iii) a_n = n(n + 1) \quad (iv) a_n = n + \frac{1}{n}$$

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2. The n th term of a sequence is $(3n-7)$. Find its 20th term.

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3. Some sequences are defined as follows. Find their first four terms :

(i)

$$a_1 = a_2 = 2, a_n = a_{n-1} - 1, n > 2 \quad (ii) a_1 = 3, a_n = 3a_{n-1}, n > 1$$

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4. A sequence is defined by $a_n = n^3 - 6n^2 + 11n - 6$. Show that the first three terms of the sequence are zero and all other terms are positive.

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5. A sequence is defined as follows :

$$a_n = 4, a_n = 2a_{n-1} + 1, n > 2, \text{ find } \frac{a_{n+1}}{a_n} \text{ for } n=1, 2, 3.$$



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Exercise 5 B

1. Which of the following are A.P.'s ? If they form an A.P., find the common difference 'd' and write three more terms :

(i) $-10, -6, -2, 2, \dots$ (ii) $3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}, \dots$

(iii) $0, -4, -8, -12, \dots$ (iv) $a, 2a, 3a, 4a, \dots$

(v) $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}, \dots$



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2. For the following A.P.'s , write the first term and common difference :

(i) $2, 5, 8, 11, \dots$ (ii) $-5, -1, 3, 7, \dots$

(iii) $0.6, 1.7, 2.8, 3.9, \dots$ (iv) $5, 2, -1, -4, \dots$



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3. Write first four terms of the A.P., when the first term 'a' and the common difference 'd' are given as follows :

(i) $a=5, d=3$ (ii) $a=-2, d=4$

(iii) $a=2, d = \frac{-3}{2}$ (iv) $a=-3, d=1$



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4. (a) Find the 10th term of the progression $1 + 3 + 5 + 7 + \dots$

(b) Find the 7th term of the progression $80 + 77 + 74 + \dots$

(c) Find the 22nd term of the progression $7\frac{3}{4} + 9\frac{1}{2} + 11\frac{1}{4} + \dots$

(d) Find the nth term of the progression $- 5 - 3 - 1 + 1 + \dots$



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5. (i) Which term of the A.P. $4, 8, 12, \dots$ is 76?

(ii) Which term of the A.P. $36, 33, 30, \dots$ is zero?

(iii) Which term of the A.P. $\frac{3}{4}, 1, \frac{5}{4}, \dots$ is 12?

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6. (i) Find the number of terms in the A.P.

8, 12, 16,124

(ii) Find the number of terms in the A.P.

75, 70, 65,15

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7. (a) How many numbers of two digits are divisible by 3 ?

(b) How many numbers of three digits are divisible by 9 ?

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8. (i) Which term of the A.P. $4, 3\frac{5}{7}, 3\frac{3}{7}, \dots$ is the first negative term?

(ii) Which term of the progression $20, 19\frac{1}{2}, 18\frac{1}{2}, 17\frac{3}{4}, \dots$ is the first

negative term?



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9. The 18th term of an A.P. exceeds its 12th term by 24. Find the common difference.



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10. Is 313, a term of the A.P. 5, 10, 15, ?



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11. (i) The 3rd and 19th terms of an A.P. are 13 and 17 respectively. Find its 10th term. (ii) The 5th and 8th terms of an A.P. are 56 and 95 respectively. Find its 25th term.



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12. (i) 6 times the 6th term of an A.P. is equal to 10 times the 10th term.

Prove that its 16th term will be zero.

(ii) 10 times the 10th term of an A.P. is equal to 15 times its 15th term. Find its 25th term.



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13. 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.



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14. Which term of the arithmetic progression 5, 15, 25, . . . will be 130 more than its 31st term?



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15. Find the value of k if $k + 1$, $2k + 1$ and $k + 7$ are in A.P.. Also find the next two terms of the A.P.



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16. Determine k , so that $k^2 + 4k + 8$, $2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are three consecutive terms of an AP.



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17. The p^{th} , q^{th} and r^{th} terms of an A.P. are a , b , c , respectively. Show that $(q - r)a + (r - p)b + (p - q)c = 0$.



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18. The sequence p_1, p_2, p_3, \dots satisfies the relation $2p_n = p_{n-1} + p_{n+1}$ where $n > 1$. Given that $p_5 = 26$ and $p_7 = 38$, then find the value of

$$p_{50} + p_{90}$$



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19. (i) The n th term of a progression is $2n+1$. Prove that it is an A. P. Also find its 5th term.

(ii) The n th term of a progression is linear expansion in ' n '. Show that it is an A.P.

(iii) The n th term of a progression is $(n^2 + 1)$. Show that it is not an A.P.



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20. (i) Find the 10th term from the end of the A.P.

$$82, 79, 76, \dots, 4$$

(ii) Find the 16th term from the end of the A.P.

$$3, 6, 9, \dots, 99$$



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21. In a flower bed, there are 51 plants in the first row, 48 plants in the second row, 45 plants in the third row and so on. There are 12 plants in the last row. How many rows are there in the flower bed?

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22. 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?

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23. The salary of Karishma increases by Rs. 1000 every three months. If her present salary is Rs. 20000 per month, what will be her salary (per month) after 4.5 years from now?

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Exercise 5 C

1. Find the sum of the following A.P.'s :

(i) 3, 8, 13, to 20 terms. (ii) 1, 4, 7, to 50 terms.

(iii) 8, 5, 2, to 25 terms. (iv) $(a + b)$, $(2a + 3b)$, $(3b + 5b)$, to n terms.



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2. Find the sum given below :

(i) $3 + 6 + 9 + \dots + 96$ (ii) $2 + 4 + 6 + \dots + 50$



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3. In an A.P. :

(i) given $a = 5$, $d = 3$, $a_n = 50$, find n and S_n .

(ii) given $a = 2$, $d = 8$, $S_n = 90$, find n and a_n .

(iii) given $a = 3$, $n = 8$, $S_n = 192$, find d.

(iv) given $l = 28$, $S = 144$, $n = 9$, find a.

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4. How many terms of the A.P. $22+26+30+\dots$ has the sum 400?

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5. How many terms of the A.P. $54, 51, 48, \dots$ has the sum 513 ? Explain the double answer.

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6. Find the value of 'x' if

$$1 + 6 + 11 + \dots + x = 189$$

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7. (a) Find the sum of first 200 even natural numbers.
- (b) Find the sum of all numbers lying between 201 and 424 which are divisible by 5.
- (c) Find the sum of all numbers from 1 to 200 which are divisible by either 2 or 3.
- (d) Find the sum of all odd numbers lying between 101 and 200 which are divisible by 3.
- (e) Find the sum of all even numbers between 50 and 100 using formula.

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8. Find the sum of n terms of an A.P. whose n th term is $(2n+1)$.

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9. The sum of n terms of a series is $n(n+1)$. Prove that it is an A.P. also find its 10th term.

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10. The sum of n terms of a series is $(3n^2 + 2n)$. Prove that it is an A.P.



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11. The sum of first 5 terms and first 15 terms of an A.P. are equal. Find the sum of its first 20 terms.



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12. The sum of first 8 terms and first 24 terms of an A.P. are equal. Find the sum of its 32 terms.



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13. The sum of 15 terms of an A.P. is zero and its 4th term is 12. Find its 14th term.



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14. The sum of first 8 terms of an A.P. is 64 and that of first 15 terms is 225.

Find the sum of its first 17 terms.



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15. If the m^{th} term of an A.P. is $\frac{1}{n}$ and the n^{th} term is $\frac{1}{m}$, show that the sum of mn terms is $\frac{1}{2}(mn + 1)$.



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16. If a_1, a_2, a_3, \dots are in A.P., such that $a_1 + a_5 + a_{10}$

$+ a_{15} + a_{20} + a_{24} = 225$, then $a_1 + a_2 + a_3 + \dots +$

a_{24} is equal to



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17. The first term, last term and common difference of an A.P. are respectively a , b and 1 . Prove that the sum of this A.P. is $\frac{1}{2}(a + b)(1 - a + b)$.

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18. If S_n denotes the sum of first n terms of an AP, then prove that $S_{12} = 3(S_8 - S_4)$.

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19. Yasmeen saves $Rs. 32$ during the first month, $Rs. 36$ in the second month and $Rs. 40$ in the third month. If she continues to save in this manner, in how many months will she save $Rs. 2000$?

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20. The sum of the first five terms of an AP and the sum of the first seven terms of the same AP is 167. If the sum first ten terms of this AP is 235, find the sum of its first twenty terms.



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21. 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 (see Figure). In how many rows are the 200 logs placed and how many logs are in the top row?



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22. The ratio of the sum of n terms of two A.P. s is $(7n + 1) : (4n + 27)$. Find the ratio of their m th terms.



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23. 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.



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24. The famous mathematician associated with finding the sum of the first 100 natural numbers is



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25. If S_1 is the sum of an arithmetic progression of ' n ' odd number of terms and S_2 the sum of the terms of the series in odd places, then

$$\frac{S_1}{S_2} = \frac{2n}{n+1} \quad \text{(b) } \frac{n}{n+1} \quad \text{(c) } \frac{n+1}{2n} \quad \text{(d) } \frac{n+1}{n}$$



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1. Find the arithmetic mean of the following :

(i) 8 and 16 (ii) -6 and 14 (iii) $x+y$ and $x-y$ (iv) $(x + y)^2$ and $(x - y)^2$

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2. If $k+2$, $2k-5$ and $k+8$ are in A.P., find the value of k .

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3. Find three numbers in A.P. whose sum is 12 and product is 48.

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4. Find three numbers in A.P. whose sum is 21 and the product of last two numbers is 63.

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5. Find three numbers in A.P. whose sum is 9 and the sum of their squares is 35.



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6. The internal angles of a triangle are in A.P. . If the smallest angle is 45° , find the remaining angles.



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7. Find 4 numbers in A.P. whose sum is 4 and sum of whose squares is 84.



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8. Find 4 numbers in A.P. such that the sum of first and fourth number is 14 and the product of second and third number is 45.



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9. Between 1 and 31 are inserted m arithmetic mean so that the ratio of the 7th and $(m - 1)th$ means is 5:9. Find the value of m .

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10. Divide 56 in four parts in A.P. such that the ratio of the product of their extremes (1st and 4th) to the product of means (2nd and 3rd) is 5:6.

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Revision Exercise Very Short Answer Questions

1. For what value of k , the terms $2k-1$, 7 and $3k$ are in A.P.?

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2. The first term and common difference of an A.P. are 3 and -2 respectively . Find its 6th term.

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3. Write the next two terms of the A.P. : 3, -1, -5,

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4. Write the next four terms of the series $\sqrt{8}, \sqrt{18}, \sqrt{32}$

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5. Which term of the A.P. : 24, 20, 16, is zero?

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6. If $k + 3$, $5k - 1$ and $3k + 2$ are in A.P., find the value of k .



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7. Find the sum of first 10 even natural numbers.



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8. Find the sum of first 15 odd natural numbers.



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9. Find the mean of -12 and 28.



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10. If the n th term of an A.P. is $(3-7n)$, find its 10th term.



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Revision Exercise Short Answer Questions

1. Find the sum of first n natural numbers.



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2. Find the sum of first n term of the A.P., whose n th term is given by $(2n+1)$.



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3. Find the 10th term from the end of the A.P. .

$5+9+13...+93$.



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4. Find the sum of the 4th term and 9th term of the A.P.

3,8,13,18,.... .

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5. Find three numbers in A.P., whose sum is 15 and product is 80.

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6. Find four numbers in A.P. whose sum is 28 and the sum of whose squares is 216.

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7. For what value of n the n^{th} terms of the following two A.Ps the same?

(i) 1, 7, 13, 19, . . (ii) 69, 68, 67, . . .

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8. Which term of the A.P.: 33, 30, 27, ... is the first negative term?

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9. Find the 11th from the last term (towards the first term) of the AP :

10, 7, 4, ..., - 62.

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Revision Exercise

1. The sum of n terms of a series is $(2n^2 + n)$. Show that it is an A.P. .

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Revision Exercise Long Answer Question

1. The sum of four consecutive numbers in A.P. is 32 and the ratio of the product of the first and last term to the product of two middle terms is 7:15. Find the numbers.



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2. How many terms of the AP $-15, -13, -11, \dots$ are needed to make the sum -55 ?



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3. The eighth term of an AP is half its second term and the eleventh term exceeds one-third of its fourth term by 1. Find the 15th term.



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4. The houses of a row are numbered consecutively from 1 to 49. Show that there is a value of x such that the sum of the numbers of the houses

preceding the house numbered x is equal to the sum of the numbers of the houses following it. Find this value.



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



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