MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

ARITHMETIC PROGRESSION

Solved Examples

1. Show that the progression 8, 11, 14, 17, 20, ... is an AP. Find its first term and the common

difference.

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2. Show that the progression 11, 6, 1, -4, -9, ... is an AP. Find its first term and the common difference.

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3. Show that each of the following progression is an AP. Find the common difference and the

next term of each.

(i) $\sqrt{7}, \sqrt{28}, \sqrt{63}, \ldots$ (ii) $\sqrt{18}, \sqrt{50}, \sqrt{98}, \ldots$

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4. Find a and b such that the numbers $a, 9, b, 25$ form an AP.

A. 17 and 1

B. 1 and 17

C. 2 and 15

D. none of these

Answer: B

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5. Find the (i) nth term and (ii) 16th term of the AP 3, 5, 7, 9, 11, ...

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6. Find the (i) nth term and (ii) 12th term of the AP 14, 9, 4, -1, -6, ...

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7. Find the 105^{th} term of the AP $4, 4\frac{1}{2}, 5, 5\frac{1}{2}, 6...$

A. 52

B. 54

C. 56

D. 60

Answer: C

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8. Find the 25th term of the AP $-5, \frac{-5}{2}, 0, \frac{5}{2}, \ldots$

A. 50

B. 45

C. 55

D. 60

Answer: C

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9. If the nth term of an AP is (5n-2), find its (i) first term, (ii) common difference and (iii) 19th term.

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10. If the seventh term of an AP is $\frac{1}{9}$ and its ninth term is $\frac{1}{7}$, find its 63^{rd} term.

A. 1

B. 2

C. 3

D. 4

Answer: A

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

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12. Which term of the AP 5, 9, 13, 17, ... is 81?

A. 20th

B. 21st

C. 19th

D. none of these

Answer: A

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

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14. Is 51 a term of the AP 5, 8, 11, 14,...?

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

A. 34

B. 35

C. 36

D. 37

Answer: A

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16. Find the middle term of the AP $213, 205, 197, \ldots, 37.$

A. 124

B. 125

C. 126

D. 127

Answer: B

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

A. $9th$

B. $10th$

C. $8th$

D. $7th$

Answer: B

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18. For what value of n are the nth terms of the following two Aps the same

$13, 19, 25, \ldots$ and $69, 68, 67, \ldots$? Also, find this term.

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19. If seven times the 7th term of an AP is equal to eleven times the 11th term then what will be its 18th term?

A. 4

B. 0

C. 6

D. 5

Answer: B

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

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

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

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21. In a given A.P.. If the pth term is q and qth term is p then show that n th term is $p+q-n$

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

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23. If pth, qth and rth terms of an A.P. are a, b, c respectively, then show that (i) $a(q-r)+b(r-p)+c(p-q)=0$

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24. If mth term of an AP is 1/n and its nth term is 1/m, then show that its (mn)th term is 1

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25. Find the 11^{th} from the last term (towards the first term) of the AP : $10,\ 7,\ 4, \ldots,\ 62.$

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

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

A. 40

B. 50

C. 60

D. 30

Answer: C

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28. A sum of Rs 1000 is invested at 8% simple interest per annum. Calculate the interest at the end of $1, 2, 3, \ldots$ years. Is the sequence of interests an A.P.? Find the interest at the end of 30 years.

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29. Tanvy joined her job in a company in the year 2015 on a monthly salary of Rs. 40000 with an annual increment of Rs. 2500. In which year will she get Rs. 65000 as monthly salary?

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30. In a new year, Reenu saved Rs. 50 in the first week and then increased her weekly savings by Rs 17.50. If in the nth week, her weekly saving becomes RS. 207.50, find the value of n.

A. 10

B. 11

C. 12

D. 13

Answer: A

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31. Find the AM between

(i) 13 and 19 (ii) (a-b) and (a+b)

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

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

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34. Find the four numbers in A.P. whose sum is 20 and the sum of whose squares is 120.

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

A. 984

B. 948

C. 999

D. 448

Answer: B

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36. Find the sum: $25 + 28 + 31 + \cdot + 100$ (ii) $18 + 15\frac{1}{2} + 13 + \dot{+} \left(-49\frac{1}{2} \right)$

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37. Find the sum: $25 + 28 + 31 + \ldots + 100$

(ii) $18 + 15\frac{1}{2} + 13 + \ldots + \left(-49\frac{1}{2} \right)$

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38. Find the sum of first n terms of an AP whose nth term is $(5n - 1)$. Hence, find the

sum of first 20 terms.

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39. If the sum of the first n terms of an A.P. is $\frac{1}{2}\left(3n^2+7n\right)$, then find its nth term. Hence, write its 20th term.

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

A. 13

B. 12

C. 11

D. 10

Answer: D

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41. How many terms of the AP 17, 15, 13, 11, ... must be added to get the sum 72? Explain the double answer.

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42. The first and the last terms of an AP are 7 and 49 respectively. If sum of all its terms is 420, find its common difference.

A. 1

B. 2

C. 3

D. 4

Answer: C

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43. The sum of the first 7 terms of an AP is 63 and the sum of its next 7 terms is 161. Find the $28th$ term of this AP.

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44. The 14th term of an A.P. is twice its 8th term. If its 6th term is -8, then find the sum of its first 20 terms.

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

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46. Sum of the first 14 terms of an AP is 1505 and its first term is 10. Find is 25th term.

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47. In a AP of 50 terms the sum of first 10 terms is 210 and the sum of last 15 terms is 2565. Then find the AP

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48. The sum of first 6 terms of an arithmetic progression is 42. The ratio of its 10th term to its 30th term is $1:3$. Calculate the first and 13th term of an AP.

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49. 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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50. If the sum of $n, 2n, 3n$ terms of an AP are S_1, S_2, S_3 respectively . Prove that $S_3 = 3(S_2 - S_1)$

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51. If the $S_p = S_q$ [sum of first 'p' and 'q' terms] $(p \neq q)$. Show that sum of its first (p+q) terms is zero.

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52. If the sum of first m terms of an A.P. be n and sum of first n terms be m, then show that the sum of its first (m+n) terms is -(m+n).

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53. The ratio of the sum of m and n terms of an A.P. is $m^2 : n^2$. Show that the ratio of the mth and nth terms is $(2m - 1) : (2n - 1)$.

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54. 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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55. If the ratio of the sum of the first n terms of two Aps is (7n + 1) : (4n + 27) then find the ratio of their 9th terms.


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56. Find the sum of all multiples of 7 lying between 500 and 900.


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57. Find the sum of all 3 digit natural numbers, which are multiples of 11.

A. 44555

B. 44550

C. 40000

D. 40050

Answer: B

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58. 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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59. 200 logs are stacked in such a way that there are 20 logs in the bottom row, 19 in the

next row, 18 in the next row and so on. In how many rows, 200 logs are placed and how many logs are there in the top row?

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60. 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. Find the production during (i) first year (ii) 8th year (iii) first 6 years.

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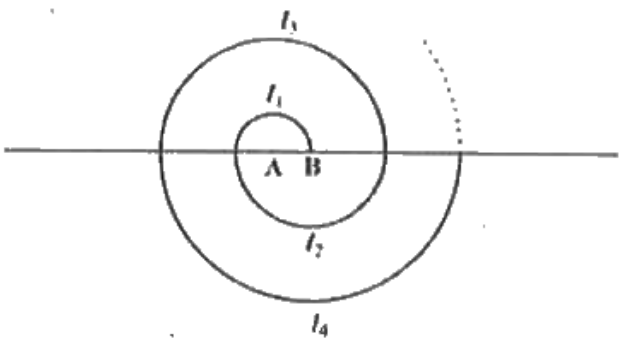
61. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, ... as shown in Figure. What is the total length of such a spiral made up of thirteen consecutive semicircles? (Take $\pi = \frac{22}{7}$)



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62. A ladder has rungs 25 cm apart, (see Figure). The rungs decrease uniformly in length from 45 cm at the bottom to 25 cm at the top. If the top and the bottom rungs are $2\frac{1}{2}$m apart, what is the length of the wood required for the rungs?

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63. 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 of x (Hint: $S_{x-1} = S_{49} - S_x$)

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64. 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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Exercise 5 A

1. Show that the progressions given below is an AP. Find the first term, common difference and next term of each given series.

(1) 9, 15, 21, 27, ...

(ii)11, 6, 1, -4...

(iii) $-1, \frac{-5}{6}, \frac{-2}{3}, \frac{-1}{2}, \ldots$.

(iv) $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots$.

$(v) \sqrt{20}, \sqrt{45}, \sqrt{80}, \sqrt{125}, \ldots$

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2. Find:

(i) the 20th term of the AP 9, 13, 17, 21, ...

(ii) the 35 th term of the AP 20, 17, 14, 11,...

(iii) the 18th term of the AP $\sqrt{2}, \sqrt{18}, \sqrt{50}, \sqrt{98}, \ldots$

(iv) the 9th term of the AP $\frac{3}{4}, \frac{5}{4}, \frac{7}{4}, \frac{9}{4}, \ldots.$

(v) the 15th term of the AP -40, -15, 10, 35,....

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

(ii) Find the 25th term of the AP $5, 4\frac{1}{2}, 4, 3\frac{1}{2}, 3, \ldots$

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4. Find the value of p for which the numbers 2p-1, 3p+1, 11 are in AP. Hence, find the numbers.

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5. Find the nth term of each of the following APs:(ii) 16,9, 2, -5, ...(i) 5, 11, 17, 23,....

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6. If the nth term of a progression is (4n-10) show that it is an AP. Find its (i) first term, (ii) common difference, and (iii) 16th term.

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7. How many terms are there in the AP $6, 10, 14, 18, \ldots, 174$?

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

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9. How many terms are there in the AP 18, $15\frac{1}{2}, 13, \ldots, -47$?

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

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

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

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13. Which term of the AP 21, 18, 15, ... is -81?

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14. Which term of the arithmetic progression 8,14,20,26, ... will be 72 more than its 41st term?

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

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16. If the 10^{th} term of an AP is 52 and 17^{th} term is 20 more than its 13^{th} term. Find the AP.

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17. Find the middle term of the A.P. $6, 13, 20, 216.$

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18. Find the 11^{th} from the last term (towards the first term) of the AP : $10, \ 7, \ 4, \ \cdots, \ 62.$

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19. Find the sum of two middle terms of the AP

$$-\frac{4}{3}, -1, -\frac{2}{3}, -\frac{1}{3}, \ldots, 4\left(\frac{1}{3}\right)$$

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20. Find the 8th term from the end of the A.P.

7,10,13, ..., 184

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21. Find the $6th$ term from the end of the $A\dot{P}$.

$17,\ 14,\ 11,\ ;\ -40$

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22. is 184 a term of the $AP3,\ 7,\ 11,\ 15,\ \ldots ?$

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23. Is -150 a term of the AP 11, 8, 5, 2,...?

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24. Which term of the AP : 121, 117, 113, . . ., is its first negative term?[Hint : Find n for $a_n < 0$]

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

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

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


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27. The fourth term of an A.P is zero. Prove that the 25th term is triple its 11th term


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28. If the sixth term of an AP is zero then show that its 33rd term is three times its 15th term.

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29. The 4th term of an AP is 11. The sum of the 5th and 7th terms of this AP is 34.Find its common difference.

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30. The 9th term of an AP is -32 and the sum of its 11th and 13th terms is -94. Find the common difference of the AP.

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31. Determine the general term of an A.P. whose $7th$ term is -1 and $16th$ term 17.

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32. If 4 times the 4th term of an AP is equal to 18 times its 18th term then find its 22nd term.

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33. If 10 times the $10th$ term of an A.P. is equal to 15 times the $15th$ term, show that $25th$ term of the A.P. is zero.

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34. Find the common difference of an A.P. whose first term is 5 and the sum of its first four terms is half the sum of the next four terms.

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35. The sum of the 2nd and the 7th terms of an AP is 30. If its 15th term is 1 less than twice its 8th term, find the AP.

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36. For what value of n, the nth terms of the arithmetic progressions 63, 65, 67, ... and 3, 10, 17,... are equal?

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37. The 17th term of AP is 5 more than twice its 8th term. If the 11th term of the AP is 43, find its nth term.

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38. The 24th term of an AP is twice its 10th term. Show that its 72nd term is 4 times its 15th term.

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39. The 19th term of an AP is equal to 3 times its 6th term. If its 9th term is 19, find the AP.

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40. In an AP, the pth term is q and (p +q) term is 0. Then, prove that its qth term is p.

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41. The first and the last terms of an A.P. are $a \; and \; l$ respectively. Show that the sum of nth term from the beginning and nth term from the end is $a + l$.

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42. Find how many two-digit numbers are divisible by 6.

43. How many two -digit numbers are divisible by 3?

44. How many two-digit numbers are divisible by 9?

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45. Find the number of natural numbers between 101 and 999 which are divisible by both 2 and 5.

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46. In a flower bed, there are 43 rose plants in the first row, 41 in the second, 39 in the third, and so on. There are 11 rose plants in the last row. How many rows are there in the flower bed?

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47. A sum of Rs. 2800 is to be used to award four prizes. If each prize after the first is Rs.

200 less than the preceding prize, find the value of each of the prizes.

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

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Exercise 5 B

1. Find k so that $(3k-2), (4k-6)$ and $(k+2)$ are three consecutive terms of an A.P.

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2. Find the value of x for which (5x+2), (4x-1) and (x+2) are in A.P.

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3. The first three terms of an A.P. respectively are $3y-1,\ 3y+5$ and $5y+1$. Then, y equals

-3 (b) 4 (c) 5 (d) 2

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

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5. Show that $(a-b)^2,\ \left(a^2+b^2\right)$ and $(a+b)^2$ are in A.P.

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

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7. The sum of three numbers in AP is 3 and their product is -35. Find the numbers.

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8. If the sum of three numbers in A.P. is 24 and their product is 440, find the numbers.

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

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10. The angles of quadrilateral are in AP whose common difference is 10° then find the angles.

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

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12. Divide 32 into four parts which are in A.P. such that the ratio of the product of extremes to the product of means is 7:15.

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13. The sum of first three terms of an AP is 48. If the product of first and second terms exceeds 4 times the third term by 12. Find the AP.

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Exercise 5 C

1. Find the sum of each of the following Aps:

(i) 2, 7, 12, 17, ... to 19 terms

(ii) 9, 7, 5, 3,.... To 14 terms.

(iii) -37, -33, -29,... to 12 terms

(iv) $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \ldots$ to 11 terms.

(v) 0.6, 1.7, 2.8, ... to 100 terms

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2. Find the sums given below : (i) $7 + 10\frac{1}{2} + 14 + \cdot\cdot + \dot{} 84$(ii)

$34 + 32 + 30 + \cdot\cdot + \dot{} 10$(iii)

$5 + (8) + (-11) + \cdot\cdot + \dot{} (230)$

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3. Find the sum of first n terms of an AP whose n^{th} term is $5 - 6n$ .find the sum of its first 20 terms

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4. The sum of first n terms of an AP is $\left(3n^2 + 6n\right)$ Find the n^{th} term and 15^{th} terms of the AP

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5. If the sum of the first n terms of an AP is given by $S_n = 3n^2 - n$ then find its nth terms, first term and common difference

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6. (i) The sum of the first n terms of an AP is $\left(\frac{5n^2}{2} + \frac{3n}{2}\right)$. Find the nth term and the 20th term of this AP.

(ii) The sum of the first n terms of an AP is

$\left(\frac{3n^2}{2}+\frac{5n}{2}\right)$. Find its nth term and the 25th term.

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7. If mth term of an AP is 1/n and its nth term is 1/m , then show that its (mn)th term is 1

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8. How many terms of the AP 21, 18, 15,... must be added to get the sum 0?

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9. How many terms of the A.P. $9, 17, 25, \cdot$ must be taken so that their sum is 636?

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10. How many terms of the A.P. 63, 60, 57, ... must be taken so that their sum is 693?

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11. How many terms of the AP $20, 19\frac{1}{3}, 18\frac{2}{3}, \ldots\ldots,$ must be taken to make the sum 300 ? Explain the double answer.

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12. Find the sum of all odd numbers between 0 and 50

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13. Find the sum of all numbers between 200 and 400 which are divisible by 7.

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

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

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

A. 21978

B. 21839

C. 21568

D. 21393

Answer: A

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17. Find the sum of all 3 digit natural numbers, which are divisible by 13.

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

19. find the sum of n terms of the series $\left(4-\frac{1}{n}\right)+\left(4-\frac{2}{n}\right)+\left(4-\frac{3}{n}\right)+\ldots\ldots\ldots$

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20. In an AP, it is given that $S_5+S_7=167 \text{and} S_{10}=235$, then find the AP, where S_n denotes the sum of its first n terms.

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21. In an A.P., the first term is 2, the last term is 29 and sum of the terms is 155. Find the common difference of the A.P.

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22. In an AP, the first term is -4, the last term is 29 and the sum of all its terms is 150. Find its common difference.

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23. 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 then sum?

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24. The first and the last terms of an A.P. are 5 and 45 respectively. If the sum of all its terms is 400, find its common difference.

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25. In an A.P., the first term is 22, nth term is -11 and the sum to first n terms is 66. Find n and d , the common difference.

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26. The 12th term of an AP is -13 and the sum of its first four terms is 24. Find the sum of its first 10 terms.

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27. The sum of the first 7 terms of an AP is 182. If its 4th and 17th terms are in the ratio 1:5, find the AP.

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

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29. 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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30. Two Aps have the same common difference. If the first terms of these Aps be 3 and 8 respectively, find the difference between the sums of their first 50 terms.

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31. In an AP, the sum of first ten terms is -150 and the sum of its next ten terms is -550 Find the AP

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32. The 13th term of an AP is 4 times its 3rd term. If its 5th term is 16 then the sum of its first ten terms is

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33. The 16th term of an AP is 5 times its 3rd term. If its 10th term is 41, find the sum of its first 15 terms.

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34. (i) An AP 5, 12, 19,.. has 50 terms. Find its last term. Hence, find the sum of its last 15 terms.

(ii) An AP 8, 10, 12,..has 60 terms. Find its last term. Hence, find the sum of its last 10 terms.

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35. The sum of n terms of two arithmetic progressions are in the ratio $(3n + 8) : (7n + 15)$. Find the ratio of their 12th terms.

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

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37. The sum of first m terms of an AP is $\left(4m^2 - m\right)$ If its nth term is 107, find the value of n. Also find the 21st term of this AP

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38. The sum of first q terms of an AP is $\left(63q - 3q^2\right)$. If its pth term is -60, find the value of p. Also, find the 11th term of its AP.

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39. Add number of terms of the "A*P*-12-9,-6,.....If 1 is added to each terms of this AP, find the sum of the new AP.

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40. Sum of the first 14 terms of an AP is 1505 and its first term is 10. Find is 25th term.

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

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42. In a school, students decided to plant 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 double of the class in which they are

studying. If there are 1 to 12 classes in the school and each class has two sections, find how many trees were planted by the students. Which value is shown in this question?

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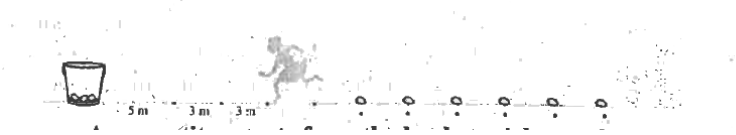
43. In a potato race, a bucket is placed at the starting point, which is 5m from the first potato, and the other potatoes are placed 3m apart in a straight line. There are ten potatoes in the line (fig.).



A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the nest potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket. What is the total distance the competitor has to run ? [Hint : To pick up the first potato and the second potato, the total distance (in metres) run by a competitor is $2 \times 5 + 2 \times (5 + 3)$]

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44. There are 25 trees at equal distances of 5 metres n a line with a well, the distance of the well from the nearest tree being 10 metres. A gardener waters all the trees separately starting from the well, and he returns to the well after watering each tree to get water for the next. Find the total distance the gardener will cover in order to water all the trees.

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45. 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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46. A man saved ₹ 33000 in 10 months. In each month after the first, he saved ₹ 100 more

than he did in the preceding month. How much did he save in the first month?

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47. A man arranges to pay a debt of Rs 3600 in 40 monthly installments which are in AP When 30 installments are paid he dies leaving one third of the debt unpaid Find the value of the first installment

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48. 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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49. 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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Exercise 5 D

1. The first three terms of an A.P. respectively are $3y-1,\ 3y+5$ and $5y+1$. Then, y equals

-3 (b) 4 (c) 5 (d) 2

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2. If $k, 2k-1$ and $2k+1$ are three consecutive terms of an A.P., the value of k is

-2 (b) 3 (c) -3 (d) 6

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3. If 18, a, (b-3) are in AP, then find the value of (2a-b).

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4. If the numbers a, 9, b, 25 form an AP, find a and b.

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

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6. How many three digit numbers are divisible by 7?

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7. How many three-digit numbers are divisible by 9?

 Watch Video Solution

8. If the sum of first m terms of an AP is $\left(2m^2 + 3m\right)$ then what is its second term?

A. 14

B. 9

C. 12

D. 16

Answer: B

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9. What is the sum of first n terms of the AP a, 3a, 5a,....

A. n^4a

B. n^3a

C. n^2a

D. na

Answer: C

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10. What is the 5th term from the end of the AP 2, 7, 12, ..., 47?

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11. If a_n denotes the nth term of the AP 2, 7, 12, 17,...., find the value of $(a_{30} - a_{20})$

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12. The nth term of an AP is (3n +5). Find its common difference.

A. 3

B. 6

C. 9

D. 12

Answer: A

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13. The nth term of an AP is (7-4n). Find its common difference.

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14. Write the next of the AP $\sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots$

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15. Write the next of the AP $\sqrt{2}, \sqrt{8}, \sqrt{18}, \ldots$

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16. Which term of the AP 21, 18, 15,... is zero?

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17. Find the sum of first n natural numbers.

 Watch Video Solution

18. Find the sum of first n even natural numbers.

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19. The first term of an AP is p and its common difference is q. Find its 10th term.

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20. If $\frac{4}{5}$, a, 2 are in AP, find the value of a.

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21. If (2p +1), 13, (5p-3) are in AP, find the value of p.

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22. If (2p-1), 7, 3p are in AP, find the value of p.

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23. If the sum of first p terms of an AP is $\left(ap^2 + bp\right)$, find its common difference.

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24. If the sum of first n terms is $\left(3n^2 + 5n\right)$, find its common difference.

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25. Find an AP whose 4th term is 9 and the sum of its 6th and 13th terms is 40.

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26. What is the common difference of an AP in which $a_{27} - a_7 = 80$?

A. 6

B. 4

C. 8

D. 2

Answer: B

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27. If 1+4+7+10+...+x = 287, find the value of x.

A. 30

B. 40

C. 50

D. 60

Answer: B

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Multiple Choice Questions Mcq

1. The common difference of the AP $\frac{1}{p}, \frac{1-p}{p}, \frac{1-2p}{p}$,.... Is

A. p

B. $-p$

C. -1

D. 1

Answer: C

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2. The common difference of the AP $\frac{1}{3}, \frac{1-3b}{3}, \frac{1-6b}{3}, \ldots$ is

A. $\frac{1}{3}$

B. $\frac{1}{3}$

C. b

D. $-b$

Answer: D

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3. The next term of the AP $\sqrt{7}, \sqrt{28}, \sqrt{63}$,... is

A. $\sqrt{70}$

B. $\sqrt{84}$

C. $\sqrt{98}$

D. $\sqrt{112}$

Answer: D

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4. If $4, x_1, x_2, x_3, 28$are in AP then $x_3 = ?$

A. 19

B. 23

C. 22

D. Cannot be determined

Answer: C

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5. If the nth term of an AP is (2n +1) then the sum of its first three terms is

A. 6n+3

B. 15

C. 12

D. 21

Answer: B

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6. The sum of first n terms of an AP is $\left(3n^2 + 6n\right)$. The common difference of the AP is

A. 6

B. 9

C. 15

D. -3

Answer: A

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7. The sum of first n terms of an AP is $\left(5n - n^2\right)$. The nth term of the AP is

A. (5-2n)

B. (6-2n)

C. (2n -5)

D. (2n-6)

Answer: B

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8. The sum of the first n terms of an A.P. is $4n^2 + 2n$. Find the nth term of this A.P.

A. $(6n - 2)$

B. $(7n - 3)$

C. $(8n - 2)$

D. $(8n + 2)$

Answer: C

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9. The 7th term of an AP is -1 and its 16th term is 17. The nth term of the AP is

A. (3n +8)

B. (4n -7)

C. (15-2n)

D. (2n-15)

Answer: D

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10. The 5th term of an AP is -3 and its common difference is -4. The sum of its first 10 terms is

A. 50

B. -50

C. 30

D. -30

Answer: B

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11. The 5th term of an AP is 20 and the sum of its 7th and 11th terms is 64. The common difference of the AP is

A. 4

B. 5

C. 3

D. 2

Answer: C

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12. The 13^{th} term of an AP is 4 times its 3^{rd} term. If its 5^{th} term is 16 then the sum of its first ten terms is

A. 150

B. 175

C. 160

D. 135

Answer: B

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13. An AP 5, 12, 19, ... has 50 terms. Its last term is

A. 343

B. 353

C. 348

D. 362

Answer: C

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14. The sum of first 20 odd natural numbers is

A. 100

B. 210

C. 400

D. 420

Answer: C

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15. The sum of first 40 positive integers divisible by 6 is

A. 2460

B. 3640

C. 4920

D. 4860

Answer: C

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16. How many two -digit numbers are divisible by 3?

A. 25

B. 30

C. 32

D. 36

Answer: B

 Watch Video Solution

17. How many three-digit numbers are divisible by 9?

A. 86

B. 90

C. 96

D. 100

Answer: D

 Watch Video Solution

18. What is the common difference of an AP in which $a_{18} - a_{14} = 32?$

A. 8

B. -8

C. 4

D. -4

Answer: A

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19. If a_n denotes the nth term of the AP 3, 18, 13, 18,... then what is the value of $(a_{30} - a_{20})$?

A. 40

B. 36

C. 50

D. 56

Answer: C

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20. Which term of the AP 72, 63, 54, ... is 0?

A. 8th

B. 9th

C. 10th

D. 11th

Answer: B

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21. Which term of the AP 25, 20, 15,.... Is the first negative term?

A. 10th

B. 9th

C. 8th

D. 7th

Answer: D

 Watch Video Solution

22. Which term of the AP 21, 42, 63, 84,.. Is 210?

A. 9th

B. 10th

C. 11th

D. 12th

Answer: B

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23. What is 20th term from the end of the AP 3, 8, 13, ..., 253?

A. 163

B. 158

C. 153

D. 148

Answer: B

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24. $(5 + 13 + 21 + \ldots + 181) = ?$

A. 2476

B. 2337

C. 2219

D. 2139

Answer: D

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25. The sum of first 16 terms of the AP 10, 6, 2 ...

is

A. 320

B. -320

C. -352

D. -400

Answer: B

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26. How many terms of the AP 3, 7, 11, 15,.... Will make the sum 406?

A. 10

B. 12

C. 14

D. 20

Answer: C

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27. The 2nd term of an AP is 13 and its 5th term is 25. What is its 17th term?

A. 69

B. 73

C. 77

D. 81

Answer: B

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28. The 17th term of an AP exceeds its 10th term by 21. The common difference of the AP is

A. 3

B. 2

C. -3

D. -2

Answer: A

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29. The 8th term of an AP is 17 and its 14th term is 29. The common difference of the AP is

A. 3

B. 2

C. 5

D. -2

Answer: B

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30. The 7th term of an AP is 4 and its common difference is -4. What is its first term?

A. 16

B. 20

C. 24

D. 28

Answer: D

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