MATHS

BOOKS - EDUCART PUBLICATION

ARITHMETIC PROGRESSIONS

Objective Type Questions Multiple Choice Questions

1. Which of the followig is not an A.P?

A. $-1.2, 0.8, 2.8, \ldots$

B. $3, 3+\sqrt{2}, 3+2\sqrt{2}, 3+3\sqrt{2}, \ldots$

C. $\frac{4}{3}, \frac{7}{3}, \frac{9}{3}, \frac{12}{3}, \ldots$

D. $\frac{-1}{3}, \frac{-2}{5}, \frac{-3}{5}, \ldots$

Answer: C

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2. In an Ap, if a = 3.5, d = 0 and n = 101, then a_n will be

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer: B

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3. The list of number -10, -6, -2, 2, ... is

A. an AP with d = -16

B. an AP with d = 4

C. an AP with d = -4

D. not an AP

Answer: B

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4. The first term of an A.P. is 5 and the last term is 45. If the sum of all the terms in 400. the number of terms is

A. 20

B. 8

C. 10

D. 16

Answer: D

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

A. 1

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

C. -1

D. $\frac{1}{p}$

Answer: C

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6. The n^{th} term of the A.P. a, 3a, 5a, ... Is

A. na

B. $(2n-1)a$

C. $(2n-1)a$

D. 2na

Answer: B

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7. The 11th term of an AP -5, $\frac{-5}{2}$, 0, $\frac{5}{2}$, ...

A. -20

B. 20

C. -30

D. 30

Answer: B

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8. The first four terms of an A.P. whose first term is -2 and the common difference is -2 are

A. $-2, 0, 2, 4$

B. $-2, 4, -8, 16$

C. $-2, -4, -6, -8$

D. $-2, -4, -8, -16$

Answer: C

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9. The 21st term of an AP whose first two terms are -3 and 4, is

A. 17

B. 137

C. 143

D. -143

Answer: B

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

A. 9^{th}

B. 10^{th}

C. 11^{th}

D. 12^{th}

Answer: B

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11. The value of x for which 2x, (x + 10) and (3x + 2) are the three consecutive terms of an AP, is

A. 6

B. -6

C. 18

D. -18

Answer: A

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12. The first term of an AP is p and the common difference is q, then its 20th term is

A. q +19p

B. p - 9q

C. p + 19q

D. 2p + 9q

Answer: C

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13. If the common difference of an AP is 10, then what is $a_{18} - a_{16}$?

A. 5

B. 20

C. 25

D. 30

Answer: b

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14. Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. The difference between their 4th terms is

A. -1

B. -8

C. 7

D. -9

Answer: C

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

A. Pythagoras

B. Newton

C. Gauss

D. Euclid

Answer: C

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

A. 2

B. 3

C. -3

D. 5

Answer: B

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17. 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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18. The 11^{th} term of the AP: $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, \ldots$ is:

A. $17\sqrt{2}$

B. $19\sqrt{2}$

C. $21\sqrt{2}$

D. $23\sqrt{2}$

Answer: C

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19. The sum of the first 10 terms of the AP: 20, 16, 12,.... Is:

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20. In an AP, if a = 1, a_n= 20 and S_n = 399, then n is equal to

A. 19

B. 21

C. 38

D. 42

Answer: C

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21. Which of the following is not an A.P?

A. $-1.2, 0.8, 2.8, \ldots$

B. $3, 3+\sqrt{2}, 3+2\sqrt{2}, 3+3\sqrt{2}, \ldots$

C. $\frac{4}{3}, \frac{7}{3}, \frac{9}{3}, \frac{12}{3}, \ldots$

D. $\frac{-1}{3}, \frac{-2}{5}, \frac{-3}{5}, \ldots$

Answer: C

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22. In an Ap, if a = 3.5, d = 0 and n = 101, then a_n will be

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer: B

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23. The list of number -10, -6, -2, 2, ... is

A. an AP with d = -16

B. an AP with d = 4

C. an AP with d = -4

D. not an AP

Answer: B

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24. 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.

A. 20

B. 8

C. 10

D. 16

Answer: D

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

A. 1

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

C. -1

D. $\frac{1}{p}$

Answer: C

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

A. na

B. $(2n-1)a$

C. $(2n-1)a$

D. 2na

Answer: B

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27. The 11th term of an AP -5, $\frac{-5}{2}$, 0, $\frac{5}{2}$, ...

A. -20

B. 20

C. -30

D. 30

Answer: B

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28. The first four terms of an A.P. whose first term is -2 and the common difference is -2 are

A. $-2, 0, 2, 4$

B. $-2, 4, -8, 16$

C. $-2, -4, -6, -8$

D. $-2, -4, -8, -16$

Answer: C

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29. The 21st term of an AP whose first two terms are -3 and 4, is

A. 17

B. 137

C. 143

D. -143

Answer: B

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

A. 9^{th}

B. 10^{th}

C. 11^{th}

D. 12^{th}

Answer: B

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31. Write the value of x for which $2x,\ x+10$ and $3x+2$ are in A.P.

A. 6

B. -6

C. 18

D. -18

Answer: A

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

A. q + 9p

B. p - 9q

C. p + 9q

D. 2p + 9q

Answer: C

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33. If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

A. 5

B. 20

C. 25

D. 30

Answer: C

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34. Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. The difference between their 4th terms is

A. -1

B. -8

C. 7

D. -9

Answer: C

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

A. Pythagoras

B. Newton

C. Gauss

D. Euclid

Answer: C

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

A. 2

B. 3

C. -3

D. 5

Answer: B

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37. 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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38. The 11^{th} term of the AP: $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, \ldots.$ is:

A. $17\sqrt{2}$

B. $19\sqrt{2}$

C. $21\sqrt{2}$

D. $23\sqrt{2}$

Answer: C

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39. The sun of first 16 terms of the AP 10, 6, 2, ... is

A. -320

B. 320

C. -352

D. -400

Answer: A

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40. In an AP, if a = 1, a_n= 20 and S_n = 399, then n is equal to

A. 19

B. 21

C. 38

D. 42

Answer: C

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Objective Type Questions Fill In The Blanks

1. Fill the two blanks in the sequence 2, ____ , 26, ____ so that the sequence forms an A.P.

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2. The sum of first 16 terms of the AP 5, 8, 11, 14, ... Is. ..... .

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3. The common difference of an A.P. 6, then $a_{15} - a_{11}$..... .

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4. If $\frac{4}{5}, \ a, \ 2$ are three consecutive terms of an A.P., then find the value of a .

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

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6. If $S_n = 5n^2 + 3n,$ then 2^{nd} term is ..... .

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7. Find the 16^{th} term of the AP: 2, 7, 12, 17, ...

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8. The number of terms of AP: 18, 16, 14, ... That make the sum zero, is .....

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9. Second term of the AP if the $S_n = n^2 + n$ is .....

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10. Fill the two blanks in the sequence 2, ____ , 26, ____ so that the sequence forms an A.P.

Watch Video Solution

11. The sum of first 16 terms of the AP 5, 8, 11, 14, ... is

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12. The common difference of an A.P. 6, then $a_{15} - a_{11}$..... .

Watch Video Solution

13. If $\frac{4}{5},\ a,\ 2$ are three consecutive terms of an A.P., then find the value of a .

Watch Video Solution

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

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15. If $S_n = 5n,$ then n^{th} term is ..... .

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16. Find the 16^{th} term of the AP: 2, 7, 12, 17, ...

Watch Video Solution

17. The number of terms of AP: 18, 16, 14, ... That make the sum zero, is .....

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18. Second term of the AP if the $S_n = n^2 + 2n$ is .....

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Objective Type Questions Very Short Questions

1. Determine the $10th$ term from the end of the A.P. $4,\ 9,\ 14,\ ;\ 254$.

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2. Find the sum of the first 50 natural numbers.

Watch Video Solution

3. If the arithmetic mean of the first n natural numbers is 15 , then n is _____ .

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4. If in an AP a=15, d=-3 and $a_n = 0$. Then find the value of n.

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

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

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6. Find the common difference of the Arithmetic Progression (A.P.)

$\frac{1}{a}, \frac{3-a}{3a}, \frac{3-2a}{3a} \ldots . (a \neq 0)$

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7. Justify whether it is true to say that $-1, \frac{-3}{2}, -2, \frac{5}{2}, \ldots$ Forms an AP as $a_2 - a_1 = a_3 - a_2$.

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

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9. In an A.P., if the common difference (d)=-4 and the seventh term (a_7) is 4 then find the first term

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10. The nth terms of an A.P. $\frac{1}{m}, \frac{m+1}{m}, \frac{2m+1}{m}, \ldots$ is:

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11. If the n^{th} term of the A.P. $-1, 4, 9, 14, \ldots.$ is 129, find the value of n.

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12. Find the 9th term from the ctowards the first term of the A.P. 5,9,13,.....,185

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13. For the AP $-3, -7, -11, \ldots$ 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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14. If the first three terms of an A.P are b, c and 2b, then find the ratio of b and c

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15. What is the common difference of an A.P. in which $a_{21} - a_7 = 82$?

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16. Q. For what value of k will k+9, 2k-1 and 2k+7 are the consecutive terms of an A.P.

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17. Find the 16^{th} term of the AP: 2, 7, 12, 17..... .

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18. Find the mean of first eleven natural numbers.

Watch Video Solution

19. Determine the $10th$ term from the end of the A.P. $4,\ 9,\ 14,\ ;\ 254$.

Watch Video Solution

20. Find the sum of the first 100 natural numbers.

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21. If the arithmetic mean of the first n natural numbers is 15 , then n is _____ .

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22. If in an AP a=15, d=-3 and $a_n = 0$. Then find the value of n.

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

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

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24. Find the common difference of the Arithmetic Progression (A.P.)

$\frac{1}{a}, \frac{3-a}{3a}, \frac{3-2a}{3a} \ldots . (a \neq 0)$

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25. Justify whether it is true to say that $-1, \frac{-3}{2}, -2, \frac{5}{2}, \ldots$ Forms an AP as $a_2 - a_1 = a_3 - a_2$.

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30. Find the 9th term from the ctowards the first term of the A.P. 5,9,13,....,185

Watch Video Solution

31. For the AP $-3, \ -7, \ -11, \ldots$ 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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32. If the first three terms of an A.P. are b, c and 4b, then find the ratio of b and c.

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33. What is the common difference of an A.P. is 2 in which $a_{11} - a_7$?

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34. For what value of k will $k+9, 2k-1$ and 2k + 7 are the consecutive terms of an A.P.?

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35. Find the 16^{th} term of the AP: 2, 7, 12, 17..... .

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36. Find the mean of first eleven natural numbers.

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Short Answer Sa I Type Questions

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

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

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

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

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5. Two A.P have the same common difference. The first term of one A.P is 2 and that of the other is 7. The difference between the 10th terms is the

same as the difference between their 21st terms, which is the same as the difference between any corresponding terms. Why?

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

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7. If S_n the sum of first n terms of an A.P. is given by $Sn = 3n^2 - 4n$, find the nth term.

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8. Find the sum of first 10 multiples of 3,

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

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10. The 10^{th} term of an A.P. is -4 and its 22^{nd} term is (-16). Find its 38^{th} term.

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

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12. Determine the AP whose 3^{rd}term is 5 and the 7^{th}term is 9.

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13. If the sum of the first 9 terms of an AP is equal to the sum of its first 11 terms, then find the sum of its first 20 terms.

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14. Find the number of natural numbers between 102 and 998 which are divisible by 2 and 5 both.

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15. 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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16. The common difference between the terms of two AP's is same. If the difference between their 50^{th} terms is 100, what is the difference between

their 100^{th} terms?

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17. 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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18. If the 4th term of an A.P. is zero, prove that the 25th term of the A.P. is three times its 11th term.

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19. For an AP, it is given that first term (a)= 5 and Common Difference (d) = 3 and nth term = 50. Find n and sum of first n terms of AP

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20. If 6 times the 6^{th} term of an A.P, is equal to 9 times the 9^{th} term, show that its 15^{th} term is zero.

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

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

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23. Two APs have the same common difference. The difference between their 100^{th}terms is 100, what is the difference between their 1000^{th}terms?

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24. Show that $(a-b)^2$, $\left(a^2+b^2\right)$ and $(a+b)^2$ are in AP.

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

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

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

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28. Two A.P have the same common difference. The first term of one A.P is 2 and that of the other is 7. The difference between the 10th terms is the same as the difference between their 21st terms, which is the same as the difference between any corresponding terms. Why?

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

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30. If S_n the sum of first n terms of an A.P. is given by $Sn = 3n^2 - 4n$, find the nth term.

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31. Find the sum of first 8 multiples of 3

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

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33. The 10^{th} term of an A.P. is -4 and its 22^{nd} term is (-16). Find its 38^{th} term.

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

Watch Video Solution

35. Determine the AP whose 3^{rd}term is 5 and the 7^{th}term is 9.

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36. If the sum of the first 9 terms of an AP is equal to the sum of its first 11 terms, then find the sum of its first 20 terms.

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37. Find the number of natural numbers between 102 and 998 which are divisible by 2 and 5 both.

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38. For what value of n, are the n^{th} terms of two APs : 63, 65, 67,... and 3, 10, 17,... equal ?

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39. The common difference between the terms of two AP's is same. If the difference between their 50^{th} terms is 100, what is the difference between their 100^{th} terms?

Watch Video Solution

40. 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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41. If the 4th term of an A.P. is zero, prove that the 25th term of the A.P. is three times its 11th term.

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42. In an A.P. given that the first term (a) = 54, the common difference (d) = -3 and the n^{th} term $(a_n) = 0$, find n and the sum of first n terms (S_n) of the A.P.

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43. If 6 times the 6^{th} term of an A.P, is equal to 9 times the 9^{th} term, show that its 15^{th} term is zero.

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

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

Watch Video Solution

46. Two APs have the same common difference. The difference between their 100^{th} terms is 100, what is the difference between their 1000^{th} terms?

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Short Answer Sa Ii Type Questions

1. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

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2. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

Watch Video Solution

3. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

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

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5. Determine the AP whose fifth term is 19 and the difference of the eighth term from the thirteenth term is 20.

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6. The sum of the first 30 terms of an A.P. is 1920. if the fourth term is 18, find its 11^{th} term.

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

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8. Find the middle term of the A.P. 7, 13, 19, ... 247.

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9. Split 207 into three parts such that these are in AP and the product of the two smaller parts is 4623.

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10. How many numbers lie between 10 and 300, which divided by 4 leave a remainder 3?

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11. Find the sum of two middle terms of the AP $-\frac{4}{3}, -1, -\frac{2}{3}, -\frac{1}{3}, ..., 4\left(\frac{1}{3}\right)$

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12. Show that the sum of an A.P. whose first term is a, the second term is b and the last term is c, is equal to `((a+c)(b+c−2a))/(2(b−a))

Watch Video Solution

13. 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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14. 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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15. 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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16. 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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17. 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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18. 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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19. 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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20. Find the sum of the first 40 positive integers divisible by 6.

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21. 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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22. If the sum of first 7 terms of an A.P. is 49 and that of its 17 terms is 289, find the sum of first n terms of the A.P.

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23. 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 tis $(m+n)$ terms is zero.

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

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25. The houses of a row are numbered 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

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26. 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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27. 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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28. Find the sum of first 24 terms of the list of numbers whose nth term is given by $a_n = 3 + 2n$

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

Watch Video Solution

30. Justify whether it is true to say that the following are the nth terms of an AP.

(i) $2n - 3$ (ii) $3n^2 + 5$ (iii) $1 + n + n^2$

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31. Justify whether it is true to say that the following are the nth terms of an AP.

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

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34. Determine the AP whose fifth term is 19 and the difference of the eighth term from the thirteenth term is 20.

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35. The sum of the first 30 terms of an A.P. is 1920. if the fourth term is 18, find its 11^{th} term.

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36. Which term of the sequence $20,\ 19\frac{1}{4},\ 18\frac{1}{2},\ 17\frac{3}{4},\ \cdot$ is the first negative term?

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37. Find the middle term of th e A.P. 7, 13, 19, ... 247.

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38. Split 207 into three parts such that these are in AP and the product of the two smaller parts is 4623.

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39. How many numbers lie between 10 and 300, which divided by 4 leave a remainder 3?

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40. Find the sum of two middle terms of the AP $-\frac{4}{3}, -1, -\frac{2}{3}, -\frac{1}{3}, ..., 4\left(\frac{1}{3}\right)$

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41. Show that the sum of an A.P. whose first term is a, the second term is b and the last term is c, is equal to `((a+c)(b+c-2a))/(2(b-a))

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42. 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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43. 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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44. 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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45. 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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46. If the m^{th} term of an A.P. is $\frac{1}{n}$ and the n^{th} terms is $\frac{1}{m}$, show that the sum of mn terms is $\frac{1}{2}(mm+1)$.

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47. 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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48. 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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49. Find the sum of the first 40 positive integers divisible by 6.

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50. 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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51. If the sum of first 7 terms of an A.P. is 49 and that of its 17 terms is 289, find the sum of first n terms of the A.P.

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52. 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 tis $(m+n)$ terms is zero.

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

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54. The houses of a row are numbered 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

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55. 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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56. 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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57. Find the sum of first 24 terms of the list of numbers whose nth term is given by $a_n = 3 + 2n$

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58. Determine the AP whose third term is 16 and the 7^{th}term exceeds the 5^{th}term by 12.

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Long Answer Type Questions

1. 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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2. Find the sum of the following series :

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

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3. 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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4. Solve for $x: 1+4+7+10+\ldots+x=287$

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5. The sum of the first five terms of an A.P. and the sum of the first seven terms of the same A.P. is 167. If the sum of first 10 terms of this A.P. is 235, find the sum of its first twenty terms.

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6. 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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7. 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.

Watch Video Solution

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

Watch Video Solution

10. If the sum of first p terms of an A.P. is equal to the sum of the first q terms, then find the sum of the first (p+q) terms.

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11. Find the sum of the integers between 100 and 200 that are divisible by 9.

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12. Find the sum of the integers between 100 and 200 that are divisible by 9.

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13. Which term of the Arithmetic Progression $-7, -12, -17, -22, \ldots$ will be $-82?$ is -100 any term of the A.P.? Give reason for your answer.

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14. How many terms of the arithmetic progression 45, 39, 33,..... Must be taken so that their sum is 180? Explain the double answer.

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15. 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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16. If the sum of the first four terms of an AP is 40 and the sum of the first fourteen terms of an AP is 280. Find the sum of first n terms of the A.P.

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17. 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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18. If the ratio of the 11^{th} term of an AP to its 18^{th} term is $2:3$, find the ratio of the sum of the first five terms to the sum of its first 10 terms.

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19. The ratio of the sums of m terms and n terms of an A.P. is $m^2 : n^2$. Prove that the ratio of their mth and nth term will be (2m - 1) : (2n-1).

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20. Solve the equation $-4 + (-1) + 2 + \ldots + x = 437$.

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21. A thief runs with a uniform speed of 100 m/min. After one minute a policeman runs after the thief to catch him. He goes with a speed of 100 m/min in first minute and increases his speed by 10 m/min every succeeding minute. After how many minutes the policeman will catch the thief.

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22. 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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23. 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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24. Find the sum of the following series :

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

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Watch Video Solution

26. Solve for $x: 1+4+7+10+\ldots+x=287$

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

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

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30. Find the

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

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Watch Video Solution

33. Find the sum of the integers between 100 and 200 that are divisible by 9.

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34. Find the sum of the integers between 100 and 200 that are

(i) divisible by 9. (ii) not divisible by 9.

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35. Which term of the AP : 21, 18, 15,... is 81? Also, is any term 0? Give reason for your answer.

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36. How many terms of the arithmetic progression 45, 39, 33,..... Must be taken so that their sum is 180? Explain the double answer.

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37. 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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