



MATHS

BOOKS - TARGET PUBLICATION

ARITHMETIC PROGRESSION

Practice Set 3 1

1. Which of the following sequences are A.P.? If they are A.P. find the common difference

127, 132, 137, ...



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2. Write an A.P. whose first term is a and common difference is d in each of the following:

$$a = 10, d = 5$$



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3. Write an A.P. whose first term is a and common difference is d in each of the following:

$$a = -3, d = 0$$



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4. Write an A.P. whose first term is a and common difference is d in each of the following:

$$a = -7, d = \frac{1}{2} \text{ i. e. } 0.5$$



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5. Write an A.P. whose first term is a and common difference is d in each of the following:

$$a = -1.25, d = 3.$$

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6. Write an A.P. whose first term is a and common difference is d in each of the following:

$$a = 6, d = -3.$$

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7. Find the first term and common difference for each of the A.P.

5,1,-3,-7

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8. Find the first term and common difference for each of the A.P.

0.6,0.9,1.2,1.5,.....

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9. Find the first term and common difference for each of the A.P.

127,135,143,151,.....



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10. Find the first term and common difference for each of the A.P.

$\frac{1}{4}, \frac{3}{4}, \frac{5}{4}, \frac{7}{4}, \dots$



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Practice Set 3 2

1. Write the correct number in the given boxes from the following A.P.

3,6,9,12,.....

Here

$$t_1 = \square, t_2 = \square, t_3 = \square, t_4 = \square, t_2 - t_1 = \square, t_3 - t_2 = \square \therefore d = \square$$



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2. Write the correct number in the given boxes from the following A.P.

$-3, -8, -13, -18, \dots$

Here,

$$t_1 = \square, t_2 = \square, t_3 = \square, t_4 = \square, t_2 - t_1 = \square, t_3 - t_2 = \square \therefore a = \square$$

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3. Write the correct number in the given boxes from the following A.P.

$70, 60, 50, 40, \dots$

Here, $t_1 = \square, t_2 = \square, t_3 = \square, \dots \therefore a = \square, d = \square$

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4. In an A.P 17^{th} term is 7 more than 10^{th} term. Find the common difference?

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Practice Set 3 3

1. First term and common difference of an A.P are 6 and 3 respectively.

Find S_{27}

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2. Find the sum of first 123 even natural numbers.

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3. In an A.P. 19th term is 52 and 38th term is 128. Find the sum of first 56 terms.

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4. Find the sum of all natural numbers from 1 to 140 which are divisible by 4.

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5. Sum of first 55 terms in an A.P is 3300. Find its 28^{th} term.

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6. If the 9^{th} term of an A.P is *zero* then show that the 29^{th} term is twice the 19^{th} term.

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Practice Set 3 4

1. On 1st January 2016, Sanika decides to save ₹10, ₹11 on second day, ₹12 on third day. If she decides to save like this, then on 31st December 2016 what would be her total saving?



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2. A man borrows ₹8000 and agrees to repay with a total interest of ₹1360 in 12 monthly installments, each installment being less than the preceding one by ₹40. Find the amount of the first and last installment.



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3. Sachin invested in a national saving certificate scheme. In the 1st year, he invested ₹5000, in 2nd year ₹7000, in 3rd year ₹9000 and so on. Find the total amount he invested in 12 years.



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4. There is an auditorium with 27 rows of seats. There are 20 seats in the first row, 22 seats in the second row, 24 seats in the third row and so on. Find the number of seats in 15th row and the total seats in the auditorium.

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5. Kargil's temperature was recorded for a week i.e Monday to Saturday. All readings were in A.P .The sum of temperatures of Monday and Saturday was $5^{\circ}C$ more than the sum of temperatures of Tuesday and Saturday. If temperature of Wednesday was $-30^{\circ}C$, then find the temperature on the other five days.

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6. On the World Environment Day tree plantation programme was arranged on a land which is triangular in shape. Trees are planted such that in the first row there is one tree, in the second row there are two

trees, in the third row there are three trees and so on. Then find the total number of trees in 25 rows.

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Practice Set 3 5

1. The sequence $-10, -6, -2, 2, \dots$ a) is an A.P, Reason $d = -16$

b) is an A.P, Reason $d = 4$ c) is an A.P, Reason $d = -4$ d) is not an A.P

A. is an A.P. Reason $d=-16$

B. Is an A.P. respond $d=4$

C. is an A.P. Reason $d =4$

D. is not an A.P.

Answer: b

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2. First four terms of an A.P are....., whose first term is -2 and common difference is -2 . a) $-2, 2, 2, 4$ b) $-2, 4, -8, 16$ c) $-2, -4, -6, -8$ d) $-2, -4, -8, -16$

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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3. What is the sum of first 30 natural numbers? a) 464 b) 465 c) 462 d) 461

A. 464

B. 465

C. 462

D. 461

Answer: b



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4. For a given A.P., $t_7 = 4$, $d = -4$ then $a = \dots\dots\dots$ a)6 b)– 7 c)20 d)28

A. 6

B. 7

C. 20

D. 28

Answer: d



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5. For a given AP, $a = 3.5$, $d = 0$, $n = 101$ then $t_n = \dots\dots\dots$ a)0 b) 103.5 c)104.5 d)3.5

A. 0

B. 3.5

C. 103.5

D. 104.5

Answer: b



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6. In an A.P, first two terms are $-3, 4$, then 21st term is.....a) -143 b)143 c)131 d)137

A. -143

B. 143

C. 137

D. 17

Answer: c



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7. If for an A.P, $d = 5$ then $t_{18} - t_{13} = \dots\dots\dots$ a)5 b)20 c)25 d)30

A. 5

B. 20

C. 25

D. 30

Answer: c



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8. Sum of first five multiples of 3 is.....a)45 b)15 c)55 d)35

A. 45

B. 55

C. 15

D. 75

Answer: a



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9. 15, 10, 5, In this A.P the sum of first 10 terms is.....a) – 75 b) – 125

c)75 d)125

A. – 75

B. – 125

C. 75

D. 125

Answer: a

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10. In an A.P, 1st term is 1 and the last term is 20. The sum of all terms is 399, then $n = \dots$ a)42 b)38 c)21 d)19

A. 42

B. 38

C. 21

D. 19

Answer: b

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11. Find the 4th term from the end in an A.P, $-11, -8, -5, \dots, 49$

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12. In an A.P 10th term is 46, sum of 5th term and 7th term is 52. Find the A.P.

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13. An A.P has its 4th term as -15 and 9th term as -30 . Find the sum of first 10 numbers.

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14. Two A.P's are given as 9, 7, 5, ... and 24, 21, 18, ... If n th term of both the progressions are equal then find the value of n and n th term.

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15. If sum of 3rd and 8th term of an A.P is 7 and sum of 7th and 14th term is -3 , then find 10th term.

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16. In an A.P, first term is -5 and last term is 45 . If sum of all the numbers in the A.P is 120 , then how many terms are there? What is the common difference?

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17. Sum of 1 to n natural numbers is 36 . Find the value of n .

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18. Divide 207 in three parts, such that all parts are in A.P and product of two smaller parts is 4623 .

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19. There are 37 terms in an A.P. The sum of three terms placed exactly at the middle is 225 and the sum of last three terms is 429. Write the A.P.

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20. If first term of an A.P is a , second term is b and last term is c , then show that sum of all the terms is $\frac{(a + c)(b + c - 2a)}{2(b - a)}$.

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21. If the sum of first p terms of an A.P is equal to the sum of first q terms, then show that the sum of its first $(p + q)$ terms is zero. ($p \neq q$).

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22. If m times the m th term of an A.P is equal to n times its n th term then show that $(m + n)$ th term of the A.P is zero.



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23. ₹1000 is invested at 10 % simple interest. Check at the end of every year if the total interest amount is in A.P. If this is an A.P then find interest amount after 20 years.



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Multiple Choice Questions

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

A. 2,4,6,8,10,.....

B. - 17, - 12, - 7, - 2, 3,.....

C. 1.5, 4, 6.5, 9,.....

D. 1,4,9,16,25,.....

Answer: d



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2. The first five terms of the A.P. with $a = 6$ and $d = -3$ are

A. 6,9,12,15,18

B. $-6, -9, -12, -15, -18$

C. 6,3,0,-3,-6

D. 6, 3, $-3, -6, -9$

Answer: c



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3. For the A.P. 9,16,23, 30,37,.....

A. $a=1, d=9$

B. $a=1, d=7$

C. $a=9, d=9$

D. $a=9, d=7$

Answer: d



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4. If $a = -9, d = -7$, then $t_{19} =$

A. 117

B. 135

C. -117

D. -135

Answer: d



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5. 149 is the..... Term of the given A.P. 5,11, 17, 23, 29,.....

A. 24

B. 25

C. 30

D. 31

Answer: b

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6. For any given A.P., if $t_{30} = 2t_{15}$, then

A. $a-d=0$

B. $a+d=0$

C. $a-2d=0$

D. $a+2d=0$

Answer: a

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$$7. 1 + 2 + 3 + 4 + \dots + 100 =$$

A. 5000

B. 5050

C. 5500

D. 5555

Answer: b



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8. If the first and last term of an A.P. are 18 and 82 respectively, then

$$S_{25} =$$

A. 2500

B. 1250

C. 800

D. 625

Answer: b



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9. For an A.P. if the first term is 8 and the common difference is 8, then S_n
=

A. $2n(n - 1)$

B. $4n(n - 1)$

C. $2n(n + 1)$

D. $4n(n + 1)$

Answer: d



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1. Some sequences are given below. For every sequence write the next three terms.

(i) 100, 70, 40, 10,.....

(ii) -7, -4, -1,2,.....

(iii) 4,4,4



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2. Which of the following sequences are arithmetic progressions? Justify.

(i) 2,6,10,14,.....

(ii) 24,21,18,15,.....

(iii) 4,12, 36, 108,.....

(iv) $1, \frac{3}{2}, 2, \frac{5}{2}$

(v) - 50, - 75, - 100.....

(vi) 12, 2, - 8, - 18,..... ,

(vii) 1, 3, 6, 10,.....

(viii) 1, 4, 7, 10,.....



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3. Check whether the sequence 7,12, 17, 22,..... Is an A.P., find the common difference.



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4. Find the first term and common difference for each of the A.P.

(i) 4,1,-2, -5,.....

(ii) $-1.25, -1.50, -1.75, -2, \dots$

(iii) 53, 38, 23, 8,.....



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5. If for an A.P. the first term is 11 and the common difference is (-2) , then find first three terms of A.P.



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6. Find the first four terms in an A.P, when $a=3$ and $d=4$.



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7. The first term a and common difference d are given. Find first four terms of A.P.

(i) $a = -3, d = 4,$

(ii) $a = 200, d = 7$

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

(iv) $a = 8, d = -5$



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Based On Practice Set 3 2

1. Find t_n for an A.P. 1,7,13, 19,.....



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2. Find t_n for following A.P., and then find 30th term of A.P.

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

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3. Find the

(i) 10th term of the A.P. 4,9,14,.....

(ii) 7th term of the A.P. 6,10,14,.....

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4. Find the 18th term of the A.P 1, 7, 13, 19.

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5. Find the 25th term of A.P 12, 16, 20, 24,

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6. Which term of the following A.P. is 560?

2,11, 20, 29,.....

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7. Find n if the n th term of the following A.P. is 66:3, 6,9,12.....

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8. How many terms are there in the A.P. 201, 208, 215,, 369?

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9. How many two digit numbers are divisible by 4?

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10. Check whether 301 is a term of the list of numbers 5, 11, 17, 23, ...

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11. If the 5th and 12th terms of an A.P. are 14 and 35 respectively, find the first term and the common difference.

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12. For an A.P. if $t_4 = 20$ and $t_7 = 32$, find a, d and t_n .

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13. The 11th term and the 21st term of an A.P. are 16 and 29 respectively then find:

a. The first term and common difference.

b. The 34th term.

c. 'n' such that $t_n = 55$.



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14. The 10th term and the 18th term of an A.P. are 25 and 41 respectively, then find 38th term of that A.P. Similarly if nth term is 99, find the value of n.



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15. The sum of the 3rd and 7th terms of an A.P. is 54 and the sum of the 5th and 11th terms is 84. Find the A.P.



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Based On Practice Set 3 3

1. If for an A.P.

(i) $a=6$, $d=3$, find S_{10}

(ii) $a = 6$, $d = 3$, find S_6

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2. Find the sum of first 100 terms of A.P. 14, 16, 18,.....

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3. Find the sum of the first n terms of an A.P.

1,4,7,10,..... Also, find S_{40} .

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4. If for an A.P., $t_8 = 36$, find S_{15} .

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5. If for an A.P. $S_{31} = 186$, find t_{16} .



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6. If the second term and the fourth terms of an A.P. are 12 and 20 respectively, then find the sum of first 25 terms:



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7. Obtain the sum of 56 terms of an A.P whose 19^{th} and 38^{th} term are 52 and 148 respectively.



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8. Find the sum of first n natural numbers.



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



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10. Write the sum of first n odd natural numbers.



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11. Find the sum of all numbers from 50 to 250 which are divisible by 6 and find t_{13} .



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12. Find three consecutive terms in an A.P., whose sum is 21 and their product is 315.



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13. Find four consecutive term in an A.P. such that the sum is -54 and the sum of the first and the third terms is -30 .

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Based On Practice Set 3 4

1. There is an auditorium with 35 rows of seats. There are 20 seats in the first row, 22 seats in the second row, 24 seats in the third row and so on. Find the number of seats in the twenty second row .

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2. Number of literate people in the year 2010 is 4000. This number increases by 400 every year. How many literate people will exist in the year 2020?

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3. In the year 2015, Mrs. Shaikh got a job with salary Rs. 1,80,000 per year. Her employer agreed to give Rs 10,000 per year as increment. Then in how many years will her annual salary be Rs 2,50,000?



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4. Mr. Shah borrows ₹4000 and agrees to repay with a total interest of ₹500 in 10 installments, each installment being less than the preceding installment by ₹10. What is the first and the last installment?



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5. Anvar saves some amount every month. In first three months he saves Rs 200, Rs 250 and Rs 300 respectively. In which month will he save Rs. 1000? Find the total amount saved.



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



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7. Mr. Ajay borrows ₹3,25,000. He paid ₹30,500 in the first month and then each installment being less than the preceding installment by ₹1500 he pays the rest. How long will it take to clear his loan?



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8. In winter, the temperature at a hill station from Monday to Friday is in A.P. The sum of the temperatures of Monday, Tuesday and Wednesday is zero and the sum of the temperatures of Thursday and Friday is $15^{\circ}C$. Find the temperature of each of the five days.



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Chapter Assessment

1. Is the following sequence an Arithmetic progression? If it is an A.P then write common difference. $-10, -13, -16, -19, \dots$

A. is an A.P. Reason $d=3$

B. is an A.P. Reason $d=-3$

C. is an A.P. Reason $d=4$

D. is not an A.P.

Answer: b



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2. In an A.P., if $t_{18} - t_{14} = 32$, then $d=$

A. 4

B. -4

C. 8

D. -8

Answer: c



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

A. 10th

B. 11th

C. 12th

D. 13th

Answer: a



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4. In an A.P. if $a=2$, $t_n = 34$, $S_n = 90$, then $n=$

A. 3

B. 5

C. 8

D. 12

Answer: b



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5. Solve the following questions.

(i) Check whether the sequence $-3, -1, 1, 3, \dots$ is an A.P. If it is an A.P., find the common difference.

(ii) If the 7th term of an A.P. is 40, then find S_{13} .



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6. Complete the following activities.

Write the correct number in the given boxes from the following A.P.

1,8, 15, 22,.....

Here $a = \square$, $t_1 = \square$, $t_2 = \square$, $t_3 = \square$,.....

$$t_2 - t_1 = \square - \square = \square$$

$$t_3 - t_2 = \square - \square = \square \therefore d = \square$$



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7. Find the A.P., if $a=18$ and $d=-5$



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8. Find the 15th term of the A.P. 21, 16,11,6.....



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9. For an A.P., find S_{12} if $a=4$ and $d=3$.

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10. Which term of the A.P. 9,12, 15,..... is 132?

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11. For an A.P. if the 11th term is 38 and 16th term is 73, then find the 31th term of the progression.

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

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

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14. 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 m th and n th term will be $(2m - 1) : (2n - 1)$.

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15. Is 5, 8, 11, 14, ... an A.P.? If so then what will be the 100th term? Check whether 92 and 61 are in this A.P.

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