



## MATHS

### BOOKS - TARGET MATHS (HINGLISH)

#### ARITHMETIC PROGRESSION

##### Practice Set 3 1

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

2,4,6,8,...



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2. Which of the following sequences is an A.P.? If they are A.P., find the common difference.  $2, \frac{5}{2}, 3, \frac{7}{2} \dots$

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

-10, -6, -2, 2,...

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

0.3, 0.33, 0.333,.....

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

0, - 4, - 8, - 12.....

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

$$-\frac{1}{5}, -\frac{1}{5}, -\frac{1}{5}, \dots$$



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

$$3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{3}, \dots$$



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

$$127, 132, 137, \dots$$



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

$$a = d, d = 5$$



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10. 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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11. 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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**12.** 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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**13.** 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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**14.** Write an A.P. whose first term is  $a$  and common difference is  $d$  in each of the following:

$$a = -19, d = -4.$$



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

5,1,-3,-7



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

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



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18. 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. 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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2. 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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3. 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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4. 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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5. Decide whether following sequence is an A.P., if so find  $20^{th}$  term of the progression.

$-12, -5, 2, 9, 16, 23, 30, \dots$

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6. Given Arithmetic Progression 12,16,20,24, ... Find the 24<sup>th</sup> term of this progression.

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7. Find the 19th term of the following A.P.:

7, 13, 19, 25, ....

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8. Find the 27th term of the following A.P.:

9, 4, - 1, - 6, - 11, ...

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9. Find how many three digit natural numvers are divisible by 5.

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10. The  $11^{th}$  term and the  $21^{th}$  term of an A.P. are 16 and 29 respectively, then find the  $41^{th}$  term of that A.P.

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11. 11,8,5,2, ... In this A.P. which term is number -151?

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12. In the natural numbers from 10 to 250, how many are divisible by 4?

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13. 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 number.



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3. Find the sum of all even numbers between 1 and 350.



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



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



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



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7. In an A.P. sum of three consecutive terms is 27 and their product is 504, find the terms. (Assume that three consecutive terms in A.P. are  $a-d$ ,  $a$ ,  $a+d$ )



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8. Find four consecutive terms in an A.P. whose sum is 12 and the sum of the 3rd and 4th terms is 14. ( Assume the four consecutive terms in A.P. are  $a - d, a, a + d, a + 2d$ )



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9. If the 9th term of an A.P. is zero , then show that 29th term is twice the 19th term.



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### Practice Set 3 4

1. On 1st Jan. 2016 , Sanika decides to save Rs. 10, RS. 11 on second day, Rs. 12 on third day. If she decides to save like this, then on 31st Dec. 2016 what would be her total savings?



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2. A man Borrows Rs. 8000 and agrees to repay with a total interest of Rs. 1360 in 12 monthly instalments. Each instalment being less than the preceding one by Rs. 40. Find the amount of the first and last instalments.



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3. Sachin invested Rs. 5000 for the 1st year, Rs. 7000 for the 2nd year, Rs. 9000 in the 3rd year in National Savings Certificate scheme. How much amount did he invest in 12 years?



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4. There is an auditorium with 27 rows of seats. There are 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 15<sup>th</sup> row and also find how many total seats are there in the auditorium?



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5. Kargil's temperature was recorded in a week from Monday to Saturday. All readings were in A.P. The sum of temperatures of Monday and Saturday was  $50^{\circ}\text{C}$  more than sum of temperatures of Tuesday and Saturday. If temperature of Wednesday was  $-30^{\circ}\text{C}$  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 tree, in the third row three trees and so on. Find the total number of trees in 25 rows.



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1. The sequence  $-10, -6, -2, 2, \dots$

- 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.  $-2, 0, 2, 4$
- 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 the first 30 natural numbers?**

A. 464

B. 465

C. 462

D. 461

**Answer: b**



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4. For an given A.P.,  $t_7 = 4$ ,  $d = -4$  then  $a =$

A. 6

B. 7

C. 20

D. 28

**Answer: d**



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5. For an given A.P.,  $a = 3.5$ ,  $d = 0$ ,  $n = 101$  then  $t_n = \dots$

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  $21^{st}$  term is .....

A. - 143

B. 143

C. 137

D. 17

**Answer: C**



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7. If for an A.P.,  $d = 5$ , then  $t_{18} - t_{13} = \dots$

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. 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

**Answer: A**



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10. In an A.P.,  $1^{st}$  terms is 1 and the last term is 20. The sum of all terms is 399 then  $n = \dots\dots\dots$

A. 42

B. 38

C. 21

D. 19

**Answer: b**



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**11.** Find the fourth term from the end in an A.P. -11, -8,-5,...49



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**12.** In an A.P. the 10th term is 46. The sun of the 5th and 7th terms is 52,  
Find the A.P.



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**13.** The A.P. in which  $4^{th}$  term -15 and  $9^{th}$  term is -30. Find the sum of first 10 numbers.



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

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

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16. In an A.P. the first term is -5 and last term is 45. If sum of all 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, then 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 will be 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 is 429. Write the A.P.

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

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21. The sum of first  $P$  terms of an A.P. is equal to the sum of its first  $Q$  terms. Show that the sum of its first  $(P+Q)$  terms is zero.

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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 the  $(m + n)$ th term of the A.P. is zero.

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23. Rs. 1000 is deposited at 10 per cent simple interest. Check if the interest amount at the end of every year is in A.P. If this is A.P. then find amount of the interest after 20 years. For this complete the following activity.

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

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

B.  $-17, -12, -7, -2, 3, \dots$

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. For an A.P. if  $d=.....$ , then sequence is a constant sequence.**

A. 0

B. 1

C.  $-1$

D. 2

**Answer: A**



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

A. 117

B. 135

C.  $-117$

D.  $-135$

**Answer: D**



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6. 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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7. 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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**8.**  $1 + 2 + 3 + 4 + \dots + 100 =$

A. 5000

B. 5050

C. 5500

D. 5555

**Answer: B**



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**9.** 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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**10.** 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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11. The sum of first 20 even natural numbers is

A. 420

B. 200

C. 210

D. 400

**Answer: a**

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**Based On Practice Set 3 1**

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)  $1, \frac{3}{2}, 2, \frac{5}{2}, \dots$

(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. Which of the following sequences are A.P.? If it is an A.P., find next two terms.

(i) 5,12,19,26,.....

(ii) 2, - 2, - 6, - 10.....

(iii) 1, 1, 2, 2, 3, 3.....

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



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5. 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.....

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



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

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8. 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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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. 7,13, 19, 25, ....

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5. Write the  $25^{th}$  term of an 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. Is 5,8,11,14,.....an A.P.? If so then what will be the 100th term?

Check whether 92 is in this A.P.? Is number 61 in this A.P.?

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

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14. The 11<sup>th</sup> term and the 21<sup>st</sup> term of an A.P. are 16 and 29 respectively then find:

a. The first term and common difference.

b. The 34<sup>th</sup> term.

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

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15. 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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16. 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 the first 56 terms of an A.P. whose 19th and 38th terms 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 350 which are divisible by 4.

Also find  $15^{\text{th}}$  term.



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**12.** Find the sum of all numbers from 50 to 350 which are divisible by 6.

Hence find the  $15^{\text{th}}$  term of that A.P.



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**13.** Find the sum of all numbers from 50 to 250 which are divisible by 6

and find  $t_{13}$ .



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

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15. 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. A village has 4000 literate people in the year 2010 and this number increases by 400 per year. How many literate people will be there till 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. A man saves Rs 16,500 in ten years. In each year after the first he saved Rs. 100 more than he did in the preceding year. How much did he save in the first year?



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5. Babubhai borrows Rs. 4,000 and agrees to repay with a total interest of Rs. 500 in 10 instalments, each instalment being less than the preceding instalment by Rs. 10. What should be the first and the last instalment?



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6. 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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7. A manufacturer of radio sets produced 600 units in the third year and 700 units in the seventh year. Assuming that the production 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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8. Ajay sharma repays the borrowed amount of Rs 3,25,000 by paying Rs 30,500 in the first month and then decreases the payment by Rs 1,500 every month. How long will it take to clear his amount?



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9. 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. Find the temperature of each of the five days.



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## Chapter Assessment

1. Which of the following sequence are 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.** Find three consecutive terms of an A.P. whose sum is 24 and product is 312.



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



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**14.** 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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15. A man set out on a cycle ride of 50km. He covers 5km in the first hour and during each successive hour his speed falls by  $\frac{1}{4}$  km/hr. How many hours will be take to finish his ride?



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16. 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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17. Is 5,8,11,14,.....an A.P.? If so then what will be the 100th term?  
Check whether 92 is in this A.P.? Is number 61 in this A.P.?



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