1. Which of the following sequences are in arithmetic progression ?

(i) 2, 6, 10, 14, ... (ii) 15, 12, 9, 6, ...

(iii) 5, 9, 12, 18, ... (iv) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$, ...

2. The nth term of a sequence is $(2n - 3)$, find its fifteenth term.

3. If the pth term of an A.P. is $(2p + 3)$; find the A.P.

4. Find the 24th term of the sequence :

12, 10, 8, 6, ...

5. Find the 30th term of the sequence :

$\frac{1}{2}, 1, \frac{3}{2}$, ...

6. Find the 100th term of the sequence :

$\sqrt{3}, 2\sqrt{3}, 3\sqrt{3}$, ...

7. Find the 50th term of the sequence :

$\frac{1}{n}, \frac{n+1}{n}, \frac{2n+1}{n}$, ...

8. Is 402 a term of the sequence :

8, 13, 18, 23, ... ?

9. Find the common difference and 99th term of the arithmetic progression :

$7\frac{3}{4}, 9\frac{1}{2}, 11\frac{1}{4}$, ...

10. How many terms are there in the series :

(i) 4, 7, 10, 13, ..., 148 ?

(ii) 0·5, 0·53, 0·56, ..., 1·1 ?

(iii) $\frac{3}{4}, 1, 1\frac{1}{4}$, ..., 3 ?

11. Which term of the A.P. 1, 4, 7, 10, ... is 52 ?

12. If 5th and 6th terms of an A.P. are respectively 6 and 5, find the 11th term of the A.P.

13. If t_n represents n^{th} term of an A.P., $t_2 + t_5 - t_3 = 10$ and $t_2 + t_9 = 17$, find its first term and its common difference.

If the first term of an A.P. is a and its common difference is d.

$t_2 + t_5 - t_3 = 10$

$\Rightarrow (a + d) + (a + 4d) - (a + 2d) = 10$

i.e. $a + 3d = 10$ I

Also, $t_2 + t_9 = 17$

$\Rightarrow (a + d) + (a + 8d) = 17$

i.e. $2a + 9d = 17$ II

Solve the two equations to get the values of a and d

14. Find the 10th term from the end of the A.P. 4, 9, 14, ..., 254.

15. Determine the arithmetic progression whose 3rd term is 5 and 7th term is 9.

16. Find the 31st term of an A.P. whose 10th term is 38 and 16th term is 74.

17. Which term of the series :

21, 18, 15, ... is –81 ?

Can any term of this series be zero ?

If yes, find the number of terms.

18. An A.P. consists of 60 terms. If the first and the last terms be 7 and 125 respectively, find the 31st term.

19. The sum of the 4th and the 8th terms of an A.P. is 24 and the sum of the 6th and the 10th terms of the same A.P. is 34. Find the first three terms of the A.P.

20. If the third term of an A.P. is 5 and the seventh terms is 9, find the 17th term.

1. In an A.P., ten times of its tenth term is equal to thirty times of its 30th term. Find its 40th term.

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

3. Which term of A.P. 5, 15, 25, ... will be 130 more than its 31st term ?

4. Find the value of p, if x, $2x + p$ and $3x + 6$ are in A.P.

5. If the 3rd and the 9th terms of an arithmetic progression are 4 and –8 respectively, which term of it is zero ?

6. How many three-digit numbers are divisible by 87 ?

7. For what value of n, the nth term of A.P. 63, 65, 67, ... and n^{th} term of A.P. 3, 10, 17, ... are equal to each other ?

8. Determine the A.P. whose 3rd term is 16 and the 7th term exceeds the 5th term by 12.

9. If numbers $n - 2$, $4n - 1$ and $5n + 2$ are in A.P., find the value of n and its next two terms.

10. Determine the value of k for which $k^2 + 4k + 8$, $2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are in A.P.

11. If a, b and c are in A.P. show that :

(i) $4a$, $4b$ and $4c$ are in A.P.

(ii) $a + 4$, $b + 4$ and $c + 4$ are in A.P.

12. An A.P. consists of 57 terms of which 7th term is 13 and the last term is 108. Find the 45th term of this A.P.

13. 4th term of an A.P. is equal to 3 times its first term and 7th term exceeds twice the 3rd term by 1. Find the first term and the common difference.

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

15. In an A.P., if m^{th} term is n and n^{th} term is m, show that its rth term is $(m + n - r)$.

16. Which term of the A.P. 3, 10, 17, ... will be 84 more than its 13th term ?