

D Michaelmas Arithmetic Sequences

Patrons are reminded that the main formula is

$$T = a + (n - 1)d$$

where n is the term number, T is the term, d is the common difference, and a is the first term. And the sum formula

$$S = \frac{n}{2} [2a + (n - 1)d].$$

1. Find the 100th term of the following sequences:

(a) 5, 7, 9, 11, 13, 15, . . .

203

(b) 10, 7, 4, 1, -2, -5 . . .

-287

(c) 14, 14.5, 15, 15.5, 16, 16.5, . . .

63.5

2. The first term of an AP is 7. The common difference is 3. Find the 20th term of the sequence.

64

3. The first term of an AP is -5. The common difference is -2. Find the 100th term of the sequence.

4. The first term of an AP is 12. The common difference is 0.1. Find the 80th term of the sequence.

5. The first term of an AP is 100. The common difference is -4. Find the 65th term of the sequence.

6. The first term of an AP is 12.5. The common difference is 0.5. Find the 150th term of the sequence.

7. The 4th term of an AP is 30. The common difference is 8. Find the first term of the sequence.

6

8. The first term of an AP is 6. The common difference is 2. Find the sum of the first 100 terms of the sequence.

9. The first term of an AP is 10. The common difference is $\frac{1}{2}$. Find the sum of the first 300 terms of the sequence.

10. The first term of an AP is 90. The common difference is -3. Find the sum of the first 200 terms of the sequence.

-41700

11. Find the sum $10 + 13 + 16 + 19 + 22 + \dots$ (200 terms).

12. Find the sum $17 + 19 + 21 + 23 + 25 + \dots$ (1000 terms).

13. Find the sum $100 + 95 + 90 + 85 + 80 + \dots$ (300 terms).

14. Find the sum $14 + 17 + 20 + 23 + 26 + \dots + 335$. (Hint: Find out how many terms there are.)

18846

15. Find the sum $80 + 75 + 70 + 65 + 60 + \dots + (-100)$.

16. The 10th term of an AP is 23 and the 15th term is 38.

(a) Find the first term of the sequence.

-4

(b) Find the 100th term of the sequence. 293

(c) Find the sum of the first 20 terms of the sequence. 490

17. The 8th term of an AP is 172 and the 19th term is 128.

(a) Find the first term of the sequence.

(b) Find the 50th term of the sequence.

(c) Find the sum of the first 120 terms of the sequence.

18. The 5th term of an AP is 5 and the 21st term is 9.

(a) Find the first term of the sequence. 4

(b) Find the 120th term of the sequence. 33.75

(c) Find the sum of the first 1000 terms of the sequence. 128875