Arithmetic Series

Section A — Identify the Series
For each series, state: first term a, common difference d, number of terms n.
Do **not** calculate the sum.

1. $1 + 4 + 7 + \cdots + 25$

2. $5 + 9 + 13 + \cdots + 61$

3. $12 + 10 + 8 + \cdots + -8$

4. $2.5 + 3.0 + 3.5 + \cdots + 8.0$

5. $\frac{1}{3} + \frac{2}{3} + 1 + \cdots + \frac{10}{3}$

6. $-4 + 2 + 8 + \cdots + 56$

Section B — Fixed Number of Terms
Calculate the value of S_n for the indicated number of terms.

7. For the arithmetic series $1 + 4 + 7 + \cdots$, calculate S_5.

8. For the arithmetic series $7 + 4 + 1 + \cdots$, calculate S_{10}.

9. For the series $2.5 + 3.0 + 3.5 + \cdots$, calculate S_{10}.

10. For the series $\frac{1}{3} + \frac{2}{3} + 1 + \cdots$, calculate S_{12}.

11. For the arithmetic series $90 + 83 + 76 + \cdots$, calculate S_{20}.

12. For the arithmetic series $-6 + -2 + 2 + \cdots$, calculate S_{15}.

Section C — Find the Last Term, then Find the Sum
Find the last term, then calculate the value of S_n.

13. $4 + 9 + 14 + \cdots$, find S_{10}.

14. $6 + 11 + 16 + \cdots$, find S_{18}.

15. $-3 + 4 + 11 + \cdots$, find S_{14}.

CC BY NC Darcy House

16. $\frac{1}{2} + 1 + \frac{3}{2} + \cdots$, find S_{16}.

17. $-100 - 95 - 90 - \cdots$, find S_{25}.

Section D — Find the Number of Terms, then Find the Sum
Find the number of terms, then calculate the value of S_n.

18. $2 + 4 + 6 + \cdots + 100$

19. $1 + 3 + 5 + \cdots + 51$

20. $4 + 9 + 14 + \cdots + 89$

21. $9 + 13 + 17 + \cdots + 153$

22. $7 + 9 + 11 + \cdots + 59$

23. $6 + 11 + 16 + \cdots + 156$

24. $-4 + 9 + 22 + \cdots + 516$

25. $\frac{2}{3} + \frac{5}{3} + \frac{8}{3} + \cdots + \frac{95}{3}$

26. $-120 - 115 - 110 - \cdots + -30$

27. $1.2 + 2.0 + 2.8 + \cdots + 20.4$

Section F — Final Questions

28. How many terms are in the arithmetic series $5 + 12 + 19 + \cdots + 187$ and what is the value of the sum?

29. An arithmetic series has $a = 7$, $d = 3$, and last term 145. Find the number of terms and the value of the sum.

30. The sum of the first $n$terms of an arithmetic series is 960. If $a = 12$ and $d = 4$, find n.

CC BY NC Darcy House