# SmartKalike

CBSE Class 10 · Maths

## Arithmetic Progressions

10 most probable questions for Boards 2027

**Q1. 1 mark · Very short answer**

What feature distinguishes a finite AP from an infinite AP?

**Answer**

A finite AP has a last term and a finite number of terms; an infinite AP has no last term.

**Q2. 2 marks · Short answer**

State the relationship between consecutive-term differences in an AP $a_1, a_2, \ldots, a_n$, using its common difference d.

**Answer**

1. Consecutive terms — For every valid k, $a_{k+1} - a_k = d$; therefore, $a_2 - a_1, a_3 - a_2, a_4 - a_3, \ldots$ all have the same value, the common difference.

**Q3. 3 marks · Multiple choice**

Which option correctly gives the common difference of the AP 6, 3, 0, −3, … and describes the possible sign of a common difference?
(A) 3; positive only (B) −3; positive, negative, or zero (C) 0; negative only (D) −6; positive or zero

**Answer**

(B) −3; positive, negative, or zero — 3 − 6 = −3, and the common difference can be positive, negative or zero.

**Q4. 4 marks · Long answer**

Define an arithmetic progression and write its general form using its first term a and common difference d. Explain how the terms in this form are generated.

**Answer**

1. Definition and form — An arithmetic progression (AP) is a list of numbers in which each term, except the first, is obtained by adding a fixed number to the preceding term. The fixed number d is called the common difference. The general form is a, a + d, a + 2d, a + 3d, ...; a is the first term and d is the common difference.
2. Generation of terms — The first term is a. Adding d once gives the second term a + d; adding d again gives the third term a + 2d; adding d once more gives the fourth term a + 3d. Continuing to add the same fixed number d to each preceding term generates the successive terms of the AP.

**Q5. 5 marks · Long answer**

(5 marks) Describe how to determine an AP when two of its terms are specified: show how the nth-term expression gives simultaneous equations for the first term and common difference. Then explain how to find the number of terms when the last term is known, and how to locate a term a specified number of places from the end.

**Answer**

1. Specified terms — X: let the first term be a and the common difference be d; Y: if the rth and sth terms are given, write $a_r = a + (r - 1)d$ and $a_s = a + (s - 1)d$, then equate these expressions to the specified values.
2. Find a and d — X: the two term equations form simultaneous linear equations; Y: solve them to obtain the first term and common difference, then write the AP using those values.
3. Known last term — X: denote the last term by l and the number of terms by n; Y: substitute l into $l = a + (n - 1)d$ and solve for n, which must be a positive integer.
4. Term from the end — X: if the AP has n terms and the required term is q places from the last term, its position from the beginning is $n - q + 1$; Y: find that term using $a_{n-q+1} = a + (n - q)d$. Alternatively, reverse the AP and use its first term and common difference to find the qth term.

**Q6. 1 mark · Very short answer**

What is another name for the nth term of an AP? If the AP has m terms, how may its last term be denoted?

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions

**Q7. 2 marks · Short answer**

Write the formula for the nth term of an AP whose first term is a and common difference is d.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions

**Q8. 3 marks · Multiple choice**

Which statement correctly explains why 1, 1, 2, 3, 5, … is not an AP?
(A) It has no first term. (B) Its consecutive differences are not constant. (C) Its terms are all positive. (D) It has infinitely many terms.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions

**Q9. 4 marks · Long answer**

For the list 6, 9, 12, 15, …, state the first term and common difference, and explain why both pieces of information specify the AP. Then state how the common difference can be obtained from any consecutive pair, and explain why 1, 1, 2, 3, 5, … is not an AP.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions

**Q10. 5 marks · Long answer**

(5 marks) (a) State the formula for the sum of the first n positive integers. (b) Explain how a rule for the nth term can be used to list terms and test whether they form an AP. (c) Explain how an AP with positive and negative terms can have two different numbers of initial terms with the same sum.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions


## Unlock all answers on SmartKalike

Every probable question of every chapter, each with a full answer, plus study targets and answer-sheet checking.

https://smartkalike.com/cbse/class-10/maths/arithmetic-progressions

Sign up with a friend's email for 30% off their first purchase.