

CLASS 11

MATHS

EXTRA QUESTIONS

Class 11 Maths Chapter 8 Sequences and Series – Extra Questions with Answers

Extra practice questions for Class 11 Maths Chapter 8 (Sequences and Series), beyond the textbook. These Class 11 Maths Chapter 8 important questions are handy for last-minute exam practice.

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Class 11 Maths Chapter 8 – Solutions and Notes

Extra practice questions for Class 11 Maths Chapter 8 (Sequences and Series), beyond the textbook. These Class 11 Maths Chapter 8 important questions are handy for last-minute exam practice.

Very Short Answer Questions (1 mark)

Q1. Find the common ratio of the GP: 3, 6, 12, 24.

Ans: $r = 6/3 = 2$.

Q2. Find the 5th term of the GP with $a=2$, $r=3$.

Ans: $a_5 = 2(3)^4 = 2(81) = 162$.

Q3. Find the sum of the first 5 natural numbers using the formula.

Ans: $5(6)/2 = 15$.

Q4. Find the geometric mean of 4 and 16.

Ans: $\sqrt{4 \times 16} = \sqrt{64} = 8$.

Q5. Does the infinite GP with $r=2$ have a finite sum?

Ans: No, since $|r|=2$ is not less than 1.

Short Answer Questions (2–3 marks)

Q6. Find the sum of the infinite GP: 1, 1/2, 1/4, 1/8, ...

Ans: $a=1$, $r=1/2$ ($|r|<1$). $S_\infty = a/(1-r) = 1/(1-0.5) = 1/0.5 = 2$.

Q7. Find the arithmetic mean and geometric mean of 9 and 16, and verify that $AM \geq GM$.

Ans: $AM = (9+16)/2 = 12.5$. $GM = \sqrt{9 \times 16} = \sqrt{144} = 12$. Since $12.5 > 12$, $AM \geq GM$ is confirmed.

Q8. A GP has first term 5 and common ratio 3. Find the sum of the first 4 terms using the sum formula.

Ans: $S_4 = a(r^4-1)/(r-1) = 5(3^4-1)/(3-1) = 5(81-1)/2 = 5(80)/2 = 200$.

Higher-Order Thinking / Application Questions

Q9. A ball is dropped from a height of 10 m, and after each bounce it rises to 3/5 of its previous height. Using the concept of an infinite GP, find the total distance the ball travels (theoretically, until it stops bouncing), accounting for both falling and rising distances.

Ans: The ball falls 10 m initially. Then it bounces up and down repeatedly, each time to 3/5 of the previous height, forming a GP with $a=10 \times (3/5)=6$ (first bounce height) and $r=3/5$, but each bounce height is travelled twice (up and down), except we count the initial fall once. Total distance = 10 (initial fall) + $2 \times$ [sum of infinite GP with $a=6$, $r=3/5$] = $10 + 2 \times [6/(1-0.6)] = 10 + 2 \times 15 = 10 + 30 = 40$ m.

Q10. Explain why the formula for the sum of an infinite GP, $S_\infty = a/(1-r)$, only works when $|r| < 1$, using the finite sum formula as a starting point.

Ans: The finite sum formula is $S_n = a(1-r^n)/(1-r)$. As n approaches infinity, the term r^n approaches 0 only if $|r| < 1$ (since a fraction raised to higher and higher powers shrinks toward zero). If $|r| \geq 1$, r^n either stays constant ($r=1$), grows without bound ($r>1$), or oscillates without settling ($r \leq -1$), so the sum does not converge to a finite value, and the infinite sum formula does not apply.

Class 11 Maths Chapter 8 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 11 Maths Chapter 8 Solutions](#) and [Class 11 Maths Chapter 8 Revision Notes](#).

See also: [Chapter 2](#) | [Chapter 3](#) | [Chapter 4](#) | [Chapter 5](#) | [Chapter 6](#) | [Chapter 7](#) | [Chapter 8](#)

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