Important Questions for Class 11 Maths Chapter 9: Important Questions for Class 11 Maths Chapter 9 focus on the fundamental concepts of Sequences and Series an important topic in algebra. These questions are created to help students understand different types of sequences, such as arithmetic and geometric progressions, and tackle problems involving the sum of terms, nth terms and series calculations.

Practicing these questions allows students to strengthen their problem-solving skills and prepares them for more complex mathematical applications. By covering a range of question types, students gain confidence and improve their performance in exams and other assessments.

Important Questions for Class 11 Maths Chapter 9 Overview

These Important Questions for Class 11 Maths Chapter 9 are created by subject experts at Physics Wallah focus on the core concepts of Sequences and Series.

These questions cover a wide range of difficulty levels, ensuring that students can gradually build their skills and tackle more challenging problems with ease. This resource is ideal for thorough exam preparation and in-depth practice.

Important Questions for Class 11 Maths Chapter 9 PDF

The PDF link for Important Questions for Class 11 Maths Chapter 9 is available below. This PDF includes a comprehensive set of questions covering the essential topics of Sequences and Series.

With these questions students can practice and reinforce their knowledge preparing thoroughly for exams. Download the PDF for easy access and structured revision helping you build confidence in Chapter 9 of your Maths syllabus.

Important Questions for Class 11 Maths Chapter 9 PDF

Important Questions for Class 11 Maths Chapter 9 Sequences and Series

Here is the Important Questions for Class 11 Maths Chapter 9 Sequences and Series-

Question 1:

The sums of n terms of two arithmetic progressions are in the ratio 5n+4: 9n+6. Find the ratio of their 18^{th} terms.

Solution:

Let a_1, a_2 and d_1, d_2 be the first term and the common difference of the first and second

arithmetic progression respectively.

Then,

(Sum of n terms of the first A.P)/(Sum of n terms of the second A.P) = (5n+4)/(9n+6)

⇒ $[(n/2)[2a_1+ (n-1)d_1]]/ [(n/2)[2a_2+ (n-1)d_2]]= (5n+4)/(9n+6)$

Cancel out (n/2) both numerator and denominator on L.H.S

⇒$[2a_1+ (n-1)d_1]/[2a_2+ (n-1)d_2]= (5n+4)/(9n+6)$ …(1)

Now susbtitute n= 35 in equation (1), {Since (n-1)/2 = 17}

Then equation (1) becomes

⇒$[2a_1+ 34d_1]/[2a_2+ 34d_2]= (5(35)+4)/(9(35+6)$

⇒$[a_1+ 17d_1]/[a_2+ 17d_2]= 179/321$ …(2)

Now, we can say that.

18th term of first AP/ 18th term of second AP = $[a_1+ 17d_1]/[a_2+ 17d_2]$….(3)

Now, from (2) and (3), we can say that,

18th term of first AP/ 18th term of second AP = 179/321

Hence, the ratio of the 18th terms of both the AP's is 179:321.

Question 2:

Insert five numbers between 8 and 26 such that resulting sequence is an A.P.

Solution:

Assume that A_1, A_2, A_3, A_4, and A_5 are the five numbers between 8 and 26, such that the sequence of an A.P becomes 8, A_1, A_2, A_3, A_4, A_5, 26

Here, a= 8, l =26, n= 5

Therefore, 26= 8+(7-1)d

Hence it becomes,

26 = 8+6d

6d = 26-8 = 18

6d= 18

d = 3

A_1= a+d = 8+ 3 =11

A_2= a+2d = 8+ 2(3) =8+6 = 14

A_3= a+3d = 8+ 3(3) =8+9 = 17

A_4= a+4d = 8+ 4(3) =8+12 = 20

A_5= a+5d = 8+ 5(3) =8+15 = 23

Hence, the required five numbers between the number 8 and 26 are 11, 14, 17, 20, 23.

Question 3:

The 5th, 8th, and 11th terms of a GP are p, q and s respectively. Prove that $q^2 = ps$

Solution:

Given that:

5th term = P

8th term = q

11th term = s

To prove that: $q^2 = ps$

By using the above information, we can write the equation as:

$a_5 = ar^{5-1} = ar^4 = p$ ….(1)

$a_8 = ar^{8-1} = ar^7 = q$ ….(2)

$a_{11} = ar^{11-1} = ar^{10} =s$ …(3)

Divide the equation (2) by (1), we get

$r^3 = q/p$ …(4)

Divide the equation (3) by (2), we get

$r^3 = s/q$ …(5)

Now, equate the equation (4) and (5), we get

$q/p = s/q$

It becomes, $q^2 = ps$

Hence proved.

Question 4:

Show that the sum of $(m + n)^{th}$ and $(m – n)^{th}$ terms of an A.P. is equal to twice the m^{th} term.

Solution:

Let a and d be the first term and the common difference of the A.P. respectively. It is known that the k^{th} term of an A.P. is given by

$a_k = a +(k -1)d$

Therefore, $a_{m+n} = a +(m+n -1)d$

$a_{m-n} = a +(m-n -1)d$

$a_m = a +(m-1)d$

Hence, the sum of $(m + n)^{th}$ and $(m – n)^{th}$ terms of an A.P is written as:

$a_{m+n}+ a_{m-n} = a +(m+n -1)d + a +(m-n -1)d$

$= 2a +(m + n -1+ m – n -1)d$

$=2a+(2m-2)d$

$=2a + 2(m-1)d$

$= 2 [a + (m-1)d]$

$= 2 a_m$ [since $a_m = a +(m-1)d$]

Therefore, the sum of (m + n)thand (m – n)th terms of an A.P. is equal to twice the mth term.

Question 5:

Find the sum of integers from 1 to 100 that are divisible by 2 or 5.

Solution:

The integers from 1 to 100, which are divisible by 2, are 2, 4, 6 ….. 100.

This forms an A.P. with both the first term and common difference equal to 2.

⇒ 100=2+(n-1)2

⇒ n= 50

Therefore, the sum of integers from 1 to 100 that are divisible by 2 is given as:

2+4+6+…+100 = (50/2)[2(2)+(50-1)(2)]

= (50/2)(4+98)

= 25(102)

= 2550

The integers from 1 to 100, which are divisible by 5, 10…. 100

This forms an A.P. with both the first term and common difference equal to 5.

Therefore, 100= 5+(n-1)5

⇒5n = 100

⇒ n= 100/5

⇒ n= 20

Therefore, the sum of integers from 1 to 100 that are divisible by 2 is given as:

5+10+15+…+100= (20/2)[2(5)+(20-1)(5)]

= (20/2)(10+95)

= 10(105)

= 1050

Hence, the integers from 1 to 100, which are divisible by both 2 and 5 are 10, 20, ….. 100.

This also forms an A.P. with both the first term and common difference equal to 10.

Therefore, $100 = 10+(n-1)10$

$\Rightarrow 10n = 100$

$\Rightarrow n = 100/10$

$\Rightarrow n = 10$

$10+20+\ldots+100 = (10/2)[2(10)+(10-1)(10)]$

$= (10/2)(20+90)$

$= 5(110)$

$= 550$

Therefore, the required sum is:

$= 2550 + 1050 - 550$

$= 3050$

Hence, the sum of the integers from 1 to 100, which are divisible by 2 or 5 is 3050.

Benefits of Solving Important Questions for Class 11 Maths Chapter 9 Sequences and Series

Here are some benefits of solving important questions for Class 11 Maths Chapter 9 Sequences and Series:

Builds Conceptual Understanding: Practicing these questions helps students understand the fundamental principles of sequences, series, arithmetic progression, and geometric progression.

Enhances Problem-Solving Skills: By tackling different types of questions, students learn various problem-solving strategies and improve their analytical skills.

Improves Exam Readiness: These questions often reflect the style and difficulty of exam questions, preparing students for the types of problems they may encounter.

Increases Speed and Accuracy: Regular practice enables students to solve problems more quickly and with fewer mistakes, an advantage during timed exams.

Boosts Confidence: As students master these questions, they feel more confident and better equipped to tackle complex problems on their own.