

**Agewmider Comprehensive Senior Secondary School Grade12 Mathematics Work Sheet -1
from Unit-One Sequences and Series**

Do the following question and show the necessarily steps neatly

- What is the general term of sequence -1, 3, 7, 11, 15, ...
- What is the sum of the infinite series $0.1 + 0.01 + 0.001 + \dots$
- If $\{a_n\}$ is a sequence with $a_1 = 3$ and $a_{n+1} = a_n + 5$ for all $n \geq 1$. then, Find the 100^{th} term of the sequence.
- In an arithmetic sequence, the fourth term is 84 and the tenth term is 60. find the first term and the sum of the 12^{th} term?
- For the geometric sequence the 2^{nd} term is $-\frac{1}{2}$ and the 5^{th} term is $\frac{1}{16}$ then, find r ?
- If the n^{th} partial sum of an arithmetic sequence $\{A_n\}$ is $3n^2$ find A_n and A_{10} ?
- A ball bounces up one-half the distance from which it falls. How far does it bounce up on the fifth rebound, if the ball is dropped from a height of 20metres?
- A theatre hall has 40 rows of seats the first row has 18 seats the second row has 22 seats and the third row has 26 seats and so on. What is the seating capacity of the theatre hall?
- A boat is now worth Birr150,000.00 and loses 15% of its value each year .what will be worth after 5 years?
- If $\sum_{k=1}^{\infty} 5^{kt} = \frac{1}{24}$. Find the value of t ?
- Find the sum of $\sum_{i=1}^5 (2x_i + 6y_i - 5)$?
- Find the sum of all multiples of three between 20 and 200?
- Find the product of $4 \times 4^{\frac{1}{2}} \times 4^{\frac{1}{4}} \times 4^{\frac{1}{8}} \times \dots \times 4^{\frac{1}{2^n}} \times \dots$
- The fraction form of $0.\overline{417}$ is equal to -----
- Insert three geometric means between 3 and 243?
- Evaluate $\sum_{n=1}^{\infty} \left(\frac{2^n + 5^n}{10^n}\right)$
- Agewmider comprehensive senior secondary school gives a total prize of Birr 60,000.00 for 6 higher achiever students to score University Entrance Exam. if the difference in value between consecutive prizes is Birr 2,000.00. Find the value of the 1^{st} & the 6^{th} prizes?
- If the product of $5^k \times 5^{k^2} \times 5^{k^3} \times \dots = 5$ then, find the value of k ?
- Find the sum of the infinite series $9 + \frac{9}{10} + \frac{9}{100} + \frac{9}{1000} + \dots =$
- Determine the following geometric series are convergent or divergent
A) $\sum_{n=1}^{\infty} 6 \left(\frac{1}{3}\right)^n$ B) $\sum_{n=1}^{\infty} 3(-5)^n$ C) $\sum_{n=1}^{\infty} (2\sqrt{7})^n$ D) $\sum_{n=1}^{\infty} 5 \left(\frac{1}{10}\right)^{-n}$
- The sum of the first four terms of a geometric sequences is 30. and the sum from 5^{th} to 8^{th} terms is 480. find the first term and the common ratio?
- For the given general term $a_n = \frac{2}{n^2 + 5n + 6}$. Find the sum of the first 20^{th} and n^{th} terms?
- If the first and the n^{th} term of a geometric sequence are X and Y , respectively. And if P is the product of n terms, prove that $P^2 = (XY)^n$

Set by grade 12 Mathematics teachers

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