

Section	Topic	Sub-Topic	Question	Answer
1	Geometric Progression	1.1 Definition	What is Geometric Progression?	Geometric Progression (GP) is a sequence of numbers where each term after the first is found by multiplying the previous term by a fixed, non-zero number called the common ratio.
1	Geometric Progression	1.2 General Term	What is the general term of a geometric progression?	The general term of a geometric progression is given by $a_n = a_1 \cdot r^{n-1}$, where a_1 is the first term and r is the common ratio.
1	Geometric Progression	1.3 Sum of a GP	How do you find the sum of a geometric progression?	The sum of the first n terms of a geometric progression can be calculated using the formula $S_n = a_1 \frac{1 - r^n}{1 - r}$, where a_1 is the first term and r is the common ratio.
1	Geometric Progression	1.4 Geometric Mean	What is the geometric mean of two numbers?	The geometric mean of two numbers a and b is given by \sqrt{ab} .
1	Geometric Progression	1.5 Application	How is geometric progression used in real life?	Geometric progression is used in various fields such as finance (compound interest), science (population growth), and engineering (circuit analysis).
2	Arithmetic Progression	2.1 Definition	What is Arithmetic Progression?	Arithmetic Progression (AP) is a sequence of numbers where each term after the first is found by adding a fixed, non-zero number called the common difference to the previous term.
2	Arithmetic Progression	2.2 General Term	What is the general term of an arithmetic progression?	The general term of an arithmetic progression is given by $a_n = a_1 + (n-1)d$, where a_1 is the first term and d is the common difference.
2	Arithmetic Progression	2.3 Sum of an AP	How do you find the sum of an arithmetic progression?	The sum of the first n terms of an arithmetic progression can be calculated using the formula $S_n = \frac{n}{2} [2a_1 + (n-1)d]$, where a_1 is the first term and d is the common difference.
2	Arithmetic Progression	2.4 Arithmetic Mean	What is the arithmetic mean of two numbers?	The arithmetic mean of two numbers a and b is given by $\frac{a+b}{2}$.
2	Arithmetic Progression	2.5 Application	How is arithmetic progression used in real life?	Arithmetic progression is used in various fields such as finance (simple interest), science (uniform motion), and engineering (series resistors).
3	Binomial Theorem	3.1 Definition	What is Binomial Theorem?	The Binomial Theorem is a formula that provides a way to expand powers of binomials (expressions with two terms).
3	Binomial Theorem	3.2 General Term	What is the general term of a binomial expansion?	The general term of a binomial expansion of $(a+b)^n$ is given by $T_{k+1} = \binom{n}{k} a^{n-k} b^k$.
3	Binomial Theorem	3.3 Binomial Coefficient	What is a binomial coefficient?	A binomial coefficient is a numerical value representing the number of ways to choose k items from n items without regard to order.
3	Binomial Theorem	3.4 Application	How is binomial theorem used in real life?	Binomial theorem is used in various fields such as probability theory, statistics, and computer science.

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Total Questions: 10
Time: 60 minutes
Instructions: Answer all questions.