Sequence & Series

Multiple Choice Questions

1	Arithmetic mean between 8 and 16 is :				
	(a)8	(b)12	(c)16	(d)24	
2	Common difference of	ommon difference of sequence – 1, – $\frac{3}{2}$, –2, is :			
	(a)1	(b)-1	(c) $\frac{1}{2}$	(d) $-\frac{1}{2}$	
3	5 th , 8 th and 11 th terms of a G.P. are in :				
	(a)G.P.	(b)A.P.	(c)A.P. and G.P. both	(d)cannot say	
4 7 th term of sequence 2, 7, 12, is :					
	(a)34	(b)37	(c)32	(d)27	
5	If A and G are arithmetic mean and geometric mean between two positive integers then :				
	(a)A = G	(b) $A \leq G$	(c) $A \ge G$	(d)none of these	
6	6 Common ratio of sequence $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots \dots$ is :				
	(a)5	(b) $\frac{1}{4}$	(c)2	(d) $\frac{1}{2}$	
7	Geometric mean of 2 and 32 is :				
	(a)2	(b)8	(c)64	(d)128	
8	If $-\frac{2}{7}$, x, $-\frac{7}{2}$ are in G.P. then value of x is :				
	(a)±1	(b)0	(c)±14	(d)±2	
9	A number 3 more that	umber 3 more than 5 th term of sequence 3, 5, 7, is :			
	(a)11	(b)12	(c)13	(d)14	
10	A number 2 less than 4 th term of sequence 4, 12, 36, is :				
	(a)108	(b)107	(c)106	(d)105	
11	If x, y, z are in G.P. then :				
	(a) $x = y \neq z$	(b) $2y = x + z$	$(c)z^2 = xy$	$(d)y^2 = xz$	
12	If x, y, z are in A.P. then :				
	(a) $x = y \neq z$	(b) $2y = x + z$	$(c)z^2 = xy$	$(d)y^2 = xz$	

2 and 6 Marks Questions

- 1. In an A.P. the first term is 2 and sum of first 5 terms is one-fourth of next five terms. Find 20th term.
- 2. Find x if $25 + 22 + 19 + \dots + x = 116$.
- 3. The sums of *n* terms of two A.P.'s are in the ratio (5n + 4) : (9n + 6). Find the ratio of their 18th term.
- 4. The ratio of sums of m and n terms of an A.P. is $m^2: n^2$. Show that the ratio of m^{th} and n^{th} term is (2m-1): (2n-1).
- 5. Find five arithmetic means between 8 and 26.
- 6. If 6th, 9th and 12th terms of a G.P. are x, y and z then prove that x, y and z are in G.P.
- 7. The sum of first three terms of G.P. is $\frac{39}{10}$ and their product is 1. Find the common ratio and terms.
- 8. Find the sum of first *n* terms of sequences :

(i)

- 7, 77, 777, 7777, (ii) 5, 55, 555, 5555,
- (iii). 0.3, 0.33, 0.333, 0.3333, (iv) 0.4, 0.444, 0.4444,
- 9. Insert 3 geometric means between 1 and 256.

- 10. The sum of two numbers is 6 times their geometric mean, show that numbers are in the ratio $(3 + 2\sqrt{2}): (3 2\sqrt{2})$.
- 11. Show that arithmetic mean between two positive numbers is always greater then or equal to the geometric mean between them.
- **12.** If AM and GM between two numbers are 8 and 5 then form the quadratic equation whose roots are these numbers. Also find the numbers.
- 13. Find the sum to *n* terms for the series :
 - (i) $1 \times 2 \times 3 + 2 \times 3 \times 4 + 3 \times 4 \times 5 + \cdots \dots \dots$
 - (ii) $1^2 + (1^2 + 2^2) + (1^2 + 2^2 + 3^2) + \cdots \dots \dots \dots$
- 14. Find the sum of all natural numbers from 1 to 1000, which are divisible by 7.
- 15. For what value of n, $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the A.M. between a and b.
- 16. The A.M. between two numbers is 10 and their G.M. is 8. Find the numbers.
- 17. For what value of n, $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the G.M. between a and b.
- 18. If the A.M. between two numbers *a* and *b* is twice the G.M. between them, show that
- $a: b = (2 + \sqrt{3}): (2 \sqrt{3}).$
- 19. Prove that
 - (i) $9^{\frac{1}{3}} \cdot 9^{\frac{1}{9}} \cdot 9^{\frac{1}{27}} \dots \dots \dots = 3$ (ii) $(32) \cdot (32)^{\frac{1}{6}} \cdot (32)^{\frac{1}{36}} \dots \dots \dots = 64$
- 20. The first term of a G.P. is 2 and sum to infinity is 6. Find the common ratio.

Prepared By : Vaibhav (Lecturer Maths), Govt. Multipurpose Sec. School, Patiala