

1. The value of $0.42\overline{3}$ is

(a) $\frac{419}{990}$

(b) $\frac{419}{999}$

(c) $\frac{417}{990}$

(d) $\frac{417}{999}$

2. If b^2 , a^2 and c^2 are in AP, then $a + b$, $b + c$ and $c + a$ will be in

(a) AP

(b) GP

(c) HP

(d) None of these

3. If the ratio of the sum of n terms of two AP's be $(7n + 1) : (4n + 27)$, then the ratio of their 11th terms will be

(a) $2 : 3$

(b) $3 : 4$

(c) $4 : 3$

(d) $5 : 6$

4. If the p th term of an AP be q and q th term be p , then its r th term of an AP will be

(a) $p + q + r$

(b) $p + q - r$

(c) $p + r - q$

(d) $p - q - r$

5. The interior angles of a polygon are in AP. If the smallest angle be 120° and the common difference be 5, then the number of side is

(a) 8

(b) 10

(c) 9

(d) 6

6. If the sum of first 10 terms of an arithmetic progression with first term p and common difference q , is 4 times the sum of the first 5 terms, then what is the ratio of $p : q$?

(a) $1 : 2$

(b) $1 : 4$

(c) $2 : 1$

(d) $4 : 1$

7. The sum of n terms of three AP's is whose first term is 1 and common differences are 1, 2 and 3 are S_1 , S_2 and S_3 , respectively. Then, the true relation is

(a) $S_1 + S_3 = S_2$

(b) $S_1 + S_3 = 2S_2$

(c) $S_1 + S_2 = 2S_3$

(d) $S_1 + S_2 = S_3$

8. If $\frac{1}{b-c}$, $\frac{1}{c-a}$ and $\frac{1}{a-b}$ be consecutive terms of an AP, then

$(b-c)^2$, $(c-a)^2$ and $(a-b)^2$ will be in

(a) GP

(b) AP

(c) HP

(d) None of these

9. If A be an arithmetic mean between two numbers and S be the sum of n arithmetic means between the same numbers, then

(a) $S = nA$

(b) $A = nS$

(c) $A = S$

(d) None of these

10. If x^2 , y^2 and z^2 are in AP, then $y + z$, $z + x$ and $x + y$ are in

(a) AP

(b) HP

(c) GP

(d) None of these

11. If x , $2x + 2$ and $3x + 3$ are the first three terms of a GP, then what is its fourth term?

(a) $-27/2$

(b) $27/2$

(c) $-33/2$

(d) $33/2$

12. In an AP, the m th term is $1/n$ and n th term term is $1/m$. What is its (mn) th term?

(a) $1/(mn)$

(b) m/n

(c) n/m

(d) 1

13. If G be the geometric mean of x and y , then

$\frac{1}{G^2 - x^2} + \frac{1}{G^2 - y^2}$ is equal to

(a) G^2

(b) $\frac{1}{G^2}$

(c) $\frac{2}{G^2}$

(d) $3G^2$

14. If $|x| < 1$, then the sum of the series $1 + 2x + 3x^2 + 4x^3 + \dots \infty$ will be

(a) $\frac{1}{1-x}$

(b) $\frac{1}{1+x}$

(c) $\frac{1}{(1+x)^2}$

(d) $\frac{1}{(1-x)^2}$

15. If the arithmetic mean of two numbers be A and geometric mean be G , then the numbers will be

(a) $A \pm (A^2 - G^2)$

(b) $\sqrt{A} \pm \sqrt{A^2 - G^2}$

(c) $A \pm \sqrt{(A+G)(A-G)}$

(d) $\frac{A \pm \sqrt{(A+G)(A-G)}}{2}$

16. If the AM and GM of two numbers are 5 and 4 respectively, then what is the HM of those numbers?

(a) $\frac{5}{4}$

(b) $\frac{16}{5}$

(c) $\frac{9}{2}$

(d) 9

17. If $\frac{a^{n+1} + b^{n+1}}{a^n + b^n}$ be the harmonic mean between a and b then the value of n is

(a) 1

(b) -1

(c) 0

(d) 2

18. If the m th term of HP be n and n th term be m , then the r th term will be

(a) $\frac{r}{mn}$

(b) $\frac{mn}{r+1}$

(c) $\frac{mn}{r}$

(d) $\frac{mn}{r-1}$

19. If $\log_a x$, $\log_b x$ and $\log_c x$ be in HP, then a , b and c are in

(a) AP

(b) HP

(c) GP

(d) None of these

20. If 1, x , y , z and 16 are in geometric progression, then what is the value of $x + y + z$?

(a) 8

(b) 12

(c) 14

(d) 16

21. If a, b and c are in AP and $|a|, |b|, |c| < 1$, and

$$x = 1 + a + a^2 + \dots \infty$$

$$y = 1 + b + b^2 + \dots \infty$$

$$z = 1 + c + c^2 + \dots \infty$$

Then, x, y and z shall be in

- (a) AP (b) GP
(c) HP (d) None of these

22. If $a_1, a_2, a_3, \dots, a_n$ are in AP, where $a_i > 0$ for all i , then the value

of $\frac{1}{\sqrt{a_1} + \sqrt{a_2}} + \frac{1}{\sqrt{a_2} + \sqrt{a_3}} + \dots + \frac{1}{\sqrt{a_{n-1}} + \sqrt{a_n}}$

(a) $\frac{n-1}{\sqrt{a_1} + \sqrt{a_n}}$ (b) $\frac{n+1}{\sqrt{a_1} + \sqrt{a_n}}$

(c) $\frac{n-1}{\sqrt{a_1} - \sqrt{a_n}}$ (d) $\frac{n+1}{\sqrt{a_1} - \sqrt{a_n}}$

23. If $1/4, 1/x, 1/10$ are in HP, then what is the value of x ?

- (a) 5 (b) 6
(c) 7 (d) 8

24. The sum of the first n terms of the series $\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$ is

- (a) $2^n - n - 1$ (b) $1 - 2^n$
(c) $n + 2^n - 1$ (d) $2^n - 1$

25. If the number of terms in an AP is $2n + 1$, then the ratio of the sum of the odd terms to the sum of even terms is

(a) $\frac{n+1}{n}$ (b) $\frac{n}{n+1}$

(c) $\frac{n^2}{n+1}$ (d) $\frac{n+1}{2n}$

26. The sum of the series $\frac{1}{(3 \times 5)} + \frac{1}{(5 \times 7)} + \frac{1}{(7 \times 9)} + \dots \infty$ is equal to

- (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $-\frac{1}{3}$ (d) $\frac{5}{6}$

27. If a, b and c are in GP, then $\frac{1}{a^2 - b^2} + \frac{1}{b^2 - c^2}$ is

(a) $\frac{1}{c^2 - b^2}$ (b) $\frac{1}{b^2 - c^2}$

(c) $\frac{1}{c^2 - a^2}$ (d) $\frac{1}{b^2 - a^2}$

28. What is the value of $7^{6/7} \cdot 7^{6/7^2} \cdot 7^{6/7^3} \dots$ upto ∞ ?

- (a) $\log^7(6/7)$ (b) 6
(c) $6/7$ (d) 7

29. If p times the p th term of an AP is q times the q th term, then what is the $(p + q)$ th term equal to?

- (a) $p + q$ (b) pq
(c) 1 (d) 0

30. If $x = 1 + \frac{y}{2} + \left(\frac{y}{2}\right)^2 + \left(\frac{y}{2}\right)^3 + \dots$, where $|y| < 2$, what is y equal to?

(a) $\frac{x-1}{x}$

(b) $\frac{x-1}{2x}$

(c) $\frac{2x-2}{x}$

(d) $\frac{2x+1}{2x}$

31. The product of first nine terms of a GP is, in general, equal to which one of the following?

- (a) The 9th power of the 4th term
(b) The 4th power of the 9th term
(c) The 5th power of the 9th term
(d) The 9th power of the 5th term

32. If for positive real numbers x, y and z the numbers $x + y, 2y$ and $y + z$ are in harmonic progression, then which one of the following is correct?

- (a) x, y and z are in geometric progression
(b) x, y and z are in arithmetic progression
(c) x, y and z are in harmonic progression
(d) None of these

33. What is the sum of the series $1 + \frac{1}{8} + \frac{1.3}{8.16} + \frac{1.3.5}{8.16.24} + \dots \infty$?

(a) $\frac{2}{\sqrt{3}}$

(b) $2\sqrt{3}$

(c) $\frac{\sqrt{3}}{2}$

(d) $\frac{1}{2\sqrt{3}}$

34. The n th term of the series $\frac{1^3}{1} + \frac{1^3 + 2^3}{1+3} + \frac{1^3 + 2^3 + 3^3}{1+3+5} + \dots$ will be

(a) $n^2 + 2n + 1$

(b) $\frac{n^2 + 2n + 1}{8}$

(c) $\frac{n^2 + 2n + 1}{4}$

(d) $\frac{n^2 - 2n + 1}{4}$

35. The sum to n terms of the infinite series $1 \cdot 3^2 + 2 \cdot 5^2 + 3 \cdot 7^2 + \dots \infty$ is

(a) $\frac{n}{6} (n+1) (6n^2 + 14n + 7)$

(b) $\frac{n}{6} (n+1) (2n+1) (3n+1)$

(c) $4n^3 + 4n^2 + n$

(d) None of these

36. If $a^x = b^y = c^z$, where a, b and c are in GP and $a, b, c, x, y, z \neq 0$; then x, y and z are in

- (a) AP (b) GP
(c) HP (d) None of these

37. If $S_n = nP + \frac{n(n-1)}{2} Q$, where S_n denotes the sum of the first n terms of AP, then the common difference is

- (a) $P + Q$ (b) $2P + 3Q$
(c) $2Q$ (d) Q

38. If a, b, c, d, e and f are in AP, then $(e - c)$ is equal to which one of the following?

(a) $2(c - a)$

(b) $2(d - c)$

(c) $2(f - d)$

(d) $(d - c)$

39. A square is drawn by joining mid-points of the sides of a square. Another square is drawn inside the second square in the same way and the process is continued indefinitely. If the side of the first square is 16 cm, then what is the sum of the areas of all the squares?

(a) 256 sq cm

(b) 512 sq cm

(c) 1024 sq cm

(d) $512/3$ sq cm

40. Natural numbers are divided into groups as (1), (2, 3), (4, 5, 6), (7, 8, 9, 10) and so on. What is the sum of the numbers in the 11th group?

(a) 605

(b) 615

(c) 671

(d) 693

Answer Key

1. (a)	2. (c)	3. (c)	4. (b)	5. (c)	6. (a)	7. (b)	8. (b)	9. (a)	10. (b)
11. (a)	12. (d)	13. (b)	14. (d)	15. (c)	16. (b)	17. (b)	18. (c)	19. (c)	20. (c)
21. (c)	22. (a)	23. (c)	24. (c)	25. (a)	26. (a)	27. (b)	28. (d)	29. (d)	30. (c)
31. (d)	32. (a)	33. (a)	34. (c)	35. (a)	36. (c)	37. (d)	38. (b)	39. (b)	40. (c)