

NAME :

CLASS & SEC. :

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NUMBERS AND SEQUENCES

"I know numbers are beautiful, if they aren't beautiful, nothing is"
- Paul Erdos

- Euclid's division lemma states that for positive integers a and b , there exist unique integers q and r such that $a = bq + r$, where r must satisfy.
(A) $1 < r < b$ (B) $0 < r < b$ (C) $0 \leq r < b$ (D) $0 < r \leq b$
- Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are
(A) 0, 1, 8 (B) 1, 4, 8 (C) 0, 1, 3 (D) 1, 3, 5
- If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is
(A) 4 (B) 2 (C) 1 (D) 3
- The sum of the exponents of the prime factors in the prime factorization of 1729 is
(A) 1 (B) 2 (C) 3 (D) 4
- The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
(A) 2025 (B) 5220 (C) 5025 (D) 2520
- $7^{4k} \equiv \underline{\hspace{1cm}} \pmod{100}$
(A) 1 (B) 2 (C) 3 (D) 4
- Given $F_1 = 1$, $F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is
(A) 3 (B) 5 (C) 8 (D) 11
- The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this A.P.
(A) 4551 (B) 10091 (C) 7881 (D) 13531
- If 6 times of 6th term of an A.P. is equal to 7 times the 7th term, then the 13th term of the A.P. is
(A) 0 (B) 6 (C) 7 (D) 13
- An A.P. consists of 31 terms. If its 16th term is m , then the sum of all the terms of this A.P. is
(A) 16 m (B) 62 m (C) 31 m (D) $\frac{31}{2} m$
- In an A.P., the first term is 1 and the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?
(A) 6 (B) 7 (C) 8 (D) 9
- If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \dots + 2^0$ which of the following is true?
(A) B is 2^{64} more than A (B) A and B are equal
(C) B is larger than A by 1 (D) A is larger than B by 1
- The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is
(A) $\frac{1}{24}$ (B) $\frac{1}{27}$ (C) $\frac{2}{3}$ (D) $\frac{1}{81}$
- If the sequence $t_1, t_2, t_3, \dots$ are in A.P. then the sequence $t_6, t_{12}, t_{18}, \dots$ is
(A) a Geometric Progression (B) an Arithmetic Progression
(C) neither an Arithmetic Progression nor a Geometric Progression
(D) a constant sequence
- The value of $(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15)$ is
(A) 14400 (B) 14200 (C) 14280 (D) 14520

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