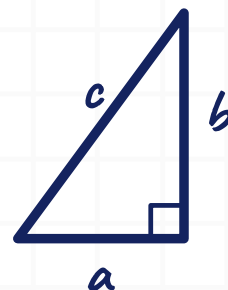
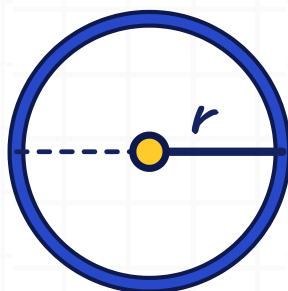


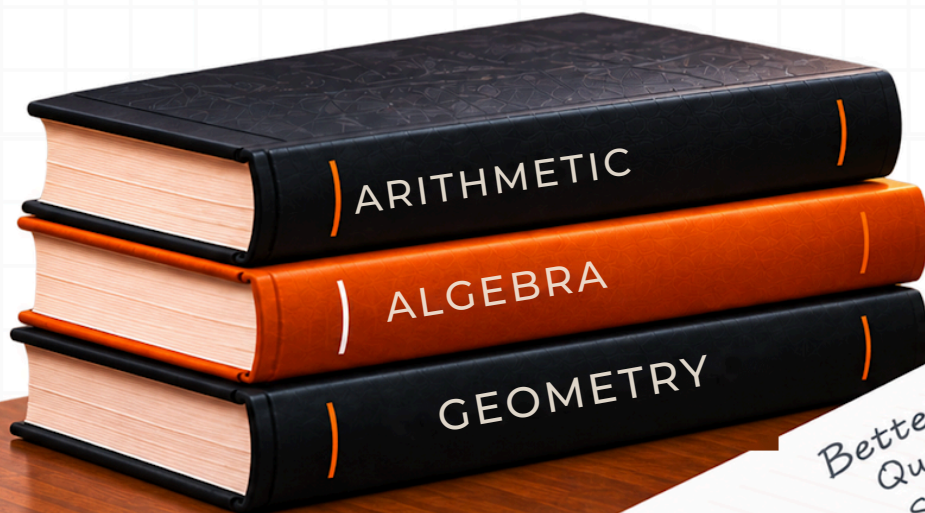
CAT PYQ

Progressions (AP-GP-HP)

$$a^2 + b^2 = c^2$$



$$D = S \times T$$



Better
Questions
Stronger
Concepts
Brighter Future

Progressions (AP-GP-HP) CAT PYQ



Common Admission Test - Indian Institutes of Management

76 Questions

Quantitative Aptitude

Years: 1990-2025

General Instructions

- (i) This collection contains **76 Quantitative Aptitude questions** classified under **Progressions (AP-GP-HP)**, following the supplied CD PYQ sheet.
- (ii) **Coverage:** CAT 1990-2025. Questions are grouped by their source year and sitting, with continuous numbering from **1 to 76**.
- (iii) This collection has **66 multiple choice questions (MCQs)** and **10 Type In The Answer (TITA) questions**. Read every option before choosing the answer. Enter a response for questions marked "Type in the answer."
- (iv) All required shared passages and data sets for the selected questions are included. Blue range labels refer to the question numbers **in this collection**. Read the full passage, chart, table or conditions before answering.
- (v) Each question carries its original year or exam date, sitting where available, and source question number. References distinguish the two CAT 2003 sittings.
- (vi) Use this collection for practice. Follow the timing and marking scheme of the original sitting when attempting a timed exercise.
- (vii) Answer keys and solutions are not included. Passages and questions may continue onto the following page.

CAT 2025 Slot 1 - Questions 1-1

1. In the set of consecutive odd numbers $\{1, 3, 5, \dots, 57\}$, there is a number k such that the sum of all the elements less than k is equal to the sum of all the elements greater than k . Then, k equals

30 Nov 2025, Slot 1, Q59

(A) 41

(B) 39

(C) 43

(D) 37

CAT 2025 Slot 2 - Questions 2-2

2. Let a_n be the n^{th} term of a decreasing infinite geometric progression. If $a_1 + a_2 + a_3 = 52$ and $a_1a_2 + a_2a_3 + a_3a_1 = 624$, then the sum of this geometric progression is

30 Nov 2025, Slot 2, Q64

(A) 57

(B) 54

(C) 60

(D) 63

CAT 2025 Slot 3 - Questions 3-3

3. In an arithmetic progression, if the sum of fourth, seventh and tenth terms is 99, and the sum of the first fourteen terms is 497, then the sum of first five terms is

30 Nov 2025, Slot 3, Q50

Type in the answer.

CAT 2024 Slot 1 - Questions 4-4

4. Suppose $x_1, x_2, x_3, \dots, x_{100}$ are in arithmetic progression such that $x_5 = -4$ and $2x_6 + 2x_9 = x_{11} + x_{13}$, Then, x_{100} equals

24 Nov 2024, Slot 1, Q50

(A) -194

(B) -196

(C) 204

(D) 206

5. The sum of the infinite series

$$\frac{1}{5} \left(\frac{1}{5} - \frac{1}{7} \right) + \left(\frac{1}{5} \right)^2 \left(\left(\frac{1}{5} \right)^2 - \left(\frac{1}{7} \right)^2 \right) + \left(\frac{1}{5} \right)^3 \left(\left(\frac{1}{5} \right)^3 - \left(\frac{1}{7} \right)^3 \right) + \dots \text{ is equal to}$$

24 Nov 2024, Slot 2, Q68

(A) $\frac{7}{816}$

(B) $\frac{5}{408}$

(C) $\frac{7}{408}$

(D) $\frac{5}{816}$

6. Consider the sequence $t_1 = 1, t_2 = -1$ and $t_n = \left(\frac{n-3}{n-1}\right) t_{n-2}$ for $n \geq 3$. Then, the value of the sum

$$\frac{1}{t_2} + \frac{1}{t_4} + \frac{1}{t_6} + \dots + \frac{1}{t_{2022}} + \frac{1}{t_{2024}}, \text{ is}$$

24 Nov 2024, Slot 3, Q53

(A) -1024144

(B) -1022121

(C) -1023132

(D) -1026169

CAT 2023 Slot 1 - Questions 7-8

7. For some positive and distinct real numbers x, y and z , if $\frac{1}{\sqrt{y} + \sqrt{z}}$ is the arithmetic mean of $\frac{1}{\sqrt{x} + \sqrt{z}}$ and $\frac{1}{\sqrt{x} + \sqrt{y}}$, then the relationship which will always hold true, is

26 Nov 2023, Slot 1, Q64

- (A) $\sqrt{x}, \sqrt{z}$ and $\sqrt{y}$ are in arithmetic progression (B) y, x and z are in arithmetic progression
(C) x, y and z are in arithmetic progression (D) $\sqrt{x}, \sqrt{y}$ and $\sqrt{z}$ are in arithmetic progression

8. A lab experiment measures the number of organisms at 8 am every day. Starting with 2 organisms on the first day, the number of organisms on any day is equal to 3 more than twice the number on the previous day. If the number of organisms on the n th day exceeds one million, then the lowest possible value of n is

26 Nov 2023, Slot 1, Q66

Type in the answer.

CAT 2023 Slot 2 - Questions 9-10

9. Let both the series $a_1, a_2, a_3, \dots$ and $b_1, b_2, b_3, \dots$ be in arithmetic progression such that the common differences of both the series are prime numbers. If $a_5 = b_9$, $a_{19} = b_{19}$ and $b_2 = 0$, then a_{11} equals

26 Nov 2023, Slot 2, Q64

- (A) 86 (B) 79
(C) 83 (D) 84

10. Let a_n and b_n be two sequences such that $a_n = 13 + 6(n - 1)$ and $b_n = 15 + 7(n - 1)$ for all natural numbers n . Then, the largest three digit integer that is common to both these sequences, is

26 Nov 2023, Slot 2, Q66

Type in the answer.

CAT 2023 Slot 3 - Questions 11-12

11. The value of $1 + \left(1 + \frac{1}{3}\right) \frac{1}{4} + \left(1 + \frac{1}{3} + \frac{1}{9}\right) \frac{1}{16} + \left(1 + \frac{1}{3} + \frac{1}{9} + \frac{1}{27}\right) \frac{1}{64} + \dots$ is

26 Nov 2023, Slot 3, Q64

- (A) $\frac{15}{13}$ (B) $\frac{27}{12}$
(C) $\frac{15}{8}$ (D) $\frac{16}{11}$

12. Let $a_n = 46 + 8n$ and $b_n = 98 + 4n$ be two sequences for natural numbers $n \leq 100$. Then, the sum of all terms common to both the sequences is

26 Nov 2023, Slot 3, Q65

- (A) 14900 (B) 14798
(C) 15000 (D) 14602

13. For any natural number n , suppose the sum of the first n terms of an arithmetic progression is $(n + 2n^2)$. If the n^{th} term of the progression is divisible by 9, then the smallest possible value of n is

27 Nov 2022, Slot 1, Q47

(A) 9

(B) 4

(C) 7

(D) 8

CAT 2022 Slot 2 - Questions 14-15

14. On day one, there are 100 particles in a laboratory experiment. On day n , where $n \geq 2$, one out of every n particles produces another particle. If the total number of particles in the laboratory experiment increases to 1000 on day m , then m equals

27 Nov 2022, Slot 2, Q57

- (A) 19 (B) 16
(C) 18 (D) 17
-

15. Consider the arithmetic progression 3, 7, 11, ... and let A_n denote the sum of the first n terms of this progression. Then the value of $\frac{1}{25} \sum_{n=1}^{25} A_n$ is

27 Nov 2022, Slot 2, Q62

- (A) 455 (B) 442
(C) 415 (D) 404
-

CAT 2022 Slot 3 - Questions 16-16

16. The average of all 3-digit terms in the arithmetic progression 38, 55, 72, ..., is

27 Nov 2022, Slot 3, Q57

Type in the answer.

CAT 2021 Slot 1 - Questions 17-18

17. If $x_0 = 1$, $x_1 = 2$, and $x_{n+2} = \frac{1 + x_{n+1}}{x_n}$, $n = 0, 1, 2, 3, \dots$, then x_{2021} is equal to

28 Nov 2021, Slot 1, Q62

- | | |
|-------|-------|
| (A) 4 | (B) 1 |
| (C) 3 | (D) 2 |
-

18. The natural numbers are divided into groups as (1), (2, 3, 4), (5, 6, 7, 8, 9), ... and so on. Then, the sum of the numbers in the 15th group is equal to

28 Nov 2021, Slot 1, Q65

- | | |
|----------|----------|
| (A) 6119 | (B) 6090 |
| (C) 4941 | (D) 7471 |
-

CAT 2021 Slot 2 - Questions 19-20

19. Three positive integers x , y and z are in arithmetic progression. If $y - x > 2$ and $xyz = 5(x + y + z)$, then $z - x$ equals

28 Nov 2021, Slot 2, Q46

- | | |
|--------|--------|
| (A) 8 | (B) 12 |
| (C) 14 | (D) 10 |

20. For a sequence of real numbers $x_1, x_2, \dots, x_n$, If $x_1 - x_2 + x_3 - \dots + (-1)^{n+1}x_n = n^2 + 2n$ for all natural numbers n , then the sum $x_{49} + x_{50}$ equals

28 Nov 2021, Slot 2, Q57

- | | |
|----------|--------|
| (A) 200 | (B) 2 |
| (C) -200 | (D) -2 |

CAT 2021 Slot 3 - Questions 21-21

21. Consider a sequence of real numbers, $x_1, x_2, x_3, \dots$ such that $x_{n+1} = x_n + n - 1$ for all $n \geq 1$. If $x_1 = -1$ then x_{100} is equal to

28 Nov 2021, Slot 3, Q51

(A) 4849

(B) 4949

(C) 4950

(D) 4850

CAT 2020 Slot 1 - Questions 22-22

22. A gentleman decided to treat a few children in the following manner. He gives half of his total stock of toffees and one extra to the first child, and then the half of the remaining stock along with one extra to the second and continues giving away in this fashion. His total stock exhausts after he takes care of 5 children. How many toffees were there in his stock initially?

29 Nov 2020, Slot 1, Q52

Type in the answer.

CAT 2020 Slot 2 - Questions 23-23

23. Let the m -th and n -th terms of a geometric progression be $\frac{3}{4}$ and 12. respectively, where $m < n$. If the common ratio of the progression is an integer r , then the smallest possible value of $r + n - m$ is

29 Nov 2020, Slot 2, Q70

- (A) 6
(B) 2
(C) -4
(D) -2
-

CAT 2020 Slot 3 - Questions 24-24

24. If $x_1 = -1$ and $x_m = x_{m+1} + (m + 1)$ for every positive integer m , then X_{100} equals

29 Nov 2020, Slot 3, Q55

(A) -5050

(B) -5151

(C) -5051

(D) -5150

CAT 2019 Slot 1 - Questions 25-27

25. If $a_1, a_2, \dots$ are in A.P, then, $\frac{1}{\sqrt{a_1} + \sqrt{a_2}} + \frac{1}{\sqrt{a_2} + \sqrt{a_3}} + \dots + \frac{1}{\sqrt{a_n} + \sqrt{a_{n+1}}}$ is equal to

24 Nov 2019, Slot 1, Q68

(A) $\frac{n}{\sqrt{a_1} + \sqrt{a_{n+1}}}$

(B) $\frac{n-1}{\sqrt{a_1} + \sqrt{a_{n-1}}}$

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

(D) $\frac{n}{\sqrt{a_1} - \sqrt{a_{n+1}}}$

26. If the population of a town is p in the beginning of any year then it becomes $3 + 2p$ in the beginning of the next year. If the population in the beginning of 2019 is 1000, then the population in the beginning of 2034 will be

24 Nov 2019, Slot 1, Q75

(A) $(1003)^{15} + 6$

(B) $(997)^{15} - 3$

(C) $(997)2^{14} + 3$

(D) $(1003)2^{15} - 3$

27. If $a_1 + a_2 + a_3 + \dots + a_n = 3(2^{n+1} - 2)$, for every $n \geq 1$, then a_{11} equals

24 Nov 2019, Slot 1, Q84

Type in the answer.

CAT 2019 Slot 2 - Questions 28-30

28. Let $a_1, a_2, \dots$ be integers such that $a_1 - a_2 + a_3 - a_4 + \dots + (-1)^{n-1}a_n = n$, for all $n \geq 1$. Then $a_{51} + a_{52} + \dots + a_{1023}$ equals

24 Nov 2019, Slot 2, Q72

- (A) 0 (B) 1
(C) 10 (D) -1

29. If $(2n + 1) + (2n + 3) + (2n + 5) + \dots + (2n + 47) = 5280$, then what is the value of $1 + 2 + 3 + \dots + n$?

24 Nov 2019, Slot 2, Q89

Type in the answer.

30. The number of common terms in the two sequences: 15, 19, 23, 27, . . . , 415 and 14, 19, 24, 29, . . . , 464 is

24 Nov 2019, Slot 2, Q92

- (A) 21 (B) 20
(C) 18 (D) 19

31. Given an equilateral triangle T1 with side 24 cm, a second triangle T2 is formed by joining the midpoints of the sides of T1. Then a third triangle T3 is formed by joining the midpoints of the sides of T2. If this process of forming triangles is continued, the sum of the areas, in sq cm, of infinitely many such triangles T1, T2, T3,... will be

25 Nov 2018, Slot 1, Q77

- (A) $188\sqrt{3}$ (B) $248\sqrt{3}$
(C) $164\sqrt{3}$ (D) $192\sqrt{3}$

32. Let x, y, z be three positive real numbers in a geometric progression such that $x < y < z$. If 5x, 16y, and 12z are in an arithmetic progression then the common ratio of the geometric progression is

25 Nov 2018, Slot 1, Q94

- (A) $\frac{3}{6}$ (B) $\frac{1}{6}$
(C) $\frac{5}{2}$ (D) $\frac{3}{2}$

CAT 2018 Slot 2 - Questions 33-34

33. The value of the sum $7 \times 11 + 11 \times 15 + 15 \times 19 + \dots + 95 \times 99$ is

25 Nov 2018, Slot 2, Q79

Type in the answer.

34. Let $t_1, t_2, \dots$ be real numbers such that $t_1 + t_2 + \dots + t_n = 2n^2 + 9n + 13$, for every positive integer $n \geq 2$. If $t_k = 103$, then k equals

25 Nov 2018, Slot 2, Q100

Type in the answer.

CAT 2017 Slot 1 - Questions 35-36

35. If the square of the 7th term of an arithmetic progression with positive common difference equals the product of the 3rd and 17th terms, then the ratio of the first term to the common difference is

26 Nov 2017, Slot 1, Q97

- (A) 2:3 (B) 3:2
(C) 3:4 (D) 4:3
-

36. Let $a_1, a_2, \dots, a_{3n}$ be an arithmetic progression with $a_1 = 3$ and $a_2 = 7$. If $a_1 + a_2 + \dots + a_{3n} = 1830$, then what is the smallest positive integer m such that $m(a_1 + a_2 + \dots + a_n) > 1830$?

26 Nov 2017, Slot 1, Q100

- (A) 8 (B) 9
(C) 10 (D) 11
-

CAT 2017 Slot 2 - Questions 37-39

37. Let a_1, a_2, a_3, a_4, a_5 be a sequence of five consecutive odd numbers. Consider a new sequence of five consecutive even numbers ending with $2a_3$. If the sum of the numbers in the new sequence is 450, then a_5 is

26 Nov 2017, Slot 2, Q93

Type in the answer.

38. An infinite geometric progression $a_1, a_2, \dots$ has the property that $a_n = 3(a_{n+1} + a_{n+2} + \dots)$ for every $n \geq 1$. If the sum $a_1 + a_2 + a_3 + \dots = 32$, then a_5 is

26 Nov 2017, Slot 2, Q99

- (A) $1/32$ (B) $2/32$
(C) $3/32$ (D) $4/32$

39. If $a_1 = \frac{1}{2 \times 5}, a_2 = \frac{1}{5 \times 8}, a_3 = \frac{1}{8 \times 11}, \dots$, then $a_1 + a_2 + a_3 + \dots + a_{100}$ is

26 Nov 2017, Slot 2, Q100

- (A) $\frac{25}{151}$ (B) $\frac{1}{2}$
(C) $\frac{1}{4}$ (D) $\frac{111}{55}$

CAT 2008 - Questions 40-41

40. The number of common terms in the two sequences 17, 21, 25,..., 417 and 16, 21, 26,..., 466 is

16 Nov 2008, Q7

- (A) 78
(B) 19
(C) 20
(D) 77
(E) 22

41. Find the sum $\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} + \dots + \sqrt{1 + \frac{1}{2007^2} + \frac{1}{2008^2}}$

16 Nov 2008, Q24

- (A) $2008 - \frac{1}{2008}$
(B) $2007 - \frac{1}{2007}$
(C) $2007 - \frac{1}{2008}$
(D) $2008 - \frac{1}{2007}$
(E) $2008 - \frac{1}{2009}$

Questions 42 to 43

Directions for the following two questions:

Let $a_1 = p$ and $b_1 = q$, where p and q are positive quantities.

Define $a_n = pb_{n-1}$, $b_n = qa_{n-1}$, for even $n > 1$. and $a_n = pa_{n-1}$, $b_n = qb_{n-1}$, for odd $n > 1$.

42. Which of the following best describes $a_n + b_n$ for even n ?

18 Nov 2007, Q24

(A) $q(pq)^{(n/2)-1}(p+q)^{n/2}$

(B) $q(pq)^{(n/2)-1}(p+q)$

(C) $qp^{n/2}(p+q)$

(D) $q^{n/2}(p+q)$

(E) $q^{n/2}(p+q)^{n/2}$

43. If $p = 1/3$ and $q = 2/3$, then what is the smallest odd n such that $a_n + b_n < 0.01$?

18 Nov 2007, Q25

(A) 7

(B) 13

(C) 11

(D) 9

(E) 15

CAT 2006 - Questions 44-46

44. Consider a sequence where the n^{th} term, $t_n = n/(n+2)$, $n = 1, 2, \dots$. The value of $t_3 * t_4 * t_5 * \dots * t_{53}$ equals.

19 Nov 2006, Q53

- | | |
|--------------|--------------|
| (A) $2/495$ | (B) $2/477$ |
| (C) $12/55$ | (D) $1/1485$ |
| (E) $1/2970$ | |

45. A group of 630 children is arranged in rows for a group photograph session. Each row contains three fewer children than the row in front of it. What number of rows is not possible?

19 Nov 2006, Q60

- | | |
|-------|-------|
| (A) 3 | (B) 4 |
| (C) 5 | (D) 6 |
| (E) 7 | |

46. Consider the set $S = \{ 1, 2, 3, \dots, 1000 \}$. How many arithmetic progressions can be formed from the elements of S that start with 1 and end with 1000 and have at least 3 elements?

19 Nov 2006, Q64

- | | |
|-------|-------|
| (A) 3 | (B) 4 |
| (C) 6 | (D) 7 |
| (E) 8 | |

47. If $a_1 = 1$ and $a_{n+1} - 3a_n + 2 = 4n$ for every positive integer n , then a_{100} equals

20 Nov 2005, Q14

(A) $3^{99} - 200$

(B) $3^{99} + 200$

(C) $3^{100} - 200$

(D) $3^{100} + 200$

CAT 2004 - Questions 48-50

48. If the sum of the first 11 terms of an arithmetic progression equals that of the first 19 terms, then what is the sum of the first 30 terms?

21 Nov 2004, Q41

- (A) 0 (B) -1
(C) 1 (D) Not unique
-

49. On January 1, 2004 two new societies S1 and S2 are formed, each n numbers. On the first day of each subsequent month, S1 adds b members while S2 multiplies its current numbers by a constant factor r. Both the societies have the same number of members on July 2, 2004. If $b = 10.5n$, what is the value of r?

21 Nov 2004, Q43

- (A) 2.0 (B) 1.9
(C) 1.8 (D) 1.7
-

50. Consider the sequence of numbers $a_1, a_2, a_3, \dots$ to infinity where $a_1 = 81.33$ and $a_2 = -19$ and $a_j = a_{j-1} - a_{j-2}$ for $j \geq 3$. What is the sum of the first 6002 terms of this sequence?

21 Nov 2004, Q60

- (A) -100.33 (B) -30.00
(C) 62.33 (D) 119.33
-

51. Let S_1 be a square of side a . Another square S_2 is formed by joining the mid-points of the sides of S_1 . The same process is applied to S_2 to form yet another square S_3 , and so on. If $A_1, A_2, A_3, \dots$ be the areas and $P_1, P_2, P_3, \dots$ be the perimeters of $S_1, S_2, S_3, \dots$, respectively, then the ratio $\frac{P_1 + P_2 + P_3 + \dots}{A_1 + A_2 + A_3 + \dots}$ equals

15 Feb 2004, CAT 2003 Re-test, Q76

- (A) $\frac{2(1 + \sqrt{2})}{a}$ (B) $\frac{2(2 - \sqrt{2})}{a}$
 (C) $\frac{2(2 + \sqrt{2})}{a}$ (D) $\frac{2(1 + 2\sqrt{2})}{a}$

52. If three positive real numbers x, y and z satisfy $y - x = z - y$ and $xyz = 4$, then what is the minimum possible value of y ?

15 Feb 2004, CAT 2003 Re-test, Q77

- (A) $2^{1/3}$ (B) $2^{2/3}$
 (C) $2^{1/4}$ (D) $2^{3/4}$

53. The infinite sum $1 + \frac{4}{7} + \frac{9}{7^2} + \frac{16}{7^3} + \frac{25}{7^4} + \dots$ equals

15 Feb 2004, CAT 2003 Re-test, Q79

- (A) $\frac{27}{14}$ (B) $\frac{21}{13}$
 (C) $\frac{49}{27}$ (D) $\frac{256}{147}$

54. In a coastal village, every year floods destroy exactly half of the huts. After the flood water recedes, twice the number of huts destroyed are rebuilt. The floods occurred consecutively in the last three years — 2001, 2002 and 2003. If floods are expected again in 2004, the number of huts expected to be destroyed is

15 Feb 2004, CAT 2003 Re-test, Q93

- (A) less than the number of huts existing at the beginning of 2001
 (B) less than the total number of huts destroyed by floods in 2001 and 2003
 (C) less than the total number of huts destroyed by floods in 2002 and 2003
 (D) more than the total number of huts built in 2001 and 2002

CAT 2003 Original sitting (23 Nov 2003) - Questions 55-58

55. The sum of 3rd and 15th elements of an arithmetic progression is equal to the sum of 6th, 11th and 13th elements of the same progression. Then which element of the series should necessarily be equal to zero?

23 Nov 2003, CAT 2003 Original sitting, Q110

- (A) 1st (B) 9th
(C) 12th (D) None of the above

56. The 288th term of the series a,b,b,c,c,c,d,d,d,d,e,e,e,e,f,f,f,f,f... is

23 Nov 2003, CAT 2003 Original sitting, Q128

- (A) u (B) v
(C) w (D) x

57. There are 8436 steel balls, each with a radius of 1 centimeter, stacked in a pile, with 1 ball on top, 3 balls in the second layer, 6 in the third layer, 10 in the fourth, and so on. The number of horizontal layers in the pile is

23 Nov 2003, CAT 2003 Original sitting, Q138

- (A) 34 (B) 38
(C) 36 (D) 32

58. In a certain examination paper, there are n questions. For $j = 1, 2 \dots n$, there are 2^{n-j} students who answered j or more questions wrongly. If the total number of wrong answers is 4095, then the value of n is

23 Nov 2003, CAT 2003 Original sitting, Q146

- (A) 12 (B) 11
(C) 10 (D) 9

CAT 2002 - Questions 59-61

59. The n th element of a series is represented as $X_n = (-1)^n X_{n-1}$. If $X_0 = x$ and $x > 0$, then which of the following is always true?

CAT 2002, Q63

- (A) X_n is positive if n is even
(B) X_n is positive if n is odd
(C) X_n is negative if n is even
(D) None of these

60. Let S denote the infinite sum $2 + 5x + 9x^2 + 14x^3 + 20x^4 + \dots$, where $|x| < 1$ and the coefficient of x^{n-1} is $n(n+3)/2$, ($n = 1, 2, \dots$). Then S equals:

CAT 2002, Q70

- (A) $(2-x)/(1-x)^3$
(B) $(2-x)/(1+x)^3$
(C) $(2+x)/(1-x)^3$
(D) $(2+x)/(1+x)^3$

61. A child was asked to add first few natural numbers (i.e. $1 + 2 + 3 + \dots$) so long his patience permitted. As he stopped, he gave the sum as 575. When the teacher declared the result wrong, the child discovered he had missed one number in the sequence during addition. The number he missed was

CAT 2002, Q74

- (A) less than 10
(B) 10
(C) 15
(D) more than 15

62. Two men X and Y started working for a certain company at similar jobs on January 1, 1950. X asked for an initial monthly salary of Rs. 300 with an annual increment of Rs. 30. Y asked for an initial monthly salary of Rs. 200 with a rise of Rs. 15 every 6 months. Assume that the arrangements remained unaltered till December 31, 1959. Salary is paid on the last day of the month. What is the total amount paid to them as salary during the period?

CAT 2001, Q11

- (A) Rs. 93,300 (B) Rs. 93,200
(C) Rs. 93,100 (D) None of these

63. All the page numbers from a book are added, beginning at page 1. However, one page number was added twice by mistake. The sum obtained was 1000. Which page number was added twice?

CAT 2001, Q24

- (A) 44 (B) 45
(C) 10 (D) 12

64. For a Fibonacci sequence, from the third term onwards, each term in the sequence is the sum of the previous two terms in that sequence. If the difference in squares of 7th and 6th terms of this sequence is 517, what is the 10th term of this sequence? It is known that all the terms of the Fibonacci sequence are natural numbers

CAT 2001, Q30

- (A) 147 (B) 76
(C) 123 (D) Cannot be determined

CAT 2000 - Questions 65-66

65. If $a_1 = 1$ and $a_{n+1} = 2a_n + 5$, $n=1,2,\dots$, then a_{100} is equal to:

CAT 2000, Q58

- (A) $(5 * 2^{99} - 6)$ (B) $(5 * 2^{99} + 6)$
(C) $(6 * 2^{99} + 5)$ (D) $(6 * 2^{99} - 5)$
-

66. What is the value of the following expression? $\frac{1}{(2^2 - 1)} + \frac{1}{(4^2 - 1)} + \frac{1}{(6^2 - 1)} + \dots + \frac{1}{(20^2 - 1)}$

CAT 2000, Q59

- (A) 9/19 (B) 10/19
(C) 10/21 (D) 11/21
-

CAT 1998 - Questions 67-67

67. One bacterium splits into eight bacteria of the next generation. But due to environmental condition only 50% survives and remaining 50% dies. If the seventh generation number is 4,096 million, what is the number in first generation?

CAT 1998, Q55

- (A) 1 million
- (C) 4 million

- (B) 2 million
 - (D) 8 million
-

Questions 68 to 72

Answer the questions based on the following information. A series S_1 of five positive integers is such that the third term is half the first term and the fifth term is 20 more than the first term. In series S_2 , the n th term is defined as the difference between the $(n+1)$ th term and the n th term of series S_1 , S_2 is an arithmetic progression with a common difference of 30.

68. First term of S_1 is

CAT 1996, Q141

- (A) 80 (B) 90
(C) 100 (D) 120

69. Fourth term of S_2

CAT 1996, Q142

- (A) 50 (B) 60
(C) 70 (D) None of these

70. What is the difference between fourth terms of S_1 and S_2 ?

CAT 1996, Q143

- (A) 10 (B) 20
(C) 30 (D) 40

71. What is the average value of the terms of series S_1 ?

CAT 1996, Q144

- (A) 60 (B) 70
(C) 80 (D) Average is not an integer

72. What is the sum of series S_2 ?

CAT 1996, Q145

- (A) 10 (B) 20
(C) 30 (D) 40

CAT 1990 - Questions 73-76

73. What is the sum of the following series: $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{100 \times 101}$?

CAT 1990, Q14

- (A) $\frac{99}{100}$ (B) $\frac{1}{100}$
(C) $\frac{100}{101}$ (D) $\frac{101}{102}$

74. Consider a function $f(k)$ defined for positive integers $k = 1, 2, \dots$; the function satisfies the condition $f(1) + f(2) + \dots = \frac{p}{p-1}$. Where p is fraction i.e. $0 < p < 1$. Then $f(k)$ is given by

CAT 1990, Q21

- (A) $(-p)(p)^{(k-1)}$ (B) $p(1-p)^{k-1}$
(C) $(p(1-p))^{k-1}$ (D) None of these

75. The set of natural numbers is partitioned into subsets $S_1 = (1)$, $S_2 = (2, 3)$, $S_3 = (4, 5, 6)$, $S_4 = (7, 8, 9, 10)$ and so on. The sum of the elements of the subset S_{50} is

CAT 1990, Q39

- (A) 61250 (B) 65525
(C) 42455 (D) 62525

76. A square is drawn by joining the midpoints of the sides of a given square. A third square is drawn inside the second square in the same way and this process is continued indefinitely. If a side of the first square is 8 cm, the sum of the areas of all the squares such formed (in sq.cm.) is

CAT 1990, Q40

- (A) 128 (B) 120
(C) 96 (D) None of these

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