Find the sum of all the terms, If the first 3 terms among 4 positive 2-digit integers are in A.P and the last 3 terms are in G.P. Moreover the difference between the first and last term is 40.

A.   108

B.   172

C.   124

D.   196

> **Correct Answer**

> **Explanation**

T he Questions that follow, are from actual CAT papers. If you wish to take them separately or plan to solve actual CAT papers at a later point in time, It would be a good idea to stop here.

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01.   CAT 2022 Slot 2 - QA

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

A.   19

B.   16

C.   17

D.   18

> **Correct Answer**

> **Video Explanation**

> **Explanation**

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02.   CAT 2022 Slot 2 - QA

Consider the arithmetic progression $3, 7, 11, \ldots$ 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

A.   404

B.   442

C.   455

D.   415

> **Correct Answer**

> **Video Explanation**

> Explanation

03. CAT 2022 Slot 1 - QA

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

A.   4

B.   8

C.   7

D.   9

> Correct Answer

> Video Explanation

> Explanation

04. CAT 2021 Slot 3 - QA

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

A.   4949

B.   4849

C.   4850

D.   4950

> Correct Answer

> Video Explanation

> Explanation

> Check Stats

05. CAT 2021 Slot 2 - QA

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

A.   8

B.   10

C.   14

> Correct Answer

> Video Explanation

D.	12

Explanation

Check Stats

## 06.	CAT 2021 Slot 2 - QA

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

A.	2

B.	-2

C.	200

D.	-200

Correct Answer

Video Explanation

Explanation

Check Stats

## 07.	CAT 2021 Slot 1 - QA

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

A.	4

B.	3

C.	1

D.	2

Correct Answer

Video Explanation

Explanation

Check Stats

## 08.	CAT 2020 Question Paper Slot 2 - Sequence & series

Let teh m-th and n-thterms of a Geometric progression be $\dfrac{3}{4}$ and 12, respectively, when m < n. If the common ratio of

the progression is an integer r, then the smallest possible value of r + n - m is

A. -4

B. -2

C. 6

D. 2

> **Correct Answer**
>
> **Video Solution**
>
> **Explanation**

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09. CAT 2020 Question Paper Slot 1 - Sequence ∧ Series

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?

> **Correct Answer**
>
> **Video Solution**
>
> **Explanation**

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10. CAT 2019 Question Paper Slot 2 - Sequence & series

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

A. -1

B. 1

C. 0

D. 10

> **Correct Answer**
>
> **Explanation**
>
> **Video Solution**

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11. CAT 2019 Question Paper Slot 2 - Sequence & series

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

A.   20

B.   18

C.   21

D.   19

Correct Answer

Explanation

Video Solution

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12. CAT 2019 Question Paper Slot 2 - Sequence & series

If (2n+1) + (2n+3) + (2n+5) + ... + (2n+47) = 5280 , then what is the value of 1+2+3+ ... +n ? [TITA]

Correct Answer

Explanation

Video Solution

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13. CAT 2019 Question Paper Slot 1 - Progressions

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

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

B. $(977)^{15} - 3$

C. $(1003)2^{15} - 3$

D. $(977)2^{14} + 3$

Correct Answer

Explanation

Video Solution

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14. CAT 2019 Question Paper Slot 1 - Progressions

If $a_1 + a_2 + a_3 + ... + a_n = 3(2^{n+1} - 2)$, then a_{11} equals [TITA]

Correct Answer

Explanation

Video Solution

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15. CAT 2019 Question Paper Slot 1 - Progressions

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

A. $\dfrac{n}{\sqrt{a_1}+\sqrt{a_{n+1}}}$

B. $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$

C. $\dfrac{n}{\sqrt{a_1}-\sqrt{a_{n+1}}}$

D. $\dfrac{n-1}{\sqrt{a_1}+\sqrt{a_{n-1}}}$

Correct Answer

Explanation

Video Solution

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16. CAT 2018 Question Paper Slot 2 - Sequence & Series

Let a_1, a_2, ... , a_{52} be positive integers such that $a_1 < a_2 < ... < a_{52}$. Suppose, their arithmetic mean is one less than the arithmetic mean of a_2, a_3, ..., a_{52}. If a_{52} = 100, then the largest possible value of a_1 is

A. 48

B. 20

C. 45

D. 23

Correct Answer

Explanation

Video Solution

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17. CAT 2018 Question Paper Slot 2 - Sequence & Series

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

Correct Answer

Explanation

Video Solution

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18. CAT 2018 Question Paper Slot 2 - Sequence & Series

The value of the sum 7 x 11 + 11 x 15 + 15 x 19 + ... + 95 x 99 is

A. 80707

B. 80751

C. 80730

D. 80773

Correct Answer

Explanation

Video Solution

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19. CAT 2018 Question Paper Slot 2 - Progressions & Series

The arithmetic mean of x, y and z is 80, and that of x, y, z, u and v is 75, where u = $\frac{(x+y)}{2}$ and v = $\frac{(y+z)}{2}$. If x ≥ z, then the

minimum possible value of x is (TITA)

Correct Answer

Explanation

Video Solution

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20. CAT 2018 Question Paper Slot 1 - Sequence & Series

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

A. $\frac{1}{6}$

B. $\frac{3}{6}$

C. $\frac{3}{2}$

D. $\frac{5}{2}$

Correct Answer

Explanation

Video Solution

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21. CAT 2017 Question Paper Slot 2 - Progressions

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 [TITA]

Correct Answer

Explanation

Video Solution

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22. CAT 2017 Question Paper Slot 2 - Progressions

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

A. $\frac{1}{32}$

B. $\frac{2}{32}$

C. $\frac{3}{32}$

D. $\frac{4}{32}$

Correct Answer

Explanation

Video Solution

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23. CAT 2017 Question Paper Slot 2 - Progressions

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

A. $\dfrac{25}{151}$

B. $\dfrac{1}{2}$

C. $\dfrac{1}{4}$

D. $\dfrac{111}{55}$

> Correct Answer

> Explanation

> Video Solution

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24. CAT 2017 Question Paper Slot 1 - Progressions

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:

A. 2 : 3

B. 3 : 2

C. 3 : 4

D. 4 : 3

> Correct Answer

> Explanation

> Video Solution

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25. CAT 2017 Question Paper Slot 1 - Progressions

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

A. 8

B. 9

C. 10

D. 11

> Correct Answer

> Explanation

> Video Solution