Related Questions with Solutions

Questions

Quetion: 01

For some natural N, the number of positive integral 'x' satisfying the equation,
$1 ! + 2 ! + 3 ! + ... + (x !) = (N)^2$ is :

A. none
B. one
C. two
D. infinite

Solutions

Solution: 01

$1! + 2! + 3! + 4! + 5! + ... x! = N^2$

$1 + 2 + 6 + 24 + 120 + ... = N^2$

For x! when $x \geq 5$, unit digit is zero

$1 + 2 + 6 + 24 = 33$, unit digit is 3

so, for $x \geq 5$, unit digit of sum on L.H.S. will be 3

so, it can't be a perfect square.

No, for x = 3 $1 + 2 + 6 = 9$

for x = 1 $1! = 1$

$\therefore$ Two perfect squares are obtained.

$\therefore$ Two positive integral 'x' is obtained.

Correct Options

Answer:01

Correct Options: C