

SATISH CHANDRA MEMORIAL SCHOOL
HOLIDAY HOMEWORK
STD VIII

CASE STUDY 1

1. Rishav has learned some interesting concepts on squares and square roots in his school. After returning from school, he has explained the concepts with examples to his one year younger sister, like

- (i) sum of first n consecutive odd natural numbers represents the square of n th natural number.
- (ii) There are $2n$ non perfect squares between the square of two consecutive numbers n and $(n+1)$.
- (iii) Every square number can be represented as sum of two consecutive numbers.

Example, $5^2 = 1 + 3 + 5 + 7 + 9 = 12 + 13$

and there are 10 non perfect squares between 5^2 and 6^2 .

Based on the above information answer the following questions :

- (a) Find the value of $1+3+5+\dots+63+65$ and also its square root.
- (b) How many non perfect squares are there between 1024 and 1089?
- (c) Find the value of $9+11+13+\dots+57+59$.
- (d) Write $(35)^2$ as a sum of two consecutive natural numbers.
- (e) Express 1521 as a sum of odd consecutive natural numbers.

CASE STUDY 2

2. Smart watches are a big innovation in wearable industry, performing too many functions. The most common now-a -days is to count the number of steps. This has a big impact on health. Shubhasree noticed the number of steps she walked on her smart watch in the evening and found it to be '23328'.

Based on the above information, answer the following questions:

- (i) Is the given number a perfect cube?
- (ii) If not, then what is the smallest number to be multiplied to make it a perfect cube?
- (iii) Find the one's digit in the cube of the number 9999.
- (iv) Find a four digit natural number which is both a perfect square and a perfect cube.