## Notes of Online class

1) Answer the following questions
a) Find the sum of first 10 odd numbers
b) Find the sum of first 25 odd numbers
c) How many odd numbers from 1 makes the sum 1225 ?
d) $1+3+5+7 \cdots+2 n-1$ is in between 900 and 1000 . What is $n ?$
2) Have you heard of triangular numbers? The sequence of triangular numbers is given below

$$
1,3,6,10,15,21 \cdots
$$

$n$th term of this sequence can be obtained from the pattern

$$
\begin{gathered}
1=1 \\
3=1+2 \\
6=1+2+3 \\
10=1+2+3+4 \\
15=1+2+3+4+5
\end{gathered}
$$

a) What is the 10 th triangular number?
b) Write the algebraic form of the sequence of triangular numbers
c) Which is the largest two digit triangular number?
d) Find the 50 th triangular number
3) Look at the pattern given below

$$
\begin{aligned}
& 1 \\
& 357 \\
& \begin{array}{lllll}
9 & 11 & 13 & 15 & 17
\end{array} \\
& 19212325272931
\end{aligned}
$$

a) Write the sequence of number of numbers in each line
b) Write the algebraic form of this sequence
c) How many numbers are there in 20 th line ?
d) Which number comes in the right end of 20 th line ?
d) Which number comes in the left end of 20 th line?
e) How many numbers are needed to make 20 lines of this pattern.
4) Look at the pattern given below
a) Write the sequence of number of numbers in each line
b) Write the algebraic form of this sequence
c) How many numbers are there in 20 th line ?
d) Which number comes in the right end of 20 th line ?
d) Which number comes in the left end of 20 th line ?
e) Calculate the sum of all numbers upto the end of 20 th line

Answers and Explanation

1) a) $s_{n}=n^{2}, s_{10}=10^{2}=100$
b) $s_{n}=n^{2}, s_{25}=25^{2}=625$
c) Sum of the first $n$ odd numbers $=n^{2}$. $n=\sqrt{1225}=35$
d) Perfect square in between 900 and 1000 is 961 (ேற) $. n^{2}=961, n=31$
2) a) $T_{10}=1+2+3 \cdots+10=(10+1) \frac{10}{2}=55$
b) $(n+1) \times \frac{n}{2}$
c) $T_{13}=(13+1) \times \frac{13}{2}=91$
d) $T_{50}=(50+1) \times \frac{50}{2}=1275$.
3) a) $1,3,5,7 \cdots$
b) $x_{n}=d n+(f-d)=2 n-1$
c) $x_{20}=2 \times 20-1=39$
d) Sequance of numbers in the right end: $1,7,17,31 \cdots$
$x_{n}=2 n^{2}-1, x_{20}=2 \times 20^{2}-1=799$.
Number at the end of 20 th line $=799$
e) $2 \times 19^{2}-1+2=723$.
f) $20^{2}=400$ numbers are needed
4) a) $1,3,5,7 \ldots$
b) $x_{n}=2 n-1$
c) 39
d) $20^{2}=400$
(Sequence of numbers in the right end $1,4,9,16 \cdots$ )
e) $19^{2}+1=362$
f) Sum the numbers $1,2,3,4 \cdots 400=(400+1) \times \frac{400}{2}=80200$

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