



- 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 ?
- e) Calculate the sum of all numbers upto the end of 20 th line

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#### 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.  $n^2 = 961, n = 31$
- 2)
  - a)  $T_{10} = 1 + 2 + 3 \dots + 10 = (10 + 1) \frac{10}{2} = 55$
  - 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...
  - b)  $x_n = dn + (f - d) = 2n - 1$
  - c)  $x_{20} = 2 \times 20 - 1 = 39$
  - d) Sequence of numbers in the right end : 1, 7, 17, 31...  
 $x_n = 2n^2 - 1, x_{20} = 2 \times 20^2 - 1 = 799$ .  
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...
  - b)  $x_n = 2n - 1$
  - c) 39
  - d)  $20^2 = 400$   
(Sequence of numbers in the right end 1, 4, 9, 16...)
  - e)  $19^2 + 1 = 362$
  - f) Sum the numbers 1, 2, 3, 4... 400  $= (400 + 1) \times \frac{400}{2} = 80200$

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