



Sum of:  $2 + 4 + 6 + \dots + 98 + 100 = ?$

$$\begin{aligned} \text{Sum} &= 2 + 4 + 6 + \dots + 98 + 100 \\ \text{Sum} &= \underline{100 + 98 + 96 + \dots + 4 + 2} \end{aligned}$$

$$2 \text{ Sum} = 102 + 102 + 102 + \dots + 102 + 102$$

$$2 \text{ Sum} = 102(50) = 5100$$

$$\text{Sum} = \frac{5100}{2} = 2550$$

### Example 1

Find the  $n$ th term ( $T_n$ ) of the arithmetic sequence:

$-2, 3, 8, 13, \dots$

and hence find (i)  $T_{20}$  (ii)  $T_{21}$  (iii)  $T_{21} - T_{20}$ .

In every arithmetic sequence

$$\boxed{T_n = a + (n-1)d}$$

In tables

$a = 1^{\text{st}} \text{ term}, T_1$   
 $d = \text{common diff.}$   
 $n = \text{no. of term}$

• Find  $T_n$ ?

Sequence:  $-2, 3, 8, 13, \dots$

$\xrightarrow{+5} \xrightarrow{+5}$

$$d = 5 \quad T_1 = a = -2 \quad n = n$$

$$\begin{aligned} T_n &= -2 + (n-1)5 \\ &= -2 + 5n - 5 \end{aligned}$$

$$\boxed{T_n = 5n - 7}$$

(i)  $T_{20} = 5(20) - 7 = 100 - 7 = 93$

(ii)  $T_{21} = 5(21) - 7 = 105 - 7 = 98$

(iii)  $T_{21} - T_{20} = 98 - 93 = 5$