EXERCISE: 5.2

Q.1. Fill in the blanks in the following table, given that 'a' is the first term, 'd' the common difference and an the nth term of the A.P.:

Sol. (i) $a_n = a + (n − 1) d$

$\Rightarrow a_8 = 7 + (8 − 1)\, 3$

$= 7 + 7 × 3$

$= 7 + 21$

$\Rightarrow a_8 = 28$

Q.2. Choose the correct choice in the following and justify:

(i) 30th term of the A.P.: 10, 7, 4, …., is

(A) 97   (B) 77   (C) −77   (D) −87

Sol. (i) Here, a = 10, n = 30

$T_n = a + (n − 1)d$ and $d = 7 − 10 = − 3$

$\therefore T_{30} = 10 + (30 − 1) × (−3)$

$\Rightarrow T_{30} = 10 + 29 × (−3)$

$\Rightarrow T_{30} = 10 − 87 = −77$

Thus, the correct choice is © − 77.

Q.3. In the Miming A.Ps., find the missing terms in the boxes:

Sol. (i) Here, a = 2, $T_3 − 26$

Let common difference = d

$\therefore T_n = a + (n − 1) d$

$\Rightarrow T_3 = 2 + (3 − 1) d$

$\Rightarrow 26 = 2 + 2d$

$\Rightarrow 2d = 26 − 2 = 24$

$\therefore$ The missing term = a + d

= 2 + 12 = 14

(ii) Let the first term = a and common difference = d

Here, $T_2 = 13$ and $T_4 = 3$

$T_2 = a + d = 13$

$T_4 = a + 3d = 3$

$T_4 - T_2 = (a + 3d) - (a + d) = 3 - 13$

$\Rightarrow 2d = -107$

Now, $a + d = 13 \Rightarrow a + (-5) = 13$

$\Rightarrow a = 13 + 5 = 18$

Thus, missing terms are a and $a + 2d$ or 18 and $18 + (-10) = 8$

i.e., $T_1 = 18$ and $T_3 = 8$