Homework

1. $a_n = -4n + 15$

$a_1 = -4 + 15 = 11$

$a_2 = -8 + 15 = 7$

$a_3 = -12 + 15 = 3$

$d = a_3 - a_2 = a_2 - a_1 = -4$

$\therefore$ It forms an A.P

2. $a_n = 6n + 11$

$\therefore a_1 = 6 + 11 = 17$

$a_2 = 12 + 11 = 23$

$\therefore d = a_2 - a_1 = 23 - 17 = 8$

3. A.P$_1$ = 9, 7, 5, ---

A.P$_2$ = 15, 12, 9, ---

A.Q

$a_1 + (n-1)d_1 = a_2 + (n-1)d_2$

$\Rightarrow 9 + (n-1)(-2) = 15 + (n-1)(-3)$

$\Rightarrow 9 - 2n + 2 = 15 - 3n + 3$

$\Rightarrow n = 18 - 11 = 7$

4. $a_8 = 31 \Rightarrow a + 7d = 31$ --- (1)

$a_{15} = 16 + a_{11} \Rightarrow a + 14d = 16 + a + 10d$

$\Rightarrow 4d = 16$

$\Rightarrow d = 4$

Putting $d = 4$ in eq (1),

$a + 7(4) = 31$

$\Rightarrow a = 31 - 28 = 3$

$\therefore$ A.P $\rightarrow$ 3, 7, 11, 15, ---

5. AP → 1, 3.5, 6, 8.5 - -

$a = 1$

$d = 3.5 - 1 = 2.5$

$\therefore \quad a_{10} = a + 9d = 1 + 9(2.5) \; 1 + 22.5 = 23.5$

6. $S_{10} = \frac{n(n+1)}{2}$ [where $n = 10$]

$\Rightarrow S_{10} = \frac{10 \times 11}{2} = 55$