

Q6. AP: 11, 8, 5, 2, ...

$$a = 11.$$

$$d = 8 - 11 = -3.$$

$$a_n = -150.$$

$$a + (n-1)d = a_n$$

$$\rightarrow 11 + (n-1)(-3) = -150.$$

$$= (n-1)(-3) = -150$$

$$= -3(n-1) = -150.$$

$$= n-1 = \frac{-150}{-3}$$

$$\rightarrow n = \frac{150}{3} + 1 = \frac{154}{3} = \frac{4}{533}$$

$\therefore -150$ is not a term of AP.

Q7. Here,

$$t_{11} = a + 10d = 38 \text{ --- (i)}$$

$$t_{16} = a + 15d = 73 \text{ --- (ii)}$$

(i) from equation (ii), we get:

$$5d = 35.$$

$$\rightarrow d = 7.$$

value of $d = 7$.

$$a + 10 \times 7 = 38.$$

$$\rightarrow a = 38 - 70.$$

$$\therefore t_{31} = a + 30d =$$

$$= 38 + 30 \times 7.$$

$$= 38 + 210 = 248.$$

$\therefore 31^{\text{th}}$ term is 248.

Q8. $a_{50} = 106$

$$a_{50} = a + (50-1)d.$$

$$\rightarrow a + 49d = 106 \text{ --- (i)}$$

$$\text{As } a_3 = 12 \rightarrow a_3 = a + (3-1)d \rightarrow$$

$$a + 2d = 12 \text{ --- (ii)}$$

Subtracting (ii) from (i).

$$a + 49d - a - 2d = 106 - 12.$$

$$\rightarrow 47d = 94.$$

$$\rightarrow d = \frac{94}{47} = 2.$$

$$\rightarrow a + 2d = 12.$$

$$\rightarrow a + 2 \times 2 = 12.$$

$$\rightarrow a + 4 = 12.$$

$$\rightarrow a = 12 - 4 = 8.$$

$$a_{29} = a + (29-1)d$$

$$= 8 + 28 \times 2$$

$$= 8 + 56 = 64.$$

Q9. here $t_3 = 4 \dots (i)$

$$\rightarrow a + 2d = 4 \dots (i)$$

$$8t_9 = -8.$$

$$\rightarrow a + 8d = -8 \dots (ii)$$

(i) from (ii)

$$6d = -12 \rightarrow d = -2.$$

$$(i) a + 2 \times (-2) = 4 \rightarrow a = 8.$$

let t_n be 0.

$$\text{Then } a + (n-1)d = 0.$$

$$\rightarrow 8 + (n-1)(-2) = 0$$

$$\rightarrow n = 5.$$

\therefore 5th term of given AP is 0.

Q11. $a = 3.$

$$d = 15 - 3 = 12.$$

$$\therefore t_n = a + (n-1)d$$

$$= 3 + (n-1)12 = 3 + 12n - 12.$$

$$\rightarrow t_n = 12n - 9.$$

$$t_{54} = a + 53d = 3 + 53 \times 12.$$

$$= 3 + 636 = 639.$$

$$t_n = 12n - 9 = t_{54}.$$

$$\rightarrow 12n - 9 = 12n - 9 = 639.$$

$$\rightarrow 12n = 780 \rightarrow n = 65.$$

\therefore 65th term is required.

Q10. given: $a_{17} - a_{10} = 7.$

$$\rightarrow [a + (17-1)d] - [a + (10-1)d] = 7.$$

$$\rightarrow (a + 16d) - (a + 9d) = 7.$$

$$\rightarrow 7d = 7.$$

$$\rightarrow d = 1.$$

Q12. $a_{100} - A_{100} = 100.$

$$\rightarrow a + 99d - a - 99d = 100.$$

$$\rightarrow a - a = 100.$$

$$\rightarrow a_{1000} - A_{1000} = a + 999d - a - 999d$$

$$\rightarrow a - a = 100.$$

$$\rightarrow a_{1000} - A_{1000} = 100.$$