

Ch-5APExercise 5.2

$$Q.3 \quad a_n = 5n - 7$$

Let $n = 1, 2, 3, 4, \dots$

$$a_1 = 5(1) - 7 = -2$$

$$a_2 = 5(2) - 7 = 3$$

$$a_3 = 5(3) - 7 = 8$$

$$a_4 = 5(4) - 7 = 13$$

$$a_2 - a_1 = 3 - (-2) = 5$$

$$a_3 - a_2 = 8 - 3 = 5$$

$$a_4 - a_3 = 13 - 8 = 5$$

As the difference ~~is~~ is 5 (common in all)

$\therefore -2, 3, 8, 13, \dots$ is an AP.

$$Q.4 \quad a_n = 3n^2 - 5$$

Let $n = 1, 2, 3, 4, \dots$

$$a_1 = 3(1)^2 - 5 = -2$$

$$a_2 = 3(2)^2 - 5 = 7$$

$$a_3 = 3(3)^2 - 5 = 22$$

$$a_4 = 3(4)^2 - 5 = 43$$

$$a_2 - a_1 = 7 - (-2) = 9$$

$$a_3 - a_2 = 22 - 7 = 15$$

$$a_4 - a_3 = 43 - 22 = 21$$

As the difference is not common,

$\therefore -2, 7, 22, 43, \dots$ is not an AP.

Q. 5

$$a_n = -4n + 15$$

$$\text{Let } n = 1, 2, 3, 4 \dots$$

$$a_1 = -4(1) + 15 = 11$$

$$a_2 = -4(2) + 15 = 7$$

$$a_3 = -4(3) + 15 = 3$$

$$a_4 = -4(4) + 15 = -1$$

$$a_2 - a_1 = 7 - 11 = -4$$

$$a_3 - a_2 = 3 - 7 = -4$$

$$a_4 - a_3 = -1 - 3 = -4$$

As the difference is -4 (common in all)

$\therefore 11, 7, 3, -1 \dots$ is an AP

$$\therefore a_{15} = -4(15) + 15 = \boxed{-45}$$

$$d = \boxed{-4}$$

Q. 6 a)

$$a_n = 2n - 1$$

$$\text{Let } n = 1, 2, 3 \dots$$

$$a_1 = 2(1) - 1 = 1$$

$$a_2 = 2(2) - 1 = 3$$

$$a_3 = 2(3) - 1 = 5$$

$$a_2 - a_1 = 3 - 1 = 2$$

$$a_3 - a_2 = 5 - 3 = 2$$

As the difference is 2 (common in all),

$\therefore 1, 3, 5 \dots$ is an AP.

b)

$$a_n = 3n^2 + 5$$

Let $n = 1, 2, 3, \dots$

$$a_1 = 3(1)^2 + 5 = 8$$

$$a_2 = 3(2)^2 + 5 = 17$$

$$a_3 = 3(3)^2 + 5 = 32$$

$$a_2 - a_1 = 17 - 8 = 9$$

$$a_3 - a_2 = 32 - 17 = 15$$

As the difference is not common,

$\therefore 8, 17, 32, \dots$ is not an AP.

c) $a_n = 1 + n + n^2$

Let $n = 1, 2, 3, \dots$

$$a_1 = 1 + 1 + (1)^2 = 3$$

$$a_2 = 1 + 2 + (2)^2 = 7$$

$$a_3 = 1 + 3 + (3)^2 = 13$$

$$a_2 - a_1 = 7 - 3 = 4$$

$$a_3 - a_2 = 13 - 7 = 6$$

As the difference is not common,

$\therefore 3, 7, 13, \dots$ is not an AP.