Exercise 5.1

1. (i) fixed fare = ₹15
Additional = ₹8

(ii)

$a_1 = 15 \quad d = 8$

$a_2 = a_1 + d = 15 + 8 = 23$

$a_3 = a_2 + d = 23 + 8 = 31$

$a_4 = a_3 + d = 31 + 8 = 39$

$a_5 = a_4 + d = 39 + 8 = 47$

Yes, AP = $\{15, 23, 31, 39, 47 \ldots\}$

(iii) cost for first metre = 150
cost for subsequent metre = 50

(iv)

$a_1 = 150 \quad d = 50$

$a_2 = a_1 + d = 150 + 50 = 200$

$a_3 = a_2 + d = 200 + 50 = 250$

$a_4 = a_3 + d = 250 + 50 = 300$

$a_5 = a_4 + d = 300 + 50 = 350$

Yes, AP = $\{150, 200, 250, 300, 350 \ldots\}$

2. (i) $a = 10$ $d = 10$

AP $a_2 = a_1 + d = 10 + 10 = 20$

$a_3 = a_2 + d = 20 + 10 = 30$

$a_4 = a_3 + d = 30 + 10 = 40$

$a_5 = a_4 + d = 40 + 10 = 50$

AP $= \{10, 20, 30, 40, 50 \ldots\}$

(ii) $a = -2$ $d = 0$

$a_2 = a_1 + d = -2 + 0 = -2$

$a_3 = a_2 + d = -2 + 0 = -2$

$a_4 = a_3 + d = -2 + 0 = -2$

$a_5 = a_4 + d = -2 + 0 = -2$

AP $= \{-2, -2, -2, -2, -2 \ldots\}$

(iii) $a = 4$ $d = -3$

$a_2 = a_1 + d = 4 + (-3) = 1$

$a_3 = a_2 + d = 1 + (-3) = -2$

$a_4 = a_3 + d = -2 + (-3) = -5$

$a_5 = a_4 + d = -5 + (-3) = -8$

AP $= \{4, 1, -2, -5, -8 \ldots\}$

(iv) $a = -1$ $d = 1/2$

$a_2 = a_1 + d = -1 + \frac{1}{2} = \frac{-1}{2}$

$a_3 = a_2 + d = -\frac{1}{2} + \frac{1}{2} = 0$

$a_4 = a_3 + d = 0 + \frac{1}{2} = \frac{1}{2}$

$a_5 = a_4 + d = \frac{1}{2} + \frac{1}{2} = 1$

AP $= \{-1, -\frac{1}{2}, 0, \frac{1}{2}, 1 \ldots\}$

(v) $a = -1.25$, $d = -0.25$

$a_2 = a_1 + d = -1.25 - 0.25 = -1.50$

$a_3 = a_2 + d = -1.50 - 0.25 = -1.75$

$a_4 = a_3 + d = -1.75 - 0.25 = -2.0$

$a_5 = a_4 + d = -2.00 - 0.25 = -2.25$

AP $= \{-1.25, -1.50, -1.75, -2.00, -225\}$

3. (i) first term $= 3$

common difference $= 1$

(ii) first term $= -5$

common difference $= 4$

(iii) first term $= 1/3$

common difference $= 4/3$

(iv) first term $= 0.6$

common difference $= 1.1$

4. (i) No

(ii) $d = 1/2$ next term $= 4, 9/2, 5$

(iii) $d = -2$ next term $= -9.2, -11.2, -13.2$

(iv) $d = 4$ next term $= 6, 10, 14$

(v) $d = \sqrt{2}$ next terms $= 3+4\sqrt{2}, 3+5\sqrt{2}, 3+6\sqrt{2}$

(vi) NO

(vii) $d = -4$ next terms $= -16, -20, -24$

(viii) $d = 0$ next terms $= -1/2, -1/2, -1/2$

(ix) NO

(x) $d = a$ next terms $= 5a, 6a, 7a$

(xi) NO

(xii) $d = \sqrt{2}$ next terms $= \sqrt{50}, \sqrt{72}, \sqrt{98}$

(xiii) NO

(xiv) NO

(xv) $d = 24$ next terms $= 97, 121, 135$