

Exercise 1B

Questions 3:

(i)
$$x = 0.\overline{8}$$
 then,
 $x = 0.8888...$ -----(1)
 $10x = 8.8888...$ ----(2)
On subtracting (1) from (2), we get
 $9x = 8 \Rightarrow x = \frac{8}{9}$
Hence, $0.\overline{8} = \frac{8}{9}$

- (ii) $x = 2.\overline{4}$ then, x = 2.4444... -----(1) $\therefore 10x = 24.444...$ -----(2) On subtracting (1) from (2), we get $9x = 22 \Rightarrow x = \frac{22}{9}$
- (iii) $x = 0.\overline{24}$ then, x = 0.242424... -----(1) 100x = 24.242424... -----(2) On subtracting (1) from (2), we get $99x = 24 \Rightarrow x = \frac{24}{99} = \frac{8}{33}$

$$0.\overline{24} = \frac{8}{33}$$

(iv) $x = 0.1\overline{2}$, then x = 0.12222....10x = 1.2222.... -----(1) 100x = 12.2222... -----(2) Subtracting (1) from (2), we get 90x = 11 $\therefore x = \frac{11}{90}$

$$0.1\overline{2} = \frac{11}{90}$$

(v)
$$x = 2.2\overline{4}$$
, then,
 $x = 2.24444$ -----(1)
 $10x = 22.4444...$ -----(2)
And $100x = 224.4444...$ -----(3)
On subtracting (2) from (3), we get
 $\therefore 90x = 202 \Rightarrow x = \frac{202}{90} = \frac{101}{45}$
(vi) $x = 0.3\overline{65}$, then
 $x = 0.3656565 -----(1)$
 $10x = 3.656565 -----(2)$
 $1000x = 365.656565 -----(3)$
Subtracting (2) from (3), we get
 $x = 362 \Rightarrow x = \frac{362}{990} = \frac{181}{495}$
 $0.3\overline{65} = \frac{181}{495}$

Questions 4:

(i) 53.123456789 is a rational number since it is a terminating decimal.

(ii) 31.123456789 is a rational number because it is a non - terminating repeating decimal.
(iii) 0.12012001200012..... is not a rational number as it is a non-terminating, non - repeating decimal.

******* END *******