

B. B. S. S. See IX maths

Converting a non terminating recurring decimal number into $\frac{p}{q}$ form.

- Algorithm:
- ① Equate the given decimal number as x .
 - ② Write the decimal number in decimal form by removing bar from the top of repeating digit. for example
 $0.\overline{6} = 0.6666\dots$
 $0.\overline{14} = 0.141414\dots$
 - ③ If the repeating decimal has one place repetition multiply by 10, a two place repetition multiply by 100 and so on.
 - ④ Subtract the number obtain in step ② from the number obtain from ③.
 - ⑤ Write the number in simplest form.

Ex 1.3 Q1 (ii) $\frac{1}{11} = 0.0909\dots$

$\frac{1}{11} = 0.\overline{09}$
(Non terminating and repeating)

(iii) $\frac{41}{8} = \frac{33}{8} = 4.125$
(Terminating)

$$\begin{array}{r} 11 \overline{) 100} \quad 0.0909\dots \\ \underline{99} \\ 100 \\ \underline{99} \\ 1 \end{array}$$

$$\begin{array}{r} 8 \overline{) 33} \quad (4.125) \\ \underline{32} \\ 10 \\ \underline{8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Q.3 (i) Let $x = 0.\overline{6}$
 Then
 $x = 0.66666\dots$ — ①
 on multiplying equation ① by 10
 $10x = 6.6666\dots$ — ②
 on subtracting ① by ②
 $10x - x = 6.6666\dots - 0.66666\dots$
 $9x = 6$
 $x = \frac{6}{9} = \frac{2}{3}$ Ans

Q.8

$$\frac{5}{7} = 0.714\ldots$$

$$\frac{9}{11} = 0.818\ldots$$

$$\begin{array}{r}
 7 \overline{) 50} \quad (0.714) \quad \textcircled{2} \\
 \underline{49} \\
 10 \\
 \underline{7} \\
 30 \\
 \underline{28} \\
 2
 \end{array}$$

∴ Three rational numbers between

$\frac{5}{7}$ and $\frac{9}{11}$ are

$$0.72072007200072\ldots$$

$$0.7507500075000075\ldots$$

$$0.7607600076000076\ldots$$

$$\begin{array}{r}
 11 \overline{) 90} \quad (0.818) \\
 \underline{88} \\
 20 \\
 \underline{11} \\
 90 \\
 \underline{88} \\
 2
 \end{array}$$

Home work. solve the following questions.

Q.1 (i) (iv) (v) (vi)

Q.2

Q.3 (ii) (iii)

Q.4, 5, 6, 7, 8.

Assignment:-

① write the following numbers in decimal form

(i) $\frac{5}{6}$ (ii) $3\frac{4}{5}$ (iii) $\frac{15}{8}$ (iv) $\frac{7}{3}$.

② Express the following in the form of $\frac{p}{q}$ ($q \neq 0$)

(i) $0.\overline{7}$ (ii) $0.\overline{46}$ (iii) $0.\overline{728}$ (iv) $0.5\overline{7}$

③ classify the following numbers as rational or irrational

(i) $\sqrt{17}$ (ii) $\sqrt{625}$ (iii) 0.3678 (iv) π (v) $0.110110011000011\ldots$