Decimal to Fraction
(terminating)

$$0.1 = 0.1\left(1\right) = \frac{0.1}{1}\left(\frac{10}{10}\right) = \frac{1}{10}$$

$$0.3 = 0.3\left(\frac{10}{10}\right) = \frac{3}{10}$$

$$0.5 = 0.5\left(\frac{10}{10}\right) = \frac{5}{10}\left(\frac{\div 5}{\div 5}\right) = \frac{1}{2}$$

$$0.65 = 0.65\left(\frac{100}{100}\right) = \frac{65}{100}\left(\frac{\div 5}{\div 5}\right) = \frac{13}{20}$$

$$0.75 = 0.75\left(\frac{100}{100}\right) = \frac{75}{100}\left(\frac{\div 5}{\div 5}\right) = \frac{15}{20}\left(\frac{\div 5}{\div 5}\right) = \frac{3}{4}$$

$$0.758 = 0.758\left(\frac{1000}{1000}\right) = \frac{758}{1000}\left(\frac{\div 2}{\div 2}\right) = \frac{379}{500}$$

$$0.2348 = 0.2348\left(\frac{10000}{10000}\right) = \frac{2348}{10000}\left(\frac{\div 2}{\div 2}\right) = \frac{1174}{5000}\left(\frac{\div 2}{\div 2}\right) = \frac{587}{2500}$$

Decimal to Fraction (repeating)

$0.\overline{3} = \frac{1}{3}$

$0.\overline{6} = \frac{2}{3}$

$0.\overline{7}$ let $x = 0.777\ldots$ so $\begin{array}{l} 10x = 7.7777\ldots \\ -\ x = 0.7777\ldots \\ \hline 9x = 7 \end{array}$ so $x = \frac{7}{9}$

$0.\overline{23}$ let $x = 232323\ldots$ so $\begin{array}{l} 100x = 23.2323\ldots \\ -\ x = 0.2323\ldots \\ \hline 99x = 23 \end{array}$ so $x = \frac{23}{99}$

$0.28\overline{3}$ let $\begin{array}{l} y = 0.28 \\ x = 0.00333\ldots \end{array}$ so $\begin{array}{l} 10x = 0.03333\ldots \\ -\ x = 0.00333\ldots \\ \hline 9x = 0.03 \end{array}$ so $\begin{array}{l} y = \frac{28}{100} = \frac{252}{900} \\ x = \frac{0.03}{9} = \frac{3}{900} \end{array}$ $\begin{array}{l} \diagdown \\ \diagup \end{array}$ $\frac{255}{900} = \frac{17}{60}$

$0.44\overline{7}$ let $\begin{array}{l} y = 0.44 \\ x = 0.00777\ldots \end{array}$ so $\begin{array}{l} 10x = 0.07777\ldots \\ -\ x = 0.00777\ldots \\ \hline 9x = 0.07 \end{array}$ so $\begin{array}{l} y = \frac{44}{100} = \frac{396}{900} \\ x = \frac{0.07}{9} = \frac{7}{900} \end{array}$ $\begin{array}{l} \diagdown \\ \diagup \end{array}$ $\frac{403}{900}$

$0.32\overline{87}$ let $\begin{array}{l} y = 0.32 \\ x = 0.008787\ldots \end{array}$ so $\begin{array}{l} 100x = 0.878787\ldots \\ -\ x = 0.008787\ldots \\ \hline 99x = 0.87 \end{array}$ so $\begin{array}{l} y = \frac{32}{100} = \frac{3168}{9900} \\ x = \frac{0.87}{99} = \frac{87}{9900} \end{array}$ $\begin{array}{l} \diagdown \\ \diagup \end{array}$ $\frac{3255}{9900} = \frac{217}{660}$