

Repeating Decimals In The Form: .aaa..., .abab..., .abcabc..., etc.

A. To change repeating decimals of this pattern to fractions, you simply write the repeating digit(s) as the numerator and an equal number of 9's as the denominator and reduce as necessary.

Ex [1] $.555\dots = \underline{\hspace{2cm}}$ (fraction).

- a) In this example, the digit 5 is repeating. So 5 will be the numerator. Since there is only one digit repeating, there is only one 9 as the denominator.
- b) The answer is $\frac{5}{9}$.

Ex [2] $.4545\dots = \underline{\hspace{2cm}}$ (fraction).

- a) In this example, the digits 45 are repeating. So 45 will be the numerator and since there are two digits repeating there will be two 9's in the denominator.
- b) The answer is $\frac{45}{99}$. However, we must reduce this fraction to $\frac{15}{33}$.
- c) The final answer is $\frac{15}{33}$.

Ex [3] $.144144\dots = \underline{\hspace{2cm}}$ (fraction).

- a) In this example, the digits 144 are repeating. So 144 will be the numerator and since there are three digits repeating there will be three 9's in the denominator.
- b) The answer is $\frac{144}{999}$. However, we must reduce this fraction to $\frac{16}{111}$.
- c) The final answer is $\frac{16}{111}$.