

<p>Some Numbers are Rational</p> $0.\overline{485}$	<p>Some Numbers are Rational</p> <p>I want to turn this repeating decimal into a fraction. I can see this decimal number has a two-digit repeating pattern.</p>
<p>Some Numbers are Rational</p> $x = 0.\overline{485}$	<p>Some Numbers are Rational</p> <p>First I'll set x equal to this number.</p>
<p>Some Numbers are Rational</p> $100x = 48.\overline{585}$	<p>Some Numbers are Rational</p> <p>Since the repeating pattern is 2 digits long, I'm going to multiply by 100 and write out a few more digits so I can still see the pattern.</p>
<p>Some Numbers are Rational</p> $\begin{array}{r} 100x = 48.\overline{585} \\ -x = -0.\overline{48585} \end{array}$	<p>Some Numbers are Rational</p> <p>Now I'll subtract the value of the decimal from each side. By lining the subtraction up vertically, it's easier to see what the left side will equal.</p>
<p>Some Numbers are Rational</p> $\begin{array}{r} 99x = 48.1 \\ 990x = 481 \end{array}$	<p>Some Numbers are Rational</p> <p>If I multiply each side by 10, I can re-write my equation without any decimal numbers.</p>
<p>Some Numbers are Rational</p> $x = \frac{481}{990}$	<p>Some Numbers are Rational</p> <p>Dividing each side by 990, I now know</p> $0.\overline{485} = \frac{481}{990}$