

A method of prime number verification
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Here is a pattern I noticed and I need help verifying it.

If you take any square number (example: $100 = 10^2$) and divide it by any prime number, a wave of repeating numbers is formed. Example $100/7 = 14.285714$. This forms a repeating number of 142857 infinite number of times.

Next Example $100/11 = 9.090$ repeating infinitely

Next Example $100/997 =$

0.100300902708124373119358074222668004012036108324974924774322... (period 166)

These I have all checked via WolframAlpha.

Does this pattern mean anything? Seems like a very simple way to verify a prime, but the only ones I have found it doesn't work for are 1,2,and 5.

Also possibly needed to be noted, when you change the square number the period remains the same.

Here is the formula I have derived for it: $n^2 / (2^n - 1) = H$. H represents a period of repeating numbers.