Project Euler.net

Reciprocal cycles

Problem 26

A unit fraction contains 1 in the numerator. The decimal representation of the unit fractions with denominators 2 to 10 are given:

$1/2 = 0.5$
$1/3 = 0.(3)$
$1/4 = 0.25$
$1/5 = 0.2$
$1/6 = 0.1(6)$
$1/7 = 0.(142857)$
$1/8 = 0.125$
$1/9 = 0.(1)$
$1/10 = 0.1$

Where 0.1(6) means 0.166666..., and has a 1-digit recurring cycle. It can be seen that $1/7$ has a 6-digit recurring cycle.

Find the value of $d < 1000$ for which $1/d$ contains the longest recurring cycle in its decimal fraction part.