Day 8 (July 12, 2012)

How can we be as lazy as possible on #3?

3. Find each decimal expansion in *base 10*. Seek shortcuts to simplify your work!

Fraction	Decimal
1/21	$0.\overline{047619}$
2/21	$0.\overline{095238}$
3/21	
4/21	
5/21	
6/21	
7/21 = 1/3	$0.\overline{333333}$
8/21	
9/21	
10/21	$0.\overline{476190}$

Fraction	Decimal
11/21	
12/21	
13/21	$0.\overline{619047}$
14/21	$0.\overline{666666}$
15/21	
16/21	$0.\overline{761904}$
17/21	
18/21	
19/21	
20/21	$0.\overline{952380}$

×2

shift

shift

shift

When *10, the decimal point moves over, so the digits just shift over.

But even more, notice the powers of 10 in mod 21 are 1, 10, 16, 13, ... Notice how the decimals shift.

Observation: The last digit (in the 10^{-6} place) counts down.