Activity 1 Making the Most of a Euro

Invest €1 for 1 year at 100% compound Interest.

Investigate the change in the final value, if the annual interest rate of 100% is compounded over smaller and smaller time intervals.

The interest rate *i* per compounding period is calculated by dividing the annual rate of 100% by the number of compounding periods per year.

Compounding period	Final value, $F = P(1+i)^t$, where i is the interest rate for a given compounding period and t is the number of compounding periods per year. Calculate F correct to 8 decimal places.
Yearly $i = 1$	$F = 1(1+1)^1 = 2$
Every 6 mths. $i = \frac{1}{2}$	$F = 1\left(1+\frac{1}{2}\right)^2 = 2.25$
Every 3 mths. $i =$	
Every mth. $i =$	
Every week. $i =$	
Every day. $i =$	
Every hour. $i =$	
Every minute. $i =$	
Every second. $i =$	

What if the compounding period was 1 millisecond (10^{-3} s), 1 microsecond (10^{-6} s) or 1 nanosecond (10^{-9} s)? What difference would it make?

Will F ever reach 3? How about 2.8?