



Problem of the Week

Problem D

The Power of Five

The number N is the product of the first 1000 positive integers and can be written as $1000!$. We say, "1000 *factorial*." That is,

$$N = 1000! = 1000 \times 999 \times 998 \times 997 \times \cdots \times 3 \times 2 \times 1.$$

N is divisible by 5, 25, 125, 625, \cdots . Each of these factors is a power of 5. That is, $5 = 5^1$, $25 = 5^2$, $125 = 5^3$, $625 = 5^4$, and so on.

Determine the largest power of 5 that divides N .

