



Problem of the Week Grade 11 and 12

Powerful Factors at Work

The product of the integers 1 to 64 can be written in an abbreviated form as $64!$ and we say 64 *factorial*. So $64! = 64 \times 63 \times 62 \times \cdots \times 3 \times 2 \times 1$.

In general, the product of the positive integers 1 to n is

$$n! = n \times (n - 1) \times (n - 2) \times \cdots \times 3 \times 2 \times 1.$$

Determine the largest positive integer value of n so that $64!$ is divisible by 12^n .

