

For a positive integer n , define $\phi(n)$ to be the product of the odd positive integers less than or equal to n . For example

$$\phi(11) = 11 \cdot 9 \cdot 7 \cdot 5 \cdot 3 \cdot 1 = \phi(12).$$

For how many positive integers $n \leq 10^9$ is $\phi(n) - 1$ a multiple of n ?