# # Euler’s Totient Function

How many numbers are there from 1 to N, whose gcd with N is 1.

1. g:- N=4, There are two numbers- 1,3 whose gcd with 4 is 1.



The formula basically says that the value of  is equal to n multiplied by product of (1 – 1/p) for all prime factors p of n.

For example value of ϕ(6) = 6 \* (1-1/2) \* (1 – 1/3) = 2.

Algo:-

1. Say result = n;
2. If prime less than sqrt(n) divides n, divide all factors of this prime from this number.
3. If p divides n, then  is same as . So first divide result by p and then multiply by p-1 .
4. After loop of sqrt(n) , if n>1 then n must be a prime number that is a factor of n. So this must be included in result.



**Time Complexity**: sqrt(n).