

# Basic Maths for DSA

---

---

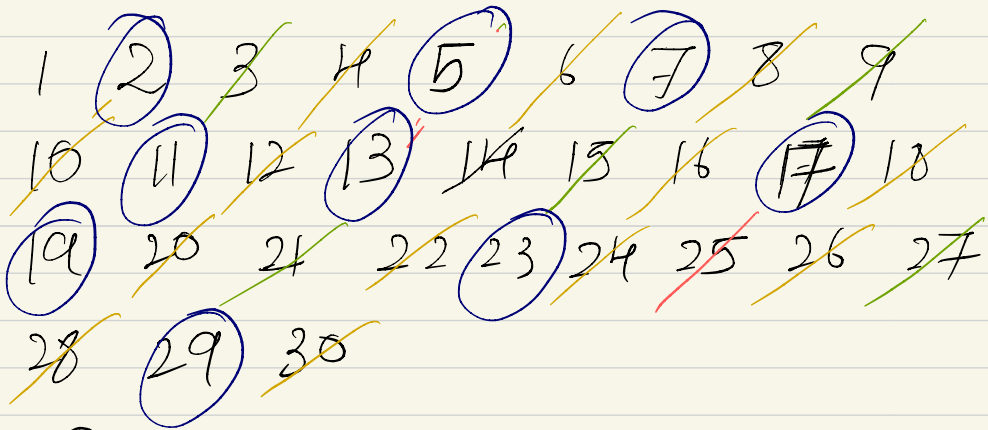
---

---



# Sieve of Eratosthenes

Algo if  $n=30$



- ① Mark Every number as prime
- ② Mark 0 & 1 not prime
- ③ Mark Tabewise Non-prime  
↳ starts from  $i \neq 0$

$$\boxed{GCD = HCF}$$

Euclid's algorithm

$$GCD(a, b) = GCD(a-b, b)$$

eg  $\overset{a}{12}, \overset{b}{8}$

$$GCD(12-8, 8)$$

$$GCD(4, 8)$$

$$GCD(8-4, 4)$$

$$GCD(4, 4)$$

$$GCD(0, 4)$$

→ stop

greater

smaller

For Modulo do

$$(a+b) \cdot / \cdot M = \left[ a \cdot / \cdot M + b \cdot / \cdot M \right] \cdot / \cdot M$$

$$(a * b) \cdot / \cdot M = (a \cdot / \cdot M) * (b \cdot / \cdot M)$$

$$(a/b) \cdot / \cdot M \Rightarrow \underline{\text{code force}}$$

Fast Exponential

$$\begin{aligned} a^b &= \\ &\hookrightarrow (a^{b/2})^2 \\ &\hookrightarrow (a^{b/4})^2 \\ &\hookrightarrow (a^{b/8})^2 \end{aligned}$$