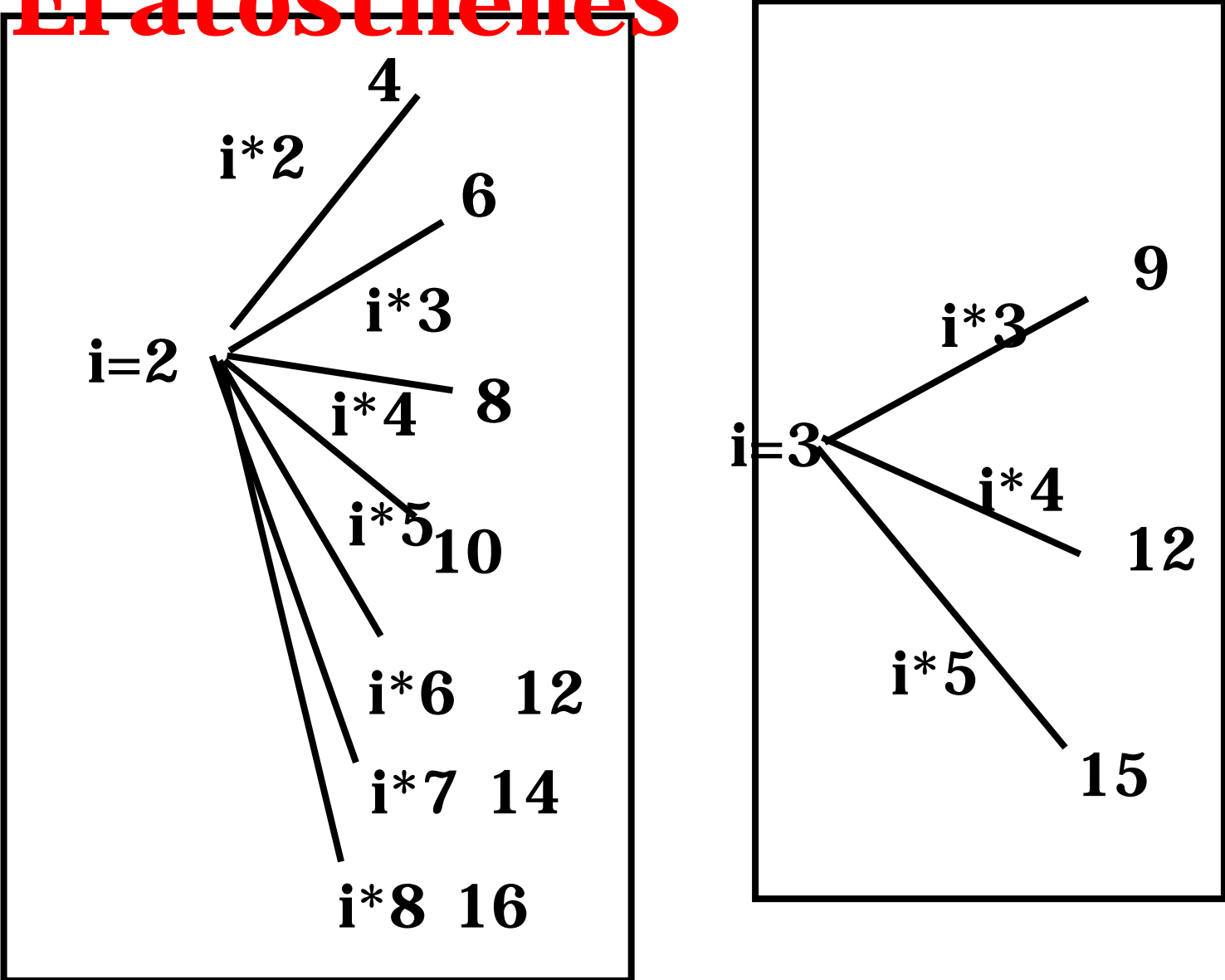


Sieve Of Eratosthenes

	max = 16																
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
i = 2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
i = 3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
i = 4	Four is crossed. Stop																
	1, 2, 3, 5, 7, 11, 13																

```
void SieveOfEratosthenes() {
    boolean [] a = new boolean[n + 1] ;
    for (int i = 0; i <= n; ++i) {
        a[i] = true ;
    }
    a[0] = false ;
    a[1] = false ;

    for (int i = 2; (i <= SQRT(n) ; ++i) {
        if (a[i] == true) {
            //WRITE CODE
        }
    }
}
```



Work done

$$\left\lceil \frac{n}{2} + \frac{n}{3} + \frac{n}{5} + \frac{n}{7} \right\rceil$$

(note no work done for 4, 6 ...)

$$\sum_{p \text{ prime}} \frac{1}{p} = \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \frac{1}{11} + \frac{1}{13} + \frac{1}{17} + \dots = \infty$$

$$\sum_{\substack{p \text{ prime} \\ p \leq n}} \frac{1}{p} \geq \log \log (n + 1) - \log \frac{\pi^2}{6}$$

This was proved by Leonhard Euler in 1737.

$$n * \left[\frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \frac{1}{11} + \frac{1}{13} + \frac{1}{17} + \dots \right]$$

$$n * \left[\log \log n \right]$$

O(n * log(log n))