```
A prime number is a natural number greater than 1 that has
             no positive divisors other than 1 and itself (2, 3, 5, 7, 11, 13, 17, 19, 23)

olean isPrimeBruteForce(int n) {

private boolean isPrimeUptoSquareRoot(int n) {
private boolean isPrimeBruteForce(int n) {
                                                              If n is factorisable
  for (int i = 2; i < n; ++i) {
                                                                     n = r * q
    ++steps ;
if (n % i == 0) {
                                                                 r or q must be <= SQRT(n)
      return false;
                                                               n SQRT(n) (r * q)
                                    O(n)
                                                                                (5 * 5)
  return true ;
                                                                     4.2
                                                              18
                                                              24
                                                                  4.8
public void bruteForce() {
                                                            public void uptoSquareRoot() {
   for (int i = 2; i <= max ; ++i) {
    if (isPrimeUptoSquareRoot(i) == true) {</pre>
   for (int i = 2; i <= max; ++i) {
     if (isPrimeBruteForce(i) == true) {
       p[pkount++] = i;
                                                                      p[pkount++] = i ;
                                                                   }
  }
    public void uptoPrimeNumbers() {
                                                             Note this
      int pkount = 0;
      p[pkount++] = 2;
      for (int i = 3; i <= max; ++i) {

boolean divisible = false;

for (int k = 0; (p[k] * p[k] <=
        if (divisible == false) {
           p[pkount++] = i;
```

Figure 2.24: Three algorithms for genearting prime numbers

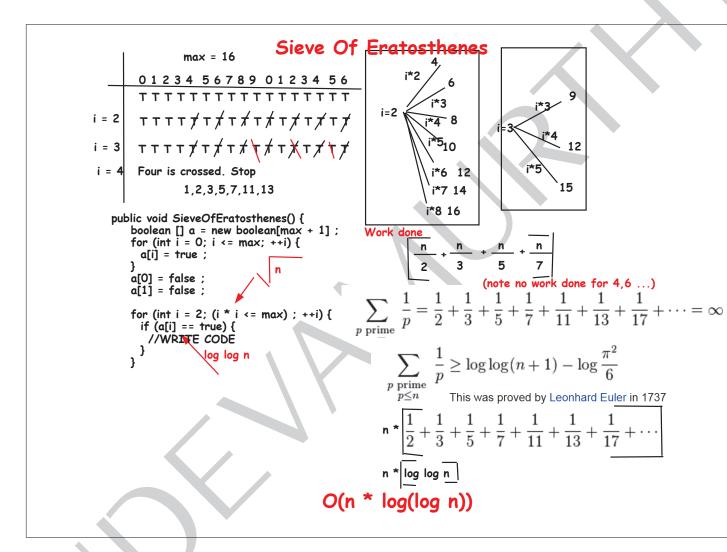


Figure 2.25: Sieve of Eratosthenes algorithm

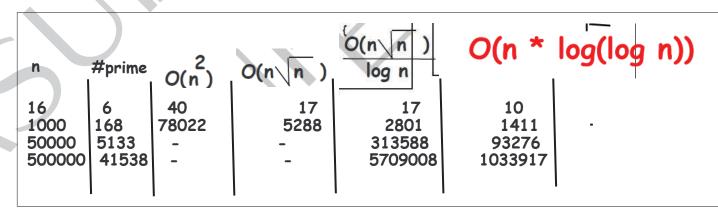


Figure 2.26: Number of steps with all the four methods