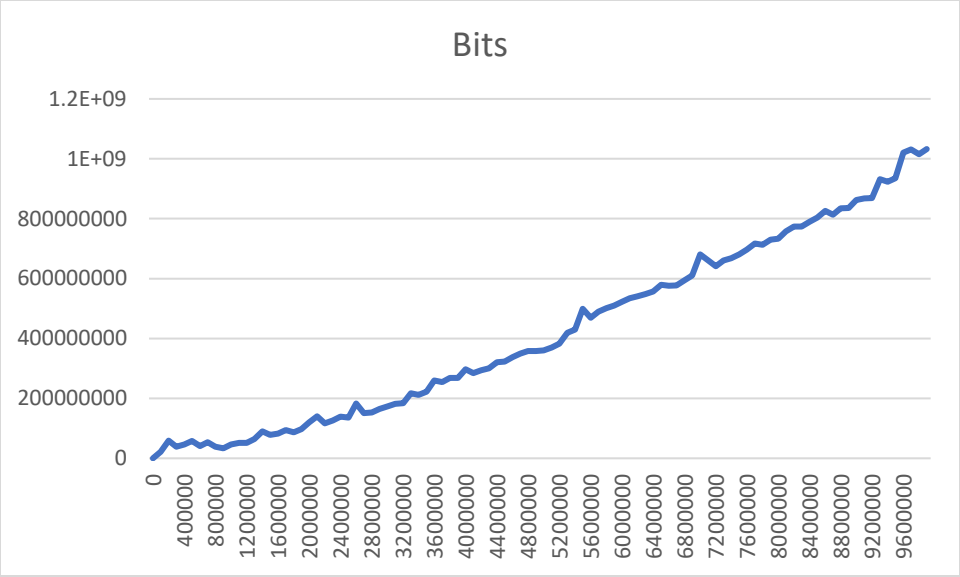
BigInteger Lab

```
14      for (int i = 0; i <= 100000000; i += 100000) {
15          BigInteger a = new BigInteger(i, random);
16          BigInteger b = new BigInteger(i, random);
17          long startTime = System.nanoTime();
18          a.multiply(b);
19          long endTime   = System.nanoTime();
20          long totalTime = endTime - startTime;
21          System.out.println(i+";"+totalTime);
22      }
```

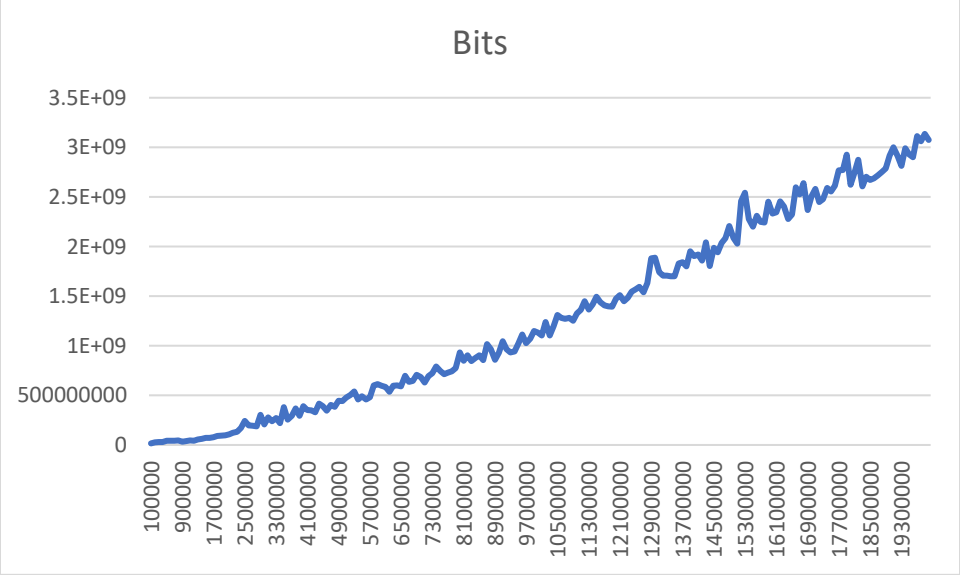
```
24      for (int i = 100000; i <= 100000000; i += 100000) {
25          BigInteger a = new BigInteger(i, random);
26          BigInteger b = new BigInteger(i/2, random);
27          long startTime = System.nanoTime();
28          a.divide(b);
29          long endTime   = System.nanoTime();
30          long totalTime = endTime - startTime;
31          System.out.println(i+";"+totalTime);
32      }
```

This is the code for the multiplication and division respectively. It iterates the number of bits in the BigInteger by increments of 100,000 so it doesn't run for days.

Multiply


Bits
1.2E+09
1E+09
800000000
600000000
400000000
200000000
0
0
400000
800000
1200000
1600000
2000000
2400000
2800000
3200000
3600000
4000000
4400000
4800000
5200000
5600000
6000000
6400000
6800000
7200000
7600000
8000000
8400000
8800000
9200000
9600000

Divide


Bits
3.5E+09
3E+09
2.5E+09
2E+09
1.5E+09
1E+09
500000000
0
100000
900000
1700000
2500000
3300000
4100000
4900000
5700000
6500000
7300000
8100000
8900000
9700000
10500000
11300000
12100000
12900000
13700000
14500000
15300000
16100000
16900000
17700000
18500000
19300000