A -27797772040142849 6472173 \* 2^32 (27797771369054208) + 671088641

B 4548762148012033

ax 6472173; 671088641

bx 1059091; 939524097

sieve:

Row 0: 1595; 4147337623; 1415787; 3630350829

Row 1: 165482; 4161808659; 146800640; 1610612737

|  |  |  |  |
| --- | --- | --- | --- |
| B | 1059091 | 939524097 | A |
| 1595 | 1595 | 1415787 | 6472173 |
| 4147337623 | 3630350829 |
| 4,148,918,892 | 165482 | 146800640 | 671088641 |
| 4161808659 | 1610612737 |
|  | 7,938,960,128 | 1610612737 |  |

J0, I0 0

J0, I1 1

J1, I0 1

J1, I1 2

// 0, 1, 1, 2

// 1, 2, 2, 3

1,595 \* 2^96

4,148,918,892 \* 2^64

7,938,960,128 \* 2^32

1,610,612,737

29,422,556,797,566,734,827,520

X

X

1,610,612,737

1.2644545325526901863503869090202e+32

Each digit is a 32-bit integer. When multiplying a 32-bit value by another 32-bit value, a 32-bit result and a 32-bit carry is produced.

2^32 = 4,294,967,296

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | C0, Hi | C0, Lo | C1, Hi | C1, Lo |
| R0 | 1595 | 4147337623 | 1415787 | 3630350829 |
| R1 | 165482 | 4161808659 | 146800640 | 1610612737 |

Result

|  |  |  |  |
| --- | --- | --- | --- |
| 96 | 64 | 32 | 1 |
| R0, C0-Hi | R1, Co Hi | R1, C0-Lo | R1, C1-Lo |
|  | R0, C0-Lo | R1, C1-Hi |  |
|  | R0, C1-Hi | R0, C1-Lo |  |

1’s R1, C1

Lo => 1’s 3

+1 Hi => 32’s 2

+1 R1, C0

Lo => 32’s 2

+1 Hi => 64’s 1

32’s R0, C1

Lo => 32’s 2

+1 Hi => 64’s 1

+ 1 R0, C0

Lo => 64’s 1

+1 Hi => 96’s 0

Process Rows and Columns from Last to first,

The first row starts with the 1’s

Each successive row increases the starting place (32’s, 64’s, etc.)

Each successive column increases the current place (32’s, 64’s, etc.)

The carry (i.e., Hi part) gets added to the current place + 1

|  |  |  |  |
| --- | --- | --- | --- |
| B | 1059091 | 939524097 | A |
| 1595 | 1595 | 1415787 | 6472173 |
| 4147337623 | 3630350829 |
| 4,148,918,892 | 165482 | 146800640 | 671088641 |
| 4161808659 | 1610612737 |
| 7,938,960,128 | 0 | 1155346202624 | 1234 |
| 1306918294 | 4026533074 |
|  | 1158263733655 | 4026533074 |  |

J0, I0 0

J0, I1 1

J0, I2 -> 2

J1, I0 1

J1, I1 2

J1, I2 -> 3

J2, I0 -> 2;

J2, I1 -> 3

J2, I2 -> 4

|  |  |  |  |
| --- | --- | --- | --- |
| 5 | 5 | 4 | 3 |
| 4 | 3 | 2 |
| 4 | 4 | 3 | 2 |
| 3 | 2 | 1 |
| 3 | 3 | 2 | 1 |
| 2 | 1 | 0 |
|  | 2 | 1 | 0 |

// 0, 1, 2, 1, 2, 3, 2, 3, 4

// 1, 2, 3, 2, 3, 4, 3, 4, 5

-

269 \* 2^32 = 1155346202624

= 4026533074

1,595 \* 2^96 1.2636891921025161846170260078592e+32

4,148,918,892 \* 2^64 76,534,044,983,302,599,220,471,529,472

7,938,960,128 \* 2^32 34,097,574,114,007,973,888

1,610,612,737 1,610,612,737

-0.00602768096723593793141715568851

\*

9.8635556059889517056815666506964e-4

=

-5.9454366395492942314714087867387e-6

-5.9454366395492942314714087867387e-6

-12644545325526901863503869e7 0902017

-5.945436639549294231471408 744326e-6

0.0000000000353482168348952044200646458987885

-0.00000594543663954929423147140839279151

3.5348216834895204420064636160963e-11

-0.000005945436639549294231471408 39279151

-0.00000594543663954929423147140839279151

-0.00000594543663954929423147140839279151

-0.00000594543663954929423147140839279151