Liars in the Miller-Rabin primality test

ARJUN YADAV

arjun@arjunyadav.net

Abstract

The Miller-Rabin primality test requires at least one witness to determine if any odd integer $n > 2$ is prime or not. This paper presents and explores the witnesses that lie the most in some range. When we consider three or four witnesses, all the top 500 worst witnesses in our ranges contain a zero. Zero also tends to be one of the worst witnesses when standing alone as a single witness or with another integer as two witnesses. The full results can be found as ancillary files on arXiv and in this paper's appendix. The code used, as well as the full results, can be found on GitHub.

I. INTRODUCTION

THE Miller-Rabin primality test was derived by Gary L. Miller and became a probabilistic primality test with Michael O. Rabin's "Probabilistic algorithm for testing primality" *[1]*.

In this algorithm, we take any odd integer $n > 2$ and re-write n in the form $2^s \cdot d + 1$ (where s, d are positive integers and d is odd).

At this stage of the algorithm, we have to call one or more witnesses. We take one of those witnesses a where $0 < a < n$ and if any one of the following hold, then n is said to be a strong probable prime:

$$a \equiv 1 \pmod{n}$$
$$a^{2^r \cdot d} \equiv -1 \pmod{n} \text{ [for some } 0 \leq r < s]$$

We'll be focusing on the first relation for the remainder of this paper.

A property worth noting about the Miller-Rabin primality test is that **if any one of the witnesses a does not hold true, then we can say with certainty that the number n inputted is composite, and if all witnesses a hold true,** then **we can say that n is a strong probable prime** (with the accuracy depending on the number of cycles k and the choice of witnesses $[a_1, a_2, a_3, ...]$).

II. CODE AND SUPPORTING MULTIPLE WITNESSES

Algorithm 1 Base Miller-Rabin primality test (supports a custom witness) *[2]*

$n \leftarrow$ Odd integer $n > 2$ to be tested.
$k \leftarrow$ Number of cycles that determines the accuracy of the test.
$a \leftarrow$ The custom witness.
do
    Write $n - 1$ as $2^s \cdot d$ with d being odd by factoring powers of two from $n - 1$.
    repeat k **times** - (1):
        $x \leftarrow a^d \pmod{n}$
        if $x = 1$ **or** $x = n - 1$ **then do next** (1)
        repeat $s - 1$ **times**:
            $x \leftarrow x^2 \pmod{n}$
            if $x = 1$ **then return** *composite*
            else if $x = n - 1$ **then do next** (1)
        return *composite*
    return *probably prime*

To support multiple witnesses, we can loop through all inputted witnesses $[a_1, a_2, a_3, ...]$, take a_1, input it into the base Miller-Rabin primality test that supports a custom witness, store the result and repeat this process for the next witness a_2 and so forth till we reach the end of the list $[a_1, a_2, a_3, ...]$.

With these results, we can use the property we noted earlier and **return** *composite* **if any one of the results returns** *composite* **and** *probably prime* **if all results return** *probably prime*.

Note that for the following pseudo code and for the results, the number of cycles k used in the base Miller-Rabin primality test function is ten.

Algorithm 2 Supporting multiple witnesses in the Miller-Rabin primality test *[3]*

$n \leftarrow$ Odd integer $n > 2$ to be tested.
$[a_1, a_2, a_3, ...] \leftarrow$ The array of custom witnesses.
Using a predefined base Miller-Rabin primality test function.
do
  Define an array called *results*.
  for a **in** $[a_1, a_2, a_3]$:
    results $\leftarrow$ Result of base Miller-Rabin primality test function with custom witness a.
    if *composite* **in** *results* **then**
      return *composite*
  return *probably prime*

III. ANALYSING THE RESULTS

i. Single witness

For the single witness results, we can see that **one is the worst liar for** $0 \leq n < 99$ **and zero is the worst liar for the remaining ranges**.

We can also observe that **even numbers and composite numbers tend to be some of the**

worst witnesses (see below pie charts).
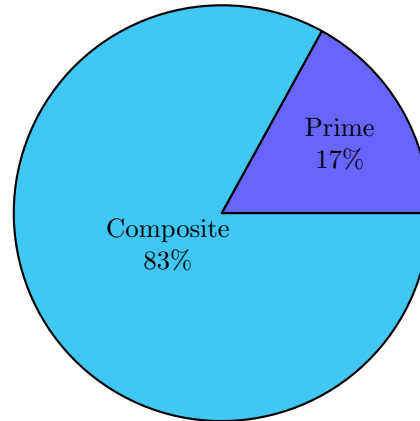
Figure 1: *Distribution of top 100 worst witnesses on primality ($0 \leq n < 999$)*
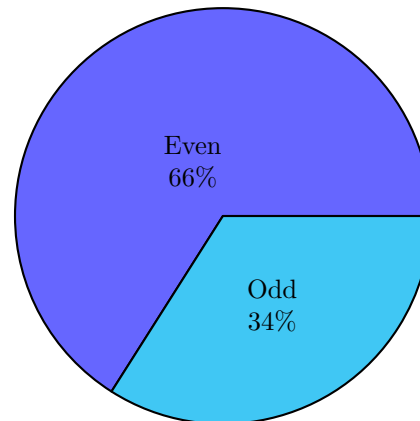
Figure 2: *Distribution of top 100 worst witnesses on parity ($0 \leq n < 999$)*

ii. Multiple witnesses

For this paper, **we analyzed two, three and four witnesses** using the itertools library for Python 3 *[4]*. However, **due to computational limitations, the results are quite predictable and repetitive**. Thus, we are analyzing the two, three and four witnesses results together.

In general, **zero is always present at least once in all the top 500 results for three and four witnesses**, it also occurs quite heavily in the two witnesses results. This is due to zero being coupled with every other possible witness in the given range.

IV.   Conclusions and Acknowledgements

This concludes our research on the worst witnesses in the Miller-Rabin primality test. Further research may return more exhaustive results and we encourage others with more computational power to find out more results in other ranges, possibly in more groups of witnesses (five, six, or more).

This research was inspired by Numberphile's video, "Witness Numbers (and the truthful 1,662,803)" featuring Matt Parker and Brady Haran *[5]*. This paper was reviewed by Devang Jhabakh Jai and Rikhav Shah, an undergraduate and graduate student respectively at the University of California, Berkeley and endorsed by Raghavendra N. Bhat, who recently graduated from the University of Illinois Urbana-Champaign.

V.   Appendix

i.   Single witness

Table 1: Single witness results ($0 \leq n < 99$, top 99) *[3]*

Witness ($0 \leq n < 99$)	Number of lies
1	24
0	21
74	5

Continued on next page

Table 1: Single witness results ($0 \leq n < 99$, top 99) *[3]* (Continued)

76	5
82	5
38	4
62	4
68	4
79	4
18	3
22	3
26	3
29	3
31	3
34	3
43	3
44	3
46	3
47	3
53	3
57	3
64	3
67	3
69	3
80	3
83	3
86	3
89	3
91	3
92	3
94	3

Continued on next page

Table 1: Single witness results ($0 \leq n < 99$, top 99) [3] (Continued)

98	3
13	2
16	2
17	2
19	2
32	2
41	2
50	2
51	2
52	2
55	2
56	2
58	2
59	2
61	2
65	2
66	2
71	2
73	2
77	2
78	2
85	2
88	2
93	2
97	2
7	1
8	1
9	1

Table 1: Single witness results ($0 \leq n < 99$, top 99) [3] (Continued)

10	1
11	1
12	1
14	1
20	1
23	1
24	1
28	1
30	1
33	1
36	1
37	1
39	1
40	1
48	1
49	1
54	1
70	1
72	1
75	1
81	1
84	1
87	1
90	1
95	1
96	1
2	0
3	0

Table 1: Single witness results ($0 \leq n < 99$, top 99) [3] (Continued)

4	0
5	0
6	0
15	0
21	0
25	0
27	0
35	0
42	0
45	0
60	0
63	0

Table 2: Single witness results ($0 \leq n < 999$, top 99) [3]

Witness ($0 \leq n < 999$)	Number of lies
0	164
676	18
901	18
374	17
944	16
766	15
824	15
900	15
946	15
989	15
293	14

Table 2: Single witness results ($0 \leq n < 999$, top 99) [3] (Continued)

307	14
524	14
557	14
584	14
638	14
734	14
526	13
562	13
566	13
568	13
776	13
818	13
874	13
904	13
976	13
256	12
274	12
278	12
316	12
373	12
419	12
460	12
571	12
606	12
631	12
674	12
694	12
704	12

Table 2: Single witness results ($0 \leq n < 999$, top 99) [3] (Continued)

712	12
736	12
782	12
898	12
899	12
926	12
932	12
974	12
991	12
995	12
68	11
149	11
157	11
191	11
230	11
242	11
268	11
302	11
362	11
386	11
398	11
411	11
426	11
451	11
467	11
482	11
494	11
501	11

Table 2: Single witness results ($0 \leq n < 999$, top 99) [3] (Continued)

514	11
521	11
538	11
626	11
628	11
629	11
649	11
652	11
664	11
757	11
781	11
802	11
803	11
809	11
820	11
826	11
841	11
854	11
862	11
881	11
892	11
993	11
998	11
166	10
209	10
211	10
221	10
226	10

Table 2: Single witness results ($0 \leq n < 999$, top 99) [3] (Continued)

244	10
295	10
314	10
352	10

Table 3: Single witness results ($0 \leq n < 4999$, top 99) [3]

Witness ($0 \leq n < 4999$)	Number of lies
0	665
4096	70
256	39
4624	36
4724	36
1432	33
2474	33
4117	33
4952	33
1296	32
1451	32
1918	32
4562	32
3464	31
4124	31
4852	31
4951	31
2414	30
3194	30

Table 3: Single witness results ($0 \leq n < 4999$, top 99) [3] (Continued)

3449	30
4726	30
4913	30
1322	29
1576	29
1607	29
2393	29
2582	29
2834	29
3446	29
3466	29
4094	29
4274	29
4454	29
1303	28
1816	28
1844	28
2116	28
2789	28
2971	28
3149	28
3376	28
3536	28
3674	28
4330	28
901	27
1156	27
1207	27

Table 3: Single witness results ($0 \leq n < 4999$, top 99) [3] (Continued)

1979	27
2382	27
2729	27
2792	27
3044	27
3106	27
3136	27
3254	27
3314	27
3571	27
3656	27
3926	27
4079	27
4086	27
4232	27
4276	27
4346	27
4558	27
4747	27
4924	27
16	26
374	26
676	26
900	26
1174	26
1832	26
1889	26
2078	26

Continued on next page

Table 3: Single witness results ($0 \leq n < 4999$, top 99) [3] (Continued)

2174	26
2458	26
2536	26
2806	26
3526	26
3781	26
3826	26
4164	26
4589	26
4713	26
4749	26
4784	26
4934	26
874	25
1101	25
1568	25
1574	25
1699	25
1772	25
2267	25
2836	25
2876	25
2906	25
2974	25

ii.   Two witnesses

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3]

Witnesses ($0 \leq n < 99$)	Number of lies
(1, 1)	24
(0, 0)	21
(0, 1)	21
(0, 2)	21
(0, 3)	21
(0, 4)	21
(0, 5)	21
(0, 6)	21
(0, 7)	21
(0, 8)	21
(0, 9)	21
(0, 10)	21
(0, 11)	21
(0, 12)	21
(0, 13)	21
(0, 14)	21
(0, 15)	21
(0, 16)	21
(0, 17)	21
(0, 18)	21
(0, 19)	21
(0, 20)	21
(0, 21)	21
(0, 22)	21
(0, 23)	21
(0, 24)	21
(0, 25)	21

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(0, 26)	21
(0, 27)	21
(0, 28)	21
(0, 29)	21
(0, 30)	21
(0, 31)	21
(0, 32)	21
(0, 33)	21
(0, 34)	21
(0, 35)	21
(0, 36)	21
(0, 37)	21
(0, 38)	21
(0, 39)	21
(0, 40)	21
(0, 41)	21
(0, 42)	21
(0, 43)	21
(0, 44)	21
(0, 45)	21
(0, 46)	21
(0, 47)	21
(0, 48)	21
(0, 49)	21
(0, 50)	21
(0, 51)	21
(0, 52)	21
(0, 53)	21

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(0, 54)	21
(0, 55)	21
(0, 56)	21
(0, 57)	21
(0, 58)	21
(0, 59)	21
(0, 60)	21
(0, 61)	21
(0, 62)	21
(0, 63)	21
(0, 64)	21
(0, 65)	21
(0, 66)	21
(0, 67)	21
(0, 68)	21
(0, 69)	21
(0, 70)	21
(0, 71)	21
(0, 72)	21
(0, 73)	21
(0, 74)	21
(0, 75)	21
(0, 76)	21
(0, 77)	21
(0, 78)	21
(0, 79)	21
(0, 80)	21
(0, 81)	21

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(0, 82)	21
(0, 83)	21
(0, 84)	21
(0, 85)	21
(0, 86)	21
(0, 87)	21
(0, 88)	21
(0, 89)	21
(0, 90)	21
(0, 91)	21
(0, 92)	21
(0, 93)	21
(0, 94)	21
(0, 95)	21
(0, 96)	21
(0, 97)	21
(0, 98)	21
(1, 0)	21
(2, 0)	21
(3, 0)	21
(4, 0)	21
(5, 0)	21
(6, 0)	21
(7, 0)	21
(8, 0)	21
(9, 0)	21
(10, 0)	21
(11, 0)	21

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(12, 0)	21
(13, 0)	21
(14, 0)	21
(15, 0)	21
(16, 0)	21
(17, 0)	21
(18, 0)	21
(19, 0)	21
(20, 0)	21
(21, 0)	21
(22, 0)	21
(23, 0)	21
(24, 0)	21
(25, 0)	21
(26, 0)	21
(27, 0)	21
(28, 0)	21
(29, 0)	21
(30, 0)	21
(31, 0)	21
(32, 0)	21
(33, 0)	21
(34, 0)	21
(35, 0)	21
(36, 0)	21
(37, 0)	21
(38, 0)	21
(39, 0)	21

(40, 0)	21
(41, 0)	21
(42, 0)	21
(43, 0)	21
(44, 0)	21
(45, 0)	21
(46, 0)	21
(47, 0)	21
(48, 0)	21
(49, 0)	21
(50, 0)	21
(51, 0)	21
(52, 0)	21
(53, 0)	21
(54, 0)	21
(55, 0)	21
(56, 0)	21
(57, 0)	21
(58, 0)	21
(59, 0)	21
(60, 0)	21
(61, 0)	21
(62, 0)	21
(63, 0)	21
(64, 0)	21
(65, 0)	21
(66, 0)	21
(67, 0)	21

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) *[3]* (Continued)

(68, 0)	21
(69, 0)	21
(70, 0)	21
(71, 0)	21
(72, 0)	21
(73, 0)	21
(74, 0)	21
(75, 0)	21
(76, 0)	21
(77, 0)	21
(78, 0)	21
(79, 0)	21
(80, 0)	21
(81, 0)	21
(82, 0)	21
(83, 0)	21
(84, 0)	21
(85, 0)	21
(86, 0)	21
(87, 0)	21
(88, 0)	21
(89, 0)	21
(90, 0)	21
(91, 0)	21
(92, 0)	21
(93, 0)	21
(94, 0)	21
(95, 0)	21

(96, 0)	21
(97, 0)	21
(98, 0)	21
(1, 74)	5
(1, 76)	5
(1, 82)	5
(74, 1)	5
(74, 74)	5
(74, 76)	5
(76, 1)	5
(76, 74)	5
(76, 76)	5
(82, 1)	5
(82, 82)	5
(1, 38)	4
(1, 62)	4
(1, 68)	4
(1, 79)	4
(22, 62)	4
(26, 82)	4
(29, 74)	4
(38, 1)	4
(38, 38)	4
(38, 79)	4
(44, 46)	4
(44, 89)	4
(44, 91)	4
(46, 44)	4

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(46, 89)	4
(46, 91)	4
(53, 82)	4
(62, 1)	4
(62, 22)	4
(62, 62)	4
(68, 1)	4
(68, 68)	4
(74, 29)	4
(74, 82)	4
(79, 1)	4
(79, 38)	4
(79, 79)	4
(82, 26)	4
(82, 53)	4
(82, 74)	4
(89, 44)	4
(89, 46)	4
(89, 91)	4
(91, 44)	4
(91, 46)	4
(91, 89)	4
(1, 18)	3
(1, 22)	3
(1, 26)	3
(1, 29)	3
(1, 31)	3
(1, 34)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(1, 43)	3
(1, 44)	3
(1, 46)	3
(1, 47)	3
(1, 53)	3
(1, 57)	3
(1, 64)	3
(1, 67)	3
(1, 69)	3
(1, 80)	3
(1, 83)	3
(1, 86)	3
(1, 89)	3
(1, 91)	3
(1, 92)	3
(1, 94)	3
(1, 98)	3
(13, 38)	3
(13, 47)	3
(13, 86)	3
(16, 29)	3
(16, 74)	3
(17, 22)	3
(17, 29)	3
(17, 38)	3
(17, 53)	3
(17, 62)	3
(17, 69)	3

Table 4: Two witnesses results ($0 \le n < 99$, top 500) [3] (Continued)

(17, 74)	3
(17, 79)	3
(17, 82)	3
(17, 92)	3
(18, 1)	3
(18, 18)	3
(18, 57)	3
(18, 68)	3
(19, 31)	3
(19, 67)	3
(19, 68)	3
(19, 79)	3
(19, 97)	3
(22, 1)	3
(22, 17)	3
(22, 22)	3
(22, 29)	3
(22, 38)	3
(22, 41)	3
(22, 43)	3
(22, 53)	3
(22, 69)	3
(22, 74)	3
(22, 79)	3
(22, 82)	3
(22, 83)	3
(22, 85)	3
(22, 92)	3

(26, 1)	3
(26, 26)	3
(26, 43)	3
(26, 51)	3
(26, 53)	3
(26, 55)	3
(26, 57)	3
(26, 68)	3
(26, 74)	3
(26, 76)	3
(26, 93)	3
(29, 1)	3
(29, 16)	3
(29, 17)	3
(29, 22)	3
(29, 29)	3
(29, 31)	3
(29, 38)	3
(29, 44)	3
(29, 46)	3
(29, 53)	3
(29, 59)	3
(29, 61)	3
(29, 62)	3
(29, 69)	3
(29, 76)	3
(29, 79)	3
(29, 82)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(29, 89)	3
(29, 91)	3
(29, 92)	3
(31, 1)	3
(31, 19)	3
(31, 29)	3
(31, 31)	3
(31, 44)	3
(31, 46)	3
(31, 59)	3
(31, 61)	3
(31, 67)	3
(31, 68)	3
(31, 74)	3
(31, 76)	3
(31, 79)	3
(31, 89)	3
(31, 91)	3
(31, 97)	3
(34, 1)	3
(34, 34)	3
(34, 65)	3
(34, 67)	3
(34, 69)	3
(34, 71)	3
(38, 13)	3
(38, 17)	3
(38, 22)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(38, 29)	3
(38, 47)	3
(38, 53)	3
(38, 62)	3
(38, 69)	3
(38, 74)	3
(38, 77)	3
(38, 82)	3
(38, 86)	3
(38, 92)	3
(41, 22)	3
(41, 43)	3
(41, 62)	3
(41, 83)	3
(41, 85)	3
(43, 1)	3
(43, 22)	3
(43, 26)	3
(43, 41)	3
(43, 43)	3
(43, 51)	3
(43, 57)	3
(43, 62)	3
(43, 68)	3
(43, 74)	3
(43, 76)	3
(43, 82)	3
(43, 83)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(43, 85)	3
(43, 93)	3
(44, 1)	3
(44, 29)	3
(44, 31)	3
(44, 44)	3
(44, 59)	3
(44, 61)	3
(44, 74)	3
(44, 76)	3
(46, 1)	3
(46, 29)	3
(46, 31)	3
(46, 46)	3
(46, 59)	3
(46, 61)	3
(46, 74)	3
(46, 76)	3
(47, 1)	3
(47, 13)	3
(47, 38)	3
(47, 47)	3
(47, 57)	3
(47, 66)	3
(47, 73)	3
(47, 83)	3
(47, 86)	3
(51, 26)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(51, 43)	3
(51, 57)	3
(51, 74)	3
(51, 76)	3
(51, 82)	3
(51, 93)	3
(53, 1)	3
(53, 17)	3
(53, 22)	3
(53, 26)	3
(53, 29)	3
(53, 38)	3
(53, 53)	3
(53, 55)	3
(53, 62)	3
(53, 69)	3
(53, 74)	3
(53, 79)	3
(53, 92)	3
(55, 26)	3
(55, 53)	3
(55, 82)	3
(57, 1)	3
(57, 18)	3
(57, 26)	3
(57, 43)	3
(57, 47)	3
(57, 51)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(57, 57)	3
(57, 66)	3
(57, 68)	3
(57, 73)	3
(57, 74)	3
(57, 82)	3
(57, 83)	3
(57, 93)	3
(59, 29)	3
(59, 31)	3
(59, 44)	3
(59, 46)	3
(59, 61)	3
(59, 74)	3
(59, 76)	3
(59, 89)	3
(59, 91)	3
(61, 29)	3
(61, 31)	3
(61, 44)	3
(61, 46)	3
(61, 59)	3
(61, 74)	3
(61, 76)	3
(61, 89)	3
(61, 91)	3
(62, 17)	3
(62, 29)	3

Table 4: Two witnesses results ($0 \leq n < 99$, top 500) [3] (Continued)

(62, 38)	3
(62, 41)	3
(62, 43)	3
(62, 53)	3
(62, 64)	3
(62, 69)	3
(62, 74)	3
(62, 79)	3
(62, 82)	3
(62, 83)	3
(62, 85)	3
(62, 92)	3
(64, 1)	3
(64, 62)	3
(64, 64)	3
(64, 83)	3
(65, 34)	3
(65, 67)	3
(66, 47)	3
(66, 57)	3
(66, 73)	3
(66, 83)	3
(67, 1)	3
(67, 19)	3
(67, 31)	3

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3]

Witnesses ($0 \leq n < 199$)	Number of lies
(1, 1)	53
(0, 0)	42
(0, 1)	42
(0, 2)	42
(0, 3)	42
(0, 4)	42
(0, 5)	42
(0, 6)	42
(0, 7)	42
(0, 8)	42
(0, 9)	42
(0, 10)	42
(0, 11)	42
(0, 12)	42
(0, 13)	42
(0, 14)	42
(0, 15)	42
(0, 16)	42
(0, 17)	42
(0, 18)	42
(0, 19)	42
(0, 20)	42
(0, 21)	42
(0, 22)	42
(0, 23)	42
(0, 24)	42
(0, 25)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(0, 26)	42
(0, 27)	42
(0, 28)	42
(0, 29)	42
(0, 30)	42
(0, 31)	42
(0, 32)	42
(0, 33)	42
(0, 34)	42
(0, 35)	42
(0, 36)	42
(0, 37)	42
(0, 38)	42
(0, 39)	42
(0, 40)	42
(0, 41)	42
(0, 42)	42
(0, 43)	42
(0, 44)	42
(0, 45)	42
(0, 46)	42
(0, 47)	42
(0, 48)	42
(0, 49)	42
(0, 50)	42
(0, 51)	42
(0, 52)	42
(0, 53)	42

Table 5: Two witnesses results ($0 \le n < 199$, top 500) [3] (Continued)

(0, 54)	42
(0, 55)	42
(0, 56)	42
(0, 57)	42
(0, 58)	42
(0, 59)	42
(0, 60)	42
(0, 61)	42
(0, 62)	42
(0, 63)	42
(0, 64)	42
(0, 65)	42
(0, 66)	42
(0, 67)	42
(0, 68)	42
(0, 69)	42
(0, 70)	42
(0, 71)	42
(0, 72)	42
(0, 73)	42
(0, 74)	42
(0, 75)	42
(0, 76)	42
(0, 77)	42
(0, 78)	42
(0, 79)	42
(0, 80)	42
(0, 81)	42

(0, 82)	42
(0, 83)	42
(0, 84)	42
(0, 85)	42
(0, 86)	42
(0, 87)	42
(0, 88)	42
(0, 89)	42
(0, 90)	42
(0, 91)	42
(0, 92)	42
(0, 93)	42
(0, 94)	42
(0, 95)	42
(0, 96)	42
(0, 97)	42
(0, 98)	42
(0, 99)	42
(0, 100)	42
(0, 101)	42
(0, 102)	42
(0, 103)	42
(0, 104)	42
(0, 105)	42
(0, 106)	42
(0, 107)	42
(0, 108)	42
(0, 109)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(0, 110)	42
(0, 111)	42
(0, 112)	42
(0, 113)	42
(0, 114)	42
(0, 115)	42
(0, 116)	42
(0, 117)	42
(0, 118)	42
(0, 119)	42
(0, 120)	42
(0, 121)	42
(0, 122)	42
(0, 123)	42
(0, 124)	42
(0, 125)	42
(0, 126)	42
(0, 127)	42
(0, 128)	42
(0, 129)	42
(0, 130)	42
(0, 131)	42
(0, 132)	42
(0, 133)	42
(0, 134)	42
(0, 135)	42
(0, 136)	42
(0, 137)	42

(0, 138)	42
(0, 139)	42
(0, 140)	42
(0, 141)	42
(0, 142)	42
(0, 143)	42
(0, 144)	42
(0, 145)	42
(0, 146)	42
(0, 147)	42
(0, 148)	42
(0, 149)	42
(0, 150)	42
(0, 151)	42
(0, 152)	42
(0, 153)	42
(0, 154)	42
(0, 155)	42
(0, 156)	42
(0, 157)	42
(0, 158)	42
(0, 159)	42
(0, 160)	42
(0, 161)	42
(0, 162)	42
(0, 163)	42
(0, 164)	42
(0, 165)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(0, 166)	42
(0, 167)	42
(0, 168)	42
(0, 169)	42
(0, 170)	42
(0, 171)	42
(0, 172)	42
(0, 173)	42
(0, 174)	42
(0, 175)	42
(0, 176)	42
(0, 177)	42
(0, 178)	42
(0, 179)	42
(0, 180)	42
(0, 181)	42
(0, 182)	42
(0, 183)	42
(0, 184)	42
(0, 185)	42
(0, 186)	42
(0, 187)	42
(0, 188)	42
(0, 189)	42
(0, 190)	42
(0, 191)	42
(0, 192)	42
(0, 193)	42

Continued on next page

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(0, 194)	42
(0, 195)	42
(0, 196)	42
(0, 197)	42
(0, 198)	42
(1, 0)	42
(2, 0)	42
(3, 0)	42
(4, 0)	42
(5, 0)	42
(6, 0)	42
(7, 0)	42
(8, 0)	42
(9, 0)	42
(10, 0)	42
(11, 0)	42
(12, 0)	42
(13, 0)	42
(14, 0)	42
(15, 0)	42
(16, 0)	42
(17, 0)	42
(18, 0)	42
(19, 0)	42
(20, 0)	42
(21, 0)	42
(22, 0)	42
(23, 0)	42

Continued on next page

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(24, 0)	42
(25, 0)	42
(26, 0)	42
(27, 0)	42
(28, 0)	42
(29, 0)	42
(30, 0)	42
(31, 0)	42
(32, 0)	42
(33, 0)	42
(34, 0)	42
(35, 0)	42
(36, 0)	42
(37, 0)	42
(38, 0)	42
(39, 0)	42
(40, 0)	42
(41, 0)	42
(42, 0)	42
(43, 0)	42
(44, 0)	42
(45, 0)	42
(46, 0)	42
(47, 0)	42
(48, 0)	42
(49, 0)	42
(50, 0)	42
(51, 0)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(52, 0)	42
(53, 0)	42
(54, 0)	42
(55, 0)	42
(56, 0)	42
(57, 0)	42
(58, 0)	42
(59, 0)	42
(60, 0)	42
(61, 0)	42
(62, 0)	42
(63, 0)	42
(64, 0)	42
(65, 0)	42
(66, 0)	42
(67, 0)	42
(68, 0)	42
(69, 0)	42
(70, 0)	42
(71, 0)	42
(72, 0)	42
(73, 0)	42
(74, 0)	42
(75, 0)	42
(76, 0)	42
(77, 0)	42
(78, 0)	42
(79, 0)	42

Table 5: Two witnesses results ($0 \le n < 199$, top 500) [3] (Continued)

(80, 0)	42
(81, 0)	42
(82, 0)	42
(83, 0)	42
(84, 0)	42
(85, 0)	42
(86, 0)	42
(87, 0)	42
(88, 0)	42
(89, 0)	42
(90, 0)	42
(91, 0)	42
(92, 0)	42
(93, 0)	42
(94, 0)	42
(95, 0)	42
(96, 0)	42
(97, 0)	42
(98, 0)	42
(99, 0)	42
(100, 0)	42
(101, 0)	42
(102, 0)	42
(103, 0)	42
(104, 0)	42
(105, 0)	42
(106, 0)	42
(107, 0)	42

Table 5: Two witnesses results ($0 \le n < 199$, top 500) [3] (Continued)

(108, 0)	42
(109, 0)	42
(110, 0)	42
(111, 0)	42
(112, 0)	42
(113, 0)	42
(114, 0)	42
(115, 0)	42
(116, 0)	42
(117, 0)	42
(118, 0)	42
(119, 0)	42
(120, 0)	42
(121, 0)	42
(122, 0)	42
(123, 0)	42
(124, 0)	42
(125, 0)	42
(126, 0)	42
(127, 0)	42
(128, 0)	42
(129, 0)	42
(130, 0)	42
(131, 0)	42
(132, 0)	42
(133, 0)	42
(134, 0)	42
(135, 0)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(136, 0)	42
(137, 0)	42
(138, 0)	42
(139, 0)	42
(140, 0)	42
(141, 0)	42
(142, 0)	42
(143, 0)	42
(144, 0)	42
(145, 0)	42
(146, 0)	42
(147, 0)	42
(148, 0)	42
(149, 0)	42
(150, 0)	42
(151, 0)	42
(152, 0)	42
(153, 0)	42
(154, 0)	42
(155, 0)	42
(156, 0)	42
(157, 0)	42
(158, 0)	42
(159, 0)	42
(160, 0)	42
(161, 0)	42
(162, 0)	42
(163, 0)	42

(164, 0)	42
(165, 0)	42
(166, 0)	42
(167, 0)	42
(168, 0)	42
(169, 0)	42
(170, 0)	42
(171, 0)	42
(172, 0)	42
(173, 0)	42
(174, 0)	42
(175, 0)	42
(176, 0)	42
(177, 0)	42
(178, 0)	42
(179, 0)	42
(180, 0)	42
(181, 0)	42
(182, 0)	42
(183, 0)	42
(184, 0)	42
(185, 0)	42
(186, 0)	42
(187, 0)	42
(188, 0)	42
(189, 0)	42
(190, 0)	42
(191, 0)	42

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(192, 0)	42
(193, 0)	42
(194, 0)	42
(195, 0)	42
(196, 0)	42
(197, 0)	42
(198, 0)	42
(1, 166)	7
(1, 188)	7
(166, 1)	7
(166, 166)	7
(188, 1)	7
(188, 188)	7
(1, 68)	6
(1, 106)	6
(1, 118)	6
(1, 124)	6
(1, 134)	6
(1, 146)	6
(1, 148)	6
(1, 164)	6
(1, 194)	6
(68, 1)	6
(68, 68)	6
(104, 106)	6
(106, 1)	6
(106, 104)	6
(106, 106)	6

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(118, 1)	6
(118, 118)	6
(124, 1)	6
(124, 124)	6
(134, 1)	6
(134, 134)	6
(134, 136)	6
(136, 134)	6
(146, 1)	6
(146, 146)	6
(148, 1)	6
(148, 148)	6
(164, 1)	6
(164, 164)	6
(164, 166)	6
(166, 164)	6
(188, 190)	6
(190, 188)	6
(194, 1)	6
(194, 194)	6
(1, 74)	5
(1, 76)	5
(1, 82)	5
(1, 94)	5
(1, 104)	5
(1, 116)	5
(1, 122)	5
(1, 136)	5

Table 5: Two witnesses results ($0 \leq n < 199$, top 500) [3] (Continued)

(1, 151)	5
(1, 157)	5
(1, 170)	5
(1, 172)	5
(1, 176)	5
(1, 190)	5
(1, 191)	5
(1, 197)	5
(74, 1)	5
(74, 74)	5
(74, 76)	5
(74, 149)	5
(74, 151)	5
(76, 1)	5
(76, 74)	5
(76, 76)	5
(76, 149)	5
(76, 151)	5
(82, 1)	5
(82, 82)	5
(82, 107)	5
(94, 1)	5
(94, 94)	5
(104, 1)	5
(104, 104)	5
(107, 82)	5
(116, 1)	5
(116, 116)	5

(122, 1)	5
(122, 122)	5
(136, 1)	5
(136, 136)	5
(146, 148)	5
(148, 146)	5
(149, 74)	5
(149, 76)	5
(149, 151)	5
(151, 1)	5
(151, 74)	5
(151, 76)	5
(151, 149)	5
(151, 151)	5
(157, 1)	5
(157, 157)	5
(170, 1)	5
(170, 170)	5
(170, 172)	5
(172, 1)	5
(172, 170)	5
(172, 172)	5
(174, 176)	5
(176, 1)	5
(176, 174)	5

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3]

Witnesses ($0 \leq n < 299$)	Number of lies
(0, 0)	58
(0, 1)	58
(0, 2)	58
(0, 3)	58
(0, 4)	58
(0, 5)	58
(0, 6)	58
(0, 7)	58
(0, 8)	58
(0, 9)	58
(0, 10)	58
(0, 11)	58
(0, 12)	58
(0, 13)	58
(0, 14)	58
(0, 15)	58
(0, 16)	58
(0, 17)	58
(0, 18)	58
(0, 19)	58
(0, 20)	58
(0, 21)	58
(0, 22)	58
(0, 23)	58
(0, 24)	58
(0, 25)	58
(0, 26)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 27)	58
(0, 28)	58
(0, 29)	58
(0, 30)	58
(0, 31)	58
(0, 32)	58
(0, 33)	58
(0, 34)	58
(0, 35)	58
(0, 36)	58
(0, 37)	58
(0, 38)	58
(0, 39)	58
(0, 40)	58
(0, 41)	58
(0, 42)	58
(0, 43)	58
(0, 44)	58
(0, 45)	58
(0, 46)	58
(0, 47)	58
(0, 48)	58
(0, 49)	58
(0, 50)	58
(0, 51)	58
(0, 52)	58
(0, 53)	58
(0, 54)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 55)	58
(0, 56)	58
(0, 57)	58
(0, 58)	58
(0, 59)	58
(0, 60)	58
(0, 61)	58
(0, 62)	58
(0, 63)	58
(0, 64)	58
(0, 65)	58
(0, 66)	58
(0, 67)	58
(0, 68)	58
(0, 69)	58
(0, 70)	58
(0, 71)	58
(0, 72)	58
(0, 73)	58
(0, 74)	58
(0, 75)	58
(0, 76)	58
(0, 77)	58
(0, 78)	58
(0, 79)	58
(0, 80)	58
(0, 81)	58
(0, 82)	58

Continued on next page

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 83)	58
(0, 84)	58
(0, 85)	58
(0, 86)	58
(0, 87)	58
(0, 88)	58
(0, 89)	58
(0, 90)	58
(0, 91)	58
(0, 92)	58
(0, 93)	58
(0, 94)	58
(0, 95)	58
(0, 96)	58
(0, 97)	58
(0, 98)	58
(0, 99)	58
(0, 100)	58
(0, 101)	58
(0, 102)	58
(0, 103)	58
(0, 104)	58
(0, 105)	58
(0, 106)	58
(0, 107)	58
(0, 108)	58
(0, 109)	58
(0, 110)	58

Continued on next page

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 111)	58
(0, 112)	58
(0, 113)	58
(0, 114)	58
(0, 115)	58
(0, 116)	58
(0, 117)	58
(0, 118)	58
(0, 119)	58
(0, 120)	58
(0, 121)	58
(0, 122)	58
(0, 123)	58
(0, 124)	58
(0, 125)	58
(0, 126)	58
(0, 127)	58
(0, 128)	58
(0, 129)	58
(0, 130)	58
(0, 131)	58
(0, 132)	58
(0, 133)	58
(0, 134)	58
(0, 135)	58
(0, 136)	58
(0, 137)	58
(0, 138)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 139)	58
(0, 140)	58
(0, 141)	58
(0, 142)	58
(0, 143)	58
(0, 144)	58
(0, 145)	58
(0, 146)	58
(0, 147)	58
(0, 148)	58
(0, 149)	58
(0, 150)	58
(0, 151)	58
(0, 152)	58
(0, 153)	58
(0, 154)	58
(0, 155)	58
(0, 156)	58
(0, 157)	58
(0, 158)	58
(0, 159)	58
(0, 160)	58
(0, 161)	58
(0, 162)	58
(0, 163)	58
(0, 164)	58
(0, 165)	58
(0, 166)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 167)	58
(0, 168)	58
(0, 169)	58
(0, 170)	58
(0, 171)	58
(0, 172)	58
(0, 173)	58
(0, 174)	58
(0, 175)	58
(0, 176)	58
(0, 177)	58
(0, 178)	58
(0, 179)	58
(0, 180)	58
(0, 181)	58
(0, 182)	58
(0, 183)	58
(0, 184)	58
(0, 185)	58
(0, 186)	58
(0, 187)	58
(0, 188)	58
(0, 189)	58
(0, 190)	58
(0, 191)	58
(0, 192)	58
(0, 193)	58
(0, 194)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 195)	58
(0, 196)	58
(0, 197)	58
(0, 198)	58
(0, 199)	58
(0, 200)	58
(0, 201)	58
(0, 202)	58
(0, 203)	58
(0, 204)	58
(0, 205)	58
(0, 206)	58
(0, 207)	58
(0, 208)	58
(0, 209)	58
(0, 210)	58
(0, 211)	58
(0, 212)	58
(0, 213)	58
(0, 214)	58
(0, 215)	58
(0, 216)	58
(0, 217)	58
(0, 218)	58
(0, 219)	58
(0, 220)	58
(0, 221)	58
(0, 222)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 223)	58
(0, 224)	58
(0, 225)	58
(0, 226)	58
(0, 227)	58
(0, 228)	58
(0, 229)	58
(0, 230)	58
(0, 231)	58
(0, 232)	58
(0, 233)	58
(0, 234)	58
(0, 235)	58
(0, 236)	58
(0, 237)	58
(0, 238)	58
(0, 239)	58
(0, 240)	58
(0, 241)	58
(0, 242)	58
(0, 243)	58
(0, 244)	58
(0, 245)	58
(0, 246)	58
(0, 247)	58
(0, 248)	58
(0, 249)	58
(0, 250)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 251)	58
(0, 252)	58
(0, 253)	58
(0, 254)	58
(0, 255)	58
(0, 256)	58
(0, 257)	58
(0, 258)	58
(0, 259)	58
(0, 260)	58
(0, 261)	58
(0, 262)	58
(0, 263)	58
(0, 264)	58
(0, 265)	58
(0, 266)	58
(0, 267)	58
(0, 268)	58
(0, 269)	58
(0, 270)	58
(0, 271)	58
(0, 272)	58
(0, 273)	58
(0, 274)	58
(0, 275)	58
(0, 276)	58
(0, 277)	58
(0, 278)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(0, 279)	58
(0, 280)	58
(0, 281)	58
(0, 282)	58
(0, 283)	58
(0, 284)	58
(0, 285)	58
(0, 286)	58
(0, 287)	58
(0, 288)	58
(0, 289)	58
(0, 290)	58
(0, 291)	58
(0, 292)	58
(0, 293)	58
(0, 294)	58
(0, 295)	58
(0, 296)	58
(0, 297)	58
(0, 298)	58
(1, 0)	58
(2, 0)	58
(3, 0)	58
(4, 0)	58
(5, 0)	58
(6, 0)	58
(7, 0)	58
(8, 0)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(9, 0)	58
(10, 0)	58
(11, 0)	58
(12, 0)	58
(13, 0)	58
(14, 0)	58
(15, 0)	58
(16, 0)	58
(17, 0)	58
(18, 0)	58
(19, 0)	58
(20, 0)	58
(21, 0)	58
(22, 0)	58
(23, 0)	58
(24, 0)	58
(25, 0)	58
(26, 0)	58
(27, 0)	58
(28, 0)	58
(29, 0)	58
(30, 0)	58
(31, 0)	58
(32, 0)	58
(33, 0)	58
(34, 0)	58
(35, 0)	58
(36, 0)	58

Table 6: Two witnesses results ($0 \le n < 299$, top 500) [3] (Continued)

(37, 0)	58
(38, 0)	58
(39, 0)	58
(40, 0)	58
(41, 0)	58
(42, 0)	58
(43, 0)	58
(44, 0)	58
(45, 0)	58
(46, 0)	58
(47, 0)	58
(48, 0)	58
(49, 0)	58
(50, 0)	58
(51, 0)	58
(52, 0)	58
(53, 0)	58
(54, 0)	58
(55, 0)	58
(56, 0)	58
(57, 0)	58
(58, 0)	58
(59, 0)	58
(60, 0)	58
(61, 0)	58
(62, 0)	58
(63, 0)	58
(64, 0)	58

Continued on next page

Table 6: Two witnesses results ($0 \le n < 299$, top 500) [3] (Continued)

(65, 0)	58
(66, 0)	58
(67, 0)	58
(68, 0)	58
(69, 0)	58
(70, 0)	58
(71, 0)	58
(72, 0)	58
(73, 0)	58
(74, 0)	58
(75, 0)	58
(76, 0)	58
(77, 0)	58
(78, 0)	58
(79, 0)	58
(80, 0)	58
(81, 0)	58
(82, 0)	58
(83, 0)	58
(84, 0)	58
(85, 0)	58
(86, 0)	58
(87, 0)	58
(88, 0)	58
(89, 0)	58
(90, 0)	58
(91, 0)	58
(92, 0)	58

Continued on next page

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(93, 0)	58
(94, 0)	58
(95, 0)	58
(96, 0)	58
(97, 0)	58
(98, 0)	58
(99, 0)	58
(100, 0)	58
(101, 0)	58
(102, 0)	58
(103, 0)	58
(104, 0)	58
(105, 0)	58
(106, 0)	58
(107, 0)	58
(108, 0)	58
(109, 0)	58
(110, 0)	58
(111, 0)	58
(112, 0)	58
(113, 0)	58
(114, 0)	58
(115, 0)	58
(116, 0)	58
(117, 0)	58
(118, 0)	58
(119, 0)	58
(120, 0)	58

(121, 0)	58
(122, 0)	58
(123, 0)	58
(124, 0)	58
(125, 0)	58
(126, 0)	58
(127, 0)	58
(128, 0)	58
(129, 0)	58
(130, 0)	58
(131, 0)	58
(132, 0)	58
(133, 0)	58
(134, 0)	58
(135, 0)	58
(136, 0)	58
(137, 0)	58
(138, 0)	58
(139, 0)	58
(140, 0)	58
(141, 0)	58
(142, 0)	58
(143, 0)	58
(144, 0)	58
(145, 0)	58
(146, 0)	58
(147, 0)	58
(148, 0)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(149, 0)	58
(150, 0)	58
(151, 0)	58
(152, 0)	58
(153, 0)	58
(154, 0)	58
(155, 0)	58
(156, 0)	58
(157, 0)	58
(158, 0)	58
(159, 0)	58
(160, 0)	58
(161, 0)	58
(162, 0)	58
(163, 0)	58
(164, 0)	58
(165, 0)	58
(166, 0)	58
(167, 0)	58
(168, 0)	58
(169, 0)	58
(170, 0)	58
(171, 0)	58
(172, 0)	58
(173, 0)	58
(174, 0)	58
(175, 0)	58
(176, 0)	58

Table 6: Two witnesses results ($0 \leq n < 299$, top 500) [3] (Continued)

(177, 0)	58
(178, 0)	58
(179, 0)	58
(180, 0)	58
(181, 0)	58
(182, 0)	58
(183, 0)	58
(184, 0)	58
(185, 0)	58
(186, 0)	58
(187, 0)	58
(188, 0)	58
(189, 0)	58
(190, 0)	58
(191, 0)	58
(192, 0)	58
(193, 0)	58
(194, 0)	58
(195, 0)	58
(196, 0)	58
(197, 0)	58
(198, 0)	58
(199, 0)	58
(200, 0)	58

iii.   Three witnesses

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3]

Witnesses ($0 \leq n < 25$)	Number of liars
(0, 0, 0)	5
(0, 0, 1)	5
(0, 0, 2)	5
(0, 0, 3)	5
(0, 0, 4)	5
(0, 0, 5)	5
(0, 0, 6)	5
(0, 0, 7)	5
(0, 0, 8)	5
(0, 0, 9)	5
(0, 0, 10)	5
(0, 0, 11)	5
(0, 0, 12)	5
(0, 0, 13)	5
(0, 0, 14)	5
(0, 0, 15)	5
(0, 0, 16)	5
(0, 0, 17)	5
(0, 0, 18)	5
(0, 0, 19)	5
(0, 0, 20)	5
(0, 0, 21)	5
(0, 0, 22)	5
(0, 0, 23)	5
(0, 0, 24)	5
(0, 1, 0)	5
(0, 1, 1)	5

Continued on next page

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 1, 2)	5
(0, 1, 3)	5
(0, 1, 4)	5
(0, 1, 5)	5
(0, 1, 6)	5
(0, 1, 7)	5
(0, 1, 8)	5
(0, 1, 9)	5
(0, 1, 10)	5
(0, 1, 11)	5
(0, 1, 12)	5
(0, 1, 13)	5
(0, 1, 14)	5
(0, 1, 15)	5
(0, 1, 16)	5
(0, 1, 17)	5
(0, 1, 18)	5
(0, 1, 19)	5
(0, 1, 20)	5
(0, 1, 21)	5
(0, 1, 22)	5
(0, 1, 23)	5
(0, 1, 24)	5
(0, 2, 0)	5
(0, 2, 1)	5
(0, 2, 2)	5
(0, 2, 3)	5
(0, 2, 4)	5

Continued on next page

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 2, 5)	5
(0, 2, 6)	5
(0, 2, 7)	5
(0, 2, 8)	5
(0, 2, 9)	5
(0, 2, 10)	5
(0, 2, 11)	5
(0, 2, 12)	5
(0, 2, 13)	5
(0, 2, 14)	5
(0, 2, 15)	5
(0, 2, 16)	5
(0, 2, 17)	5
(0, 2, 18)	5
(0, 2, 19)	5
(0, 2, 20)	5
(0, 2, 21)	5
(0, 2, 22)	5
(0, 2, 23)	5
(0, 2, 24)	5
(0, 3, 0)	5
(0, 3, 1)	5
(0, 3, 2)	5
(0, 3, 3)	5
(0, 3, 4)	5
(0, 3, 5)	5
(0, 3, 6)	5
(0, 3, 7)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 3, 8)	5
(0, 3, 9)	5
(0, 3, 10)	5
(0, 3, 11)	5
(0, 3, 12)	5
(0, 3, 13)	5
(0, 3, 14)	5
(0, 3, 15)	5
(0, 3, 16)	5
(0, 3, 17)	5
(0, 3, 18)	5
(0, 3, 19)	5
(0, 3, 20)	5
(0, 3, 21)	5
(0, 3, 22)	5
(0, 3, 23)	5
(0, 3, 24)	5
(0, 4, 0)	5
(0, 4, 1)	5
(0, 4, 2)	5
(0, 4, 3)	5
(0, 4, 4)	5
(0, 4, 5)	5
(0, 4, 6)	5
(0, 4, 7)	5
(0, 4, 8)	5
(0, 4, 9)	5
(0, 4, 10)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 4, 11)	5
(0, 4, 12)	5
(0, 4, 13)	5
(0, 4, 14)	5
(0, 4, 15)	5
(0, 4, 16)	5
(0, 4, 17)	5
(0, 4, 18)	5
(0, 4, 19)	5
(0, 4, 20)	5
(0, 4, 21)	5
(0, 4, 22)	5
(0, 4, 23)	5
(0, 4, 24)	5
(0, 5, 0)	5
(0, 5, 1)	5
(0, 5, 2)	5
(0, 5, 3)	5
(0, 5, 4)	5
(0, 5, 5)	5
(0, 5, 6)	5
(0, 5, 7)	5
(0, 5, 8)	5
(0, 5, 9)	5
(0, 5, 10)	5
(0, 5, 11)	5
(0, 5, 12)	5
(0, 5, 13)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 5, 14)	5
(0, 5, 15)	5
(0, 5, 16)	5
(0, 5, 17)	5
(0, 5, 18)	5
(0, 5, 19)	5
(0, 5, 20)	5
(0, 5, 21)	5
(0, 5, 22)	5
(0, 5, 23)	5
(0, 5, 24)	5
(0, 6, 0)	5
(0, 6, 1)	5
(0, 6, 2)	5
(0, 6, 3)	5
(0, 6, 4)	5
(0, 6, 5)	5
(0, 6, 6)	5
(0, 6, 7)	5
(0, 6, 8)	5
(0, 6, 9)	5
(0, 6, 10)	5
(0, 6, 11)	5
(0, 6, 12)	5
(0, 6, 13)	5
(0, 6, 14)	5
(0, 6, 15)	5
(0, 6, 16)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 6, 17)	5
(0, 6, 18)	5
(0, 6, 19)	5
(0, 6, 20)	5
(0, 6, 21)	5
(0, 6, 22)	5
(0, 6, 23)	5
(0, 6, 24)	5
(0, 7, 0)	5
(0, 7, 1)	5
(0, 7, 2)	5
(0, 7, 3)	5
(0, 7, 4)	5
(0, 7, 5)	5
(0, 7, 6)	5
(0, 7, 7)	5
(0, 7, 8)	5
(0, 7, 9)	5
(0, 7, 10)	5
(0, 7, 11)	5
(0, 7, 12)	5
(0, 7, 13)	5
(0, 7, 14)	5
(0, 7, 15)	5
(0, 7, 16)	5
(0, 7, 17)	5
(0, 7, 18)	5
(0, 7, 19)	5

(0, 7, 20)	5
(0, 7, 21)	5
(0, 7, 22)	5
(0, 7, 23)	5
(0, 7, 24)	5
(0, 8, 0)	5
(0, 8, 1)	5
(0, 8, 2)	5
(0, 8, 3)	5
(0, 8, 4)	5
(0, 8, 5)	5
(0, 8, 6)	5
(0, 8, 7)	5
(0, 8, 8)	5
(0, 8, 9)	5
(0, 8, 10)	5
(0, 8, 11)	5
(0, 8, 12)	5
(0, 8, 13)	5
(0, 8, 14)	5
(0, 8, 15)	5
(0, 8, 16)	5
(0, 8, 17)	5
(0, 8, 18)	5
(0, 8, 19)	5
(0, 8, 20)	5
(0, 8, 21)	5
(0, 8, 22)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 8, 23)	5
(0, 8, 24)	5
(0, 9, 0)	5
(0, 9, 1)	5
(0, 9, 2)	5
(0, 9, 3)	5
(0, 9, 4)	5
(0, 9, 5)	5
(0, 9, 6)	5
(0, 9, 7)	5
(0, 9, 8)	5
(0, 9, 9)	5
(0, 9, 10)	5
(0, 9, 11)	5
(0, 9, 12)	5
(0, 9, 13)	5
(0, 9, 14)	5
(0, 9, 15)	5
(0, 9, 16)	5
(0, 9, 17)	5
(0, 9, 18)	5
(0, 9, 19)	5
(0, 9, 20)	5
(0, 9, 21)	5
(0, 9, 22)	5
(0, 9, 23)	5
(0, 9, 24)	5
(0, 10, 0)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 10, 1)	5
(0, 10, 2)	5
(0, 10, 3)	5
(0, 10, 4)	5
(0, 10, 5)	5
(0, 10, 6)	5
(0, 10, 7)	5
(0, 10, 8)	5
(0, 10, 9)	5
(0, 10, 10)	5
(0, 10, 11)	5
(0, 10, 12)	5
(0, 10, 13)	5
(0, 10, 14)	5
(0, 10, 15)	5
(0, 10, 16)	5
(0, 10, 17)	5
(0, 10, 18)	5
(0, 10, 19)	5
(0, 10, 20)	5
(0, 10, 21)	5
(0, 10, 22)	5
(0, 10, 23)	5
(0, 10, 24)	5
(0, 11, 0)	5
(0, 11, 1)	5
(0, 11, 2)	5
(0, 11, 3)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 11, 4)	5
(0, 11, 5)	5
(0, 11, 6)	5
(0, 11, 7)	5
(0, 11, 8)	5
(0, 11, 9)	5
(0, 11, 10)	5
(0, 11, 11)	5
(0, 11, 12)	5
(0, 11, 13)	5
(0, 11, 14)	5
(0, 11, 15)	5
(0, 11, 16)	5
(0, 11, 17)	5
(0, 11, 18)	5
(0, 11, 19)	5
(0, 11, 20)	5
(0, 11, 21)	5
(0, 11, 22)	5
(0, 11, 23)	5
(0, 11, 24)	5
(0, 12, 0)	5
(0, 12, 1)	5
(0, 12, 2)	5
(0, 12, 3)	5
(0, 12, 4)	5
(0, 12, 5)	5
(0, 12, 6)	5

(0, 12, 7)	5
(0, 12, 8)	5
(0, 12, 9)	5
(0, 12, 10)	5
(0, 12, 11)	5
(0, 12, 12)	5
(0, 12, 13)	5
(0, 12, 14)	5
(0, 12, 15)	5
(0, 12, 16)	5
(0, 12, 17)	5
(0, 12, 18)	5
(0, 12, 19)	5
(0, 12, 20)	5
(0, 12, 21)	5
(0, 12, 22)	5
(0, 12, 23)	5
(0, 12, 24)	5
(0, 13, 0)	5
(0, 13, 1)	5
(0, 13, 2)	5
(0, 13, 3)	5
(0, 13, 4)	5
(0, 13, 5)	5
(0, 13, 6)	5
(0, 13, 7)	5
(0, 13, 8)	5
(0, 13, 9)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 13, 10)	5
(0, 13, 11)	5
(0, 13, 12)	5
(0, 13, 13)	5
(0, 13, 14)	5
(0, 13, 15)	5
(0, 13, 16)	5
(0, 13, 17)	5
(0, 13, 18)	5
(0, 13, 19)	5
(0, 13, 20)	5
(0, 13, 21)	5
(0, 13, 22)	5
(0, 13, 23)	5
(0, 13, 24)	5
(0, 14, 0)	5
(0, 14, 1)	5
(0, 14, 2)	5
(0, 14, 3)	5
(0, 14, 4)	5
(0, 14, 5)	5
(0, 14, 6)	5
(0, 14, 7)	5
(0, 14, 8)	5
(0, 14, 9)	5
(0, 14, 10)	5
(0, 14, 11)	5
(0, 14, 12)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 14, 13)	5
(0, 14, 14)	5
(0, 14, 15)	5
(0, 14, 16)	5
(0, 14, 17)	5
(0, 14, 18)	5
(0, 14, 19)	5
(0, 14, 20)	5
(0, 14, 21)	5
(0, 14, 22)	5
(0, 14, 23)	5
(0, 14, 24)	5
(0, 15, 0)	5
(0, 15, 1)	5
(0, 15, 2)	5
(0, 15, 3)	5
(0, 15, 4)	5
(0, 15, 5)	5
(0, 15, 6)	5
(0, 15, 7)	5
(0, 15, 8)	5
(0, 15, 9)	5
(0, 15, 10)	5
(0, 15, 11)	5
(0, 15, 12)	5
(0, 15, 13)	5
(0, 15, 14)	5
(0, 15, 15)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 15, 16)	5
(0, 15, 17)	5
(0, 15, 18)	5
(0, 15, 19)	5
(0, 15, 20)	5
(0, 15, 21)	5
(0, 15, 22)	5
(0, 15, 23)	5
(0, 15, 24)	5
(0, 16, 0)	5
(0, 16, 1)	5
(0, 16, 2)	5
(0, 16, 3)	5
(0, 16, 4)	5
(0, 16, 5)	5
(0, 16, 6)	5
(0, 16, 7)	5
(0, 16, 8)	5
(0, 16, 9)	5
(0, 16, 10)	5
(0, 16, 11)	5
(0, 16, 12)	5
(0, 16, 13)	5
(0, 16, 14)	5
(0, 16, 15)	5
(0, 16, 16)	5
(0, 16, 17)	5
(0, 16, 18)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 16, 19)	5
(0, 16, 20)	5
(0, 16, 21)	5
(0, 16, 22)	5
(0, 16, 23)	5
(0, 16, 24)	5
(0, 17, 0)	5
(0, 17, 1)	5
(0, 17, 2)	5
(0, 17, 3)	5
(0, 17, 4)	5
(0, 17, 5)	5
(0, 17, 6)	5
(0, 17, 7)	5
(0, 17, 8)	5
(0, 17, 9)	5
(0, 17, 10)	5
(0, 17, 11)	5
(0, 17, 12)	5
(0, 17, 13)	5
(0, 17, 14)	5
(0, 17, 15)	5
(0, 17, 16)	5
(0, 17, 17)	5
(0, 17, 18)	5
(0, 17, 19)	5
(0, 17, 20)	5
(0, 17, 21)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 17, 22)	5
(0, 17, 23)	5
(0, 17, 24)	5
(0, 18, 0)	5
(0, 18, 1)	5
(0, 18, 2)	5
(0, 18, 3)	5
(0, 18, 4)	5
(0, 18, 5)	5
(0, 18, 6)	5
(0, 18, 7)	5
(0, 18, 8)	5
(0, 18, 9)	5
(0, 18, 10)	5
(0, 18, 11)	5
(0, 18, 12)	5
(0, 18, 13)	5
(0, 18, 14)	5
(0, 18, 15)	5
(0, 18, 16)	5
(0, 18, 17)	5
(0, 18, 18)	5
(0, 18, 19)	5
(0, 18, 20)	5
(0, 18, 21)	5
(0, 18, 22)	5
(0, 18, 23)	5
(0, 18, 24)	5

Table 7: Three witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 19, 0)	5
(0, 19, 1)	5
(0, 19, 2)	5
(0, 19, 3)	5
(0, 19, 4)	5
(0, 19, 5)	5
(0, 19, 6)	5
(0, 19, 7)	5
(0, 19, 8)	5
(0, 19, 9)	5
(0, 19, 10)	5
(0, 19, 11)	5
(0, 19, 12)	5
(0, 19, 13)	5
(0, 19, 14)	5
(0, 19, 15)	5
(0, 19, 16)	5
(0, 19, 17)	5
(0, 19, 18)	5
(0, 19, 19)	5
(0, 19, 20)	5
(0, 19, 21)	5
(0, 19, 22)	5
(0, 19, 23)	5
(0, 19, 24)	5

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3]

Witnesses ($0 \leq n < 50$)	Number of liars
(0, 0, 0)	11
(0, 0, 1)	11
(0, 0, 2)	11
(0, 0, 3)	11
(0, 0, 4)	11
(0, 0, 5)	11
(0, 0, 6)	11
(0, 0, 7)	11
(0, 0, 8)	11
(0, 0, 9)	11
(0, 0, 10)	11
(0, 0, 11)	11
(0, 0, 12)	11
(0, 0, 13)	11
(0, 0, 14)	11
(0, 0, 15)	11
(0, 0, 16)	11
(0, 0, 17)	11
(0, 0, 18)	11
(0, 0, 19)	11
(0, 0, 20)	11
(0, 0, 21)	11
(0, 0, 22)	11
(0, 0, 23)	11
(0, 0, 24)	11
(0, 0, 25)	11
(0, 0, 26)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 0, 27)	11
(0, 0, 28)	11
(0, 0, 29)	11
(0, 0, 30)	11
(0, 0, 31)	11
(0, 0, 32)	11
(0, 0, 33)	11
(0, 0, 34)	11
(0, 0, 35)	11
(0, 0, 36)	11
(0, 0, 37)	11
(0, 0, 38)	11
(0, 0, 39)	11
(0, 0, 40)	11
(0, 0, 41)	11
(0, 0, 42)	11
(0, 0, 43)	11
(0, 0, 44)	11
(0, 0, 45)	11
(0, 0, 46)	11
(0, 0, 47)	11
(0, 0, 48)	11
(0, 1, 0)	11
(0, 1, 1)	11
(0, 1, 2)	11
(0, 1, 3)	11
(0, 1, 4)	11
(0, 1, 5)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 1, 6)	11
(0, 1, 7)	11
(0, 1, 8)	11
(0, 1, 9)	11
(0, 1, 10)	11
(0, 1, 11)	11
(0, 1, 12)	11
(0, 1, 13)	11
(0, 1, 14)	11
(0, 1, 15)	11
(0, 1, 16)	11
(0, 1, 17)	11
(0, 1, 18)	11
(0, 1, 19)	11
(0, 1, 20)	11
(0, 1, 21)	11
(0, 1, 22)	11
(0, 1, 23)	11
(0, 1, 24)	11
(0, 1, 25)	11
(0, 1, 26)	11
(0, 1, 27)	11
(0, 1, 28)	11
(0, 1, 29)	11
(0, 1, 30)	11
(0, 1, 31)	11
(0, 1, 32)	11
(0, 1, 33)	11

Continued on next page

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 1, 34)	11
(0, 1, 35)	11
(0, 1, 36)	11
(0, 1, 37)	11
(0, 1, 38)	11
(0, 1, 39)	11
(0, 1, 40)	11
(0, 1, 41)	11
(0, 1, 42)	11
(0, 1, 43)	11
(0, 1, 44)	11
(0, 1, 45)	11
(0, 1, 46)	11
(0, 1, 47)	11
(0, 1, 48)	11
(0, 2, 0)	11
(0, 2, 1)	11
(0, 2, 2)	11
(0, 2, 3)	11
(0, 2, 4)	11
(0, 2, 5)	11
(0, 2, 6)	11
(0, 2, 7)	11
(0, 2, 8)	11
(0, 2, 9)	11
(0, 2, 10)	11
(0, 2, 11)	11
(0, 2, 12)	11

Continued on next page

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 2, 13)	11
(0, 2, 14)	11
(0, 2, 15)	11
(0, 2, 16)	11
(0, 2, 17)	11
(0, 2, 18)	11
(0, 2, 19)	11
(0, 2, 20)	11
(0, 2, 21)	11
(0, 2, 22)	11
(0, 2, 23)	11
(0, 2, 24)	11
(0, 2, 25)	11
(0, 2, 26)	11
(0, 2, 27)	11
(0, 2, 28)	11
(0, 2, 29)	11
(0, 2, 30)	11
(0, 2, 31)	11
(0, 2, 32)	11
(0, 2, 33)	11
(0, 2, 34)	11
(0, 2, 35)	11
(0, 2, 36)	11
(0, 2, 37)	11
(0, 2, 38)	11
(0, 2, 39)	11
(0, 2, 40)	11

Continued on next page

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 2, 41)	11
(0, 2, 42)	11
(0, 2, 43)	11
(0, 2, 44)	11
(0, 2, 45)	11
(0, 2, 46)	11
(0, 2, 47)	11
(0, 2, 48)	11
(0, 3, 0)	11
(0, 3, 1)	11
(0, 3, 2)	11
(0, 3, 3)	11
(0, 3, 4)	11
(0, 3, 5)	11
(0, 3, 6)	11
(0, 3, 7)	11
(0, 3, 8)	11
(0, 3, 9)	11
(0, 3, 10)	11
(0, 3, 11)	11
(0, 3, 12)	11
(0, 3, 13)	11
(0, 3, 14)	11
(0, 3, 15)	11
(0, 3, 16)	11
(0, 3, 17)	11
(0, 3, 18)	11
(0, 3, 19)	11

Continued on next page

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 3, 20)	11
(0, 3, 21)	11
(0, 3, 22)	11
(0, 3, 23)	11
(0, 3, 24)	11
(0, 3, 25)	11
(0, 3, 26)	11
(0, 3, 27)	11
(0, 3, 28)	11
(0, 3, 29)	11
(0, 3, 30)	11
(0, 3, 31)	11
(0, 3, 32)	11
(0, 3, 33)	11
(0, 3, 34)	11
(0, 3, 35)	11
(0, 3, 36)	11
(0, 3, 37)	11
(0, 3, 38)	11
(0, 3, 39)	11
(0, 3, 40)	11
(0, 3, 41)	11
(0, 3, 42)	11
(0, 3, 43)	11
(0, 3, 44)	11
(0, 3, 45)	11
(0, 3, 46)	11
(0, 3, 47)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 3, 48)	11
(0, 4, 0)	11
(0, 4, 1)	11
(0, 4, 2)	11
(0, 4, 3)	11
(0, 4, 4)	11
(0, 4, 5)	11
(0, 4, 6)	11
(0, 4, 7)	11
(0, 4, 8)	11
(0, 4, 9)	11
(0, 4, 10)	11
(0, 4, 11)	11
(0, 4, 12)	11
(0, 4, 13)	11
(0, 4, 14)	11
(0, 4, 15)	11
(0, 4, 16)	11
(0, 4, 17)	11
(0, 4, 18)	11
(0, 4, 19)	11
(0, 4, 20)	11
(0, 4, 21)	11
(0, 4, 22)	11
(0, 4, 23)	11
(0, 4, 24)	11
(0, 4, 25)	11
(0, 4, 26)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 4, 27)	11
(0, 4, 28)	11
(0, 4, 29)	11
(0, 4, 30)	11
(0, 4, 31)	11
(0, 4, 32)	11
(0, 4, 33)	11
(0, 4, 34)	11
(0, 4, 35)	11
(0, 4, 36)	11
(0, 4, 37)	11
(0, 4, 38)	11
(0, 4, 39)	11
(0, 4, 40)	11
(0, 4, 41)	11
(0, 4, 42)	11
(0, 4, 43)	11
(0, 4, 44)	11
(0, 4, 45)	11
(0, 4, 46)	11
(0, 4, 47)	11
(0, 4, 48)	11
(0, 5, 0)	11
(0, 5, 1)	11
(0, 5, 2)	11
(0, 5, 3)	11
(0, 5, 4)	11
(0, 5, 5)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 5, 6)	11
(0, 5, 7)	11
(0, 5, 8)	11
(0, 5, 9)	11
(0, 5, 10)	11
(0, 5, 11)	11
(0, 5, 12)	11
(0, 5, 13)	11
(0, 5, 14)	11
(0, 5, 15)	11
(0, 5, 16)	11
(0, 5, 17)	11
(0, 5, 18)	11
(0, 5, 19)	11
(0, 5, 20)	11
(0, 5, 21)	11
(0, 5, 22)	11
(0, 5, 23)	11
(0, 5, 24)	11
(0, 5, 25)	11
(0, 5, 26)	11
(0, 5, 27)	11
(0, 5, 28)	11
(0, 5, 29)	11
(0, 5, 30)	11
(0, 5, 31)	11
(0, 5, 32)	11
(0, 5, 33)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) *[3]* (Continued)

(0, 5, 34)	11
(0, 5, 35)	11
(0, 5, 36)	11
(0, 5, 37)	11
(0, 5, 38)	11
(0, 5, 39)	11
(0, 5, 40)	11
(0, 5, 41)	11
(0, 5, 42)	11
(0, 5, 43)	11
(0, 5, 44)	11
(0, 5, 45)	11
(0, 5, 46)	11
(0, 5, 47)	11
(0, 5, 48)	11
(0, 6, 0)	11
(0, 6, 1)	11
(0, 6, 2)	11
(0, 6, 3)	11
(0, 6, 4)	11
(0, 6, 5)	11
(0, 6, 6)	11
(0, 6, 7)	11
(0, 6, 8)	11
(0, 6, 9)	11
(0, 6, 10)	11
(0, 6, 11)	11
(0, 6, 12)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) *[3]* (Continued)

(0, 6, 13)	11
(0, 6, 14)	11
(0, 6, 15)	11
(0, 6, 16)	11
(0, 6, 17)	11
(0, 6, 18)	11
(0, 6, 19)	11
(0, 6, 20)	11
(0, 6, 21)	11
(0, 6, 22)	11
(0, 6, 23)	11
(0, 6, 24)	11
(0, 6, 25)	11
(0, 6, 26)	11
(0, 6, 27)	11
(0, 6, 28)	11
(0, 6, 29)	11
(0, 6, 30)	11
(0, 6, 31)	11
(0, 6, 32)	11
(0, 6, 33)	11
(0, 6, 34)	11
(0, 6, 35)	11
(0, 6, 36)	11
(0, 6, 37)	11
(0, 6, 38)	11
(0, 6, 39)	11
(0, 6, 40)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 6, 41)	11
(0, 6, 42)	11
(0, 6, 43)	11
(0, 6, 44)	11
(0, 6, 45)	11
(0, 6, 46)	11
(0, 6, 47)	11
(0, 6, 48)	11
(0, 7, 0)	11
(0, 7, 1)	11
(0, 7, 2)	11
(0, 7, 3)	11
(0, 7, 4)	11
(0, 7, 5)	11
(0, 7, 6)	11
(0, 7, 7)	11
(0, 7, 8)	11
(0, 7, 9)	11
(0, 7, 10)	11
(0, 7, 11)	11
(0, 7, 12)	11
(0, 7, 13)	11
(0, 7, 14)	11
(0, 7, 15)	11
(0, 7, 16)	11
(0, 7, 17)	11
(0, 7, 18)	11
(0, 7, 19)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 7, 20)	11
(0, 7, 21)	11
(0, 7, 22)	11
(0, 7, 23)	11
(0, 7, 24)	11
(0, 7, 25)	11
(0, 7, 26)	11
(0, 7, 27)	11
(0, 7, 28)	11
(0, 7, 29)	11
(0, 7, 30)	11
(0, 7, 31)	11
(0, 7, 32)	11
(0, 7, 33)	11
(0, 7, 34)	11
(0, 7, 35)	11
(0, 7, 36)	11
(0, 7, 37)	11
(0, 7, 38)	11
(0, 7, 39)	11
(0, 7, 40)	11
(0, 7, 41)	11
(0, 7, 42)	11
(0, 7, 43)	11
(0, 7, 44)	11
(0, 7, 45)	11
(0, 7, 46)	11
(0, 7, 47)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) *[3]* (Continued)

(0, 7, 48)	11
(0, 8, 0)	11
(0, 8, 1)	11
(0, 8, 2)	11
(0, 8, 3)	11
(0, 8, 4)	11
(0, 8, 5)	11
(0, 8, 6)	11
(0, 8, 7)	11
(0, 8, 8)	11
(0, 8, 9)	11
(0, 8, 10)	11
(0, 8, 11)	11
(0, 8, 12)	11
(0, 8, 13)	11
(0, 8, 14)	11
(0, 8, 15)	11
(0, 8, 16)	11
(0, 8, 17)	11
(0, 8, 18)	11
(0, 8, 19)	11
(0, 8, 20)	11
(0, 8, 21)	11
(0, 8, 22)	11
(0, 8, 23)	11
(0, 8, 24)	11
(0, 8, 25)	11
(0, 8, 26)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) *[3]* (Continued)

(0, 8, 27)	11
(0, 8, 28)	11
(0, 8, 29)	11
(0, 8, 30)	11
(0, 8, 31)	11
(0, 8, 32)	11
(0, 8, 33)	11
(0, 8, 34)	11
(0, 8, 35)	11
(0, 8, 36)	11
(0, 8, 37)	11
(0, 8, 38)	11
(0, 8, 39)	11
(0, 8, 40)	11
(0, 8, 41)	11
(0, 8, 42)	11
(0, 8, 43)	11
(0, 8, 44)	11
(0, 8, 45)	11
(0, 8, 46)	11
(0, 8, 47)	11
(0, 8, 48)	11
(0, 9, 0)	11
(0, 9, 1)	11
(0, 9, 2)	11
(0, 9, 3)	11
(0, 9, 4)	11
(0, 9, 5)	11

Table 8: Three witnesses results ($0 \leq n < 50$, top 500) [3] (Continued)

(0, 9, 6)	11
(0, 9, 7)	11
(0, 9, 8)	11
(0, 9, 9)	11
(0, 9, 10)	11
(0, 9, 11)	11
(0, 9, 12)	11
(0, 9, 13)	11
(0, 9, 14)	11
(0, 9, 15)	11
(0, 9, 16)	11
(0, 9, 17)	11
(0, 9, 18)	11
(0, 9, 19)	11
(0, 9, 20)	11
(0, 9, 21)	11
(0, 9, 22)	11
(0, 9, 23)	11
(0, 9, 24)	11
(0, 9, 25)	11
(0, 9, 26)	11
(0, 9, 27)	11
(0, 9, 28)	11
(0, 9, 29)	11
(0, 9, 30)	11
(0, 9, 31)	11
(0, 9, 32)	11
(0, 9, 33)	11

(0, 9, 34)	11
(0, 9, 35)	11
(0, 9, 36)	11
(0, 9, 37)	11
(0, 9, 38)	11
(0, 9, 39)	11
(0, 9, 40)	11
(0, 9, 41)	11
(0, 9, 42)	11
(0, 9, 43)	11
(0, 9, 44)	11
(0, 9, 45)	11
(0, 9, 46)	11
(0, 9, 47)	11
(0, 9, 48)	11
(0, 10, 0)	11
(0, 10, 1)	11
(0, 10, 2)	11
(0, 10, 3)	11
(0, 10, 4)	11
(0, 10, 5)	11
(0, 10, 6)	11
(0, 10, 7)	11
(0, 10, 8)	11
(0, 10, 9)	11

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3]

Witnesses ($0 \leq n < 75$)	Number of lies
(0, 0, 0)	17
(0, 0, 1)	17
(0, 0, 2)	17
(0, 0, 3)	17
(0, 0, 4)	17
(0, 0, 5)	17
(0, 0, 6)	17
(0, 0, 7)	17
(0, 0, 8)	17
(0, 0, 9)	17
(0, 0, 10)	17
(0, 0, 11)	17
(0, 0, 12)	17
(0, 0, 13)	17
(0, 0, 14)	17
(0, 0, 15)	17
(0, 0, 16)	17
(0, 0, 17)	17
(0, 0, 18)	17
(0, 0, 19)	17
(0, 0, 20)	17
(0, 0, 21)	17
(0, 0, 22)	17
(0, 0, 23)	17
(0, 0, 24)	17
(0, 0, 25)	17
(0, 0, 26)	17

Continued on next page

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 0, 27)	17
(0, 0, 28)	17
(0, 0, 29)	17
(0, 0, 30)	17
(0, 0, 31)	17
(0, 0, 32)	17
(0, 0, 33)	17
(0, 0, 34)	17
(0, 0, 35)	17
(0, 0, 36)	17
(0, 0, 37)	17
(0, 0, 38)	17
(0, 0, 39)	17
(0, 0, 40)	17
(0, 0, 41)	17
(0, 0, 42)	17
(0, 0, 43)	17
(0, 0, 44)	17
(0, 0, 45)	17
(0, 0, 46)	17
(0, 0, 47)	17
(0, 0, 48)	17
(0, 0, 49)	17
(0, 0, 50)	17
(0, 0, 51)	17
(0, 0, 52)	17
(0, 0, 53)	17
(0, 0, 54)	17

Continued on next page

Table 9: Three witnesses results ($0 \le n < 75$, top 500) [3] (Continued)

(0, 0, 55)	17
(0, 0, 56)	17
(0, 0, 57)	17
(0, 0, 58)	17
(0, 0, 59)	17
(0, 0, 60)	17
(0, 0, 61)	17
(0, 0, 62)	17
(0, 0, 63)	17
(0, 0, 64)	17
(0, 0, 65)	17
(0, 0, 66)	17
(0, 0, 67)	17
(0, 0, 68)	17
(0, 0, 69)	17
(0, 0, 70)	17
(0, 0, 71)	17
(0, 0, 72)	17
(0, 0, 73)	17
(0, 0, 74)	17
(0, 1, 0)	17
(0, 1, 1)	17
(0, 1, 2)	17
(0, 1, 3)	17
(0, 1, 4)	17
(0, 1, 5)	17
(0, 1, 6)	17
(0, 1, 7)	17

Table 9: Three witnesses results ($0 \le n < 75$, top 500) [3] (Continued)

(0, 1, 8)	17
(0, 1, 9)	17
(0, 1, 10)	17
(0, 1, 11)	17
(0, 1, 12)	17
(0, 1, 13)	17
(0, 1, 14)	17
(0, 1, 15)	17
(0, 1, 16)	17
(0, 1, 17)	17
(0, 1, 18)	17
(0, 1, 19)	17
(0, 1, 20)	17
(0, 1, 21)	17
(0, 1, 22)	17
(0, 1, 23)	17
(0, 1, 24)	17
(0, 1, 25)	17
(0, 1, 26)	17
(0, 1, 27)	17
(0, 1, 28)	17
(0, 1, 29)	17
(0, 1, 30)	17
(0, 1, 31)	17
(0, 1, 32)	17
(0, 1, 33)	17
(0, 1, 34)	17
(0, 1, 35)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 1, 36)	17
(0, 1, 37)	17
(0, 1, 38)	17
(0, 1, 39)	17
(0, 1, 40)	17
(0, 1, 41)	17
(0, 1, 42)	17
(0, 1, 43)	17
(0, 1, 44)	17
(0, 1, 45)	17
(0, 1, 46)	17
(0, 1, 47)	17
(0, 1, 48)	17
(0, 1, 49)	17
(0, 1, 50)	17
(0, 1, 51)	17
(0, 1, 52)	17
(0, 1, 53)	17
(0, 1, 54)	17
(0, 1, 55)	17
(0, 1, 56)	17
(0, 1, 57)	17
(0, 1, 58)	17
(0, 1, 59)	17
(0, 1, 60)	17
(0, 1, 61)	17
(0, 1, 62)	17
(0, 1, 63)	17

(0, 1, 64)	17
(0, 1, 65)	17
(0, 1, 66)	17
(0, 1, 67)	17
(0, 1, 68)	17
(0, 1, 69)	17
(0, 1, 70)	17
(0, 1, 71)	17
(0, 1, 72)	17
(0, 1, 73)	17
(0, 1, 74)	17
(0, 2, 0)	17
(0, 2, 1)	17
(0, 2, 2)	17
(0, 2, 3)	17
(0, 2, 4)	17
(0, 2, 5)	17
(0, 2, 6)	17
(0, 2, 7)	17
(0, 2, 8)	17
(0, 2, 9)	17
(0, 2, 10)	17
(0, 2, 11)	17
(0, 2, 12)	17
(0, 2, 13)	17
(0, 2, 14)	17
(0, 2, 15)	17
(0, 2, 16)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 2, 17)	17
(0, 2, 18)	17
(0, 2, 19)	17
(0, 2, 20)	17
(0, 2, 21)	17
(0, 2, 22)	17
(0, 2, 23)	17
(0, 2, 24)	17
(0, 2, 25)	17
(0, 2, 26)	17
(0, 2, 27)	17
(0, 2, 28)	17
(0, 2, 29)	17
(0, 2, 30)	17
(0, 2, 31)	17
(0, 2, 32)	17
(0, 2, 33)	17
(0, 2, 34)	17
(0, 2, 35)	17
(0, 2, 36)	17
(0, 2, 37)	17
(0, 2, 38)	17
(0, 2, 39)	17
(0, 2, 40)	17
(0, 2, 41)	17
(0, 2, 42)	17
(0, 2, 43)	17
(0, 2, 44)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 2, 45)	17
(0, 2, 46)	17
(0, 2, 47)	17
(0, 2, 48)	17
(0, 2, 49)	17
(0, 2, 50)	17
(0, 2, 51)	17
(0, 2, 52)	17
(0, 2, 53)	17
(0, 2, 54)	17
(0, 2, 55)	17
(0, 2, 56)	17
(0, 2, 57)	17
(0, 2, 58)	17
(0, 2, 59)	17
(0, 2, 60)	17
(0, 2, 61)	17
(0, 2, 62)	17
(0, 2, 63)	17
(0, 2, 64)	17
(0, 2, 65)	17
(0, 2, 66)	17
(0, 2, 67)	17
(0, 2, 68)	17
(0, 2, 69)	17
(0, 2, 70)	17
(0, 2, 71)	17
(0, 2, 72)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 2, 73)	17
(0, 2, 74)	17
(0, 3, 0)	17
(0, 3, 1)	17
(0, 3, 2)	17
(0, 3, 3)	17
(0, 3, 4)	17
(0, 3, 5)	17
(0, 3, 6)	17
(0, 3, 7)	17
(0, 3, 8)	17
(0, 3, 9)	17
(0, 3, 10)	17
(0, 3, 11)	17
(0, 3, 12)	17
(0, 3, 13)	17
(0, 3, 14)	17
(0, 3, 15)	17
(0, 3, 16)	17
(0, 3, 17)	17
(0, 3, 18)	17
(0, 3, 19)	17
(0, 3, 20)	17
(0, 3, 21)	17
(0, 3, 22)	17
(0, 3, 23)	17
(0, 3, 24)	17
(0, 3, 25)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 3, 26)	17
(0, 3, 27)	17
(0, 3, 28)	17
(0, 3, 29)	17
(0, 3, 30)	17
(0, 3, 31)	17
(0, 3, 32)	17
(0, 3, 33)	17
(0, 3, 34)	17
(0, 3, 35)	17
(0, 3, 36)	17
(0, 3, 37)	17
(0, 3, 38)	17
(0, 3, 39)	17
(0, 3, 40)	17
(0, 3, 41)	17
(0, 3, 42)	17
(0, 3, 43)	17
(0, 3, 44)	17
(0, 3, 45)	17
(0, 3, 46)	17
(0, 3, 47)	17
(0, 3, 48)	17
(0, 3, 49)	17
(0, 3, 50)	17
(0, 3, 51)	17
(0, 3, 52)	17
(0, 3, 53)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 3, 54)	17
(0, 3, 55)	17
(0, 3, 56)	17
(0, 3, 57)	17
(0, 3, 58)	17
(0, 3, 59)	17
(0, 3, 60)	17
(0, 3, 61)	17
(0, 3, 62)	17
(0, 3, 63)	17
(0, 3, 64)	17
(0, 3, 65)	17
(0, 3, 66)	17
(0, 3, 67)	17
(0, 3, 68)	17
(0, 3, 69)	17
(0, 3, 70)	17
(0, 3, 71)	17
(0, 3, 72)	17
(0, 3, 73)	17
(0, 3, 74)	17
(0, 4, 0)	17
(0, 4, 1)	17
(0, 4, 2)	17
(0, 4, 3)	17
(0, 4, 4)	17
(0, 4, 5)	17
(0, 4, 6)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 4, 7)	17
(0, 4, 8)	17
(0, 4, 9)	17
(0, 4, 10)	17
(0, 4, 11)	17
(0, 4, 12)	17
(0, 4, 13)	17
(0, 4, 14)	17
(0, 4, 15)	17
(0, 4, 16)	17
(0, 4, 17)	17
(0, 4, 18)	17
(0, 4, 19)	17
(0, 4, 20)	17
(0, 4, 21)	17
(0, 4, 22)	17
(0, 4, 23)	17
(0, 4, 24)	17
(0, 4, 25)	17
(0, 4, 26)	17
(0, 4, 27)	17
(0, 4, 28)	17
(0, 4, 29)	17
(0, 4, 30)	17
(0, 4, 31)	17
(0, 4, 32)	17
(0, 4, 33)	17
(0, 4, 34)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 4, 35)	17
(0, 4, 36)	17
(0, 4, 37)	17
(0, 4, 38)	17
(0, 4, 39)	17
(0, 4, 40)	17
(0, 4, 41)	17
(0, 4, 42)	17
(0, 4, 43)	17
(0, 4, 44)	17
(0, 4, 45)	17
(0, 4, 46)	17
(0, 4, 47)	17
(0, 4, 48)	17
(0, 4, 49)	17
(0, 4, 50)	17
(0, 4, 51)	17
(0, 4, 52)	17
(0, 4, 53)	17
(0, 4, 54)	17
(0, 4, 55)	17
(0, 4, 56)	17
(0, 4, 57)	17
(0, 4, 58)	17
(0, 4, 59)	17
(0, 4, 60)	17
(0, 4, 61)	17
(0, 4, 62)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 4, 63)	17
(0, 4, 64)	17
(0, 4, 65)	17
(0, 4, 66)	17
(0, 4, 67)	17
(0, 4, 68)	17
(0, 4, 69)	17
(0, 4, 70)	17
(0, 4, 71)	17
(0, 4, 72)	17
(0, 4, 73)	17
(0, 4, 74)	17
(0, 5, 0)	17
(0, 5, 1)	17
(0, 5, 2)	17
(0, 5, 3)	17
(0, 5, 4)	17
(0, 5, 5)	17
(0, 5, 6)	17
(0, 5, 7)	17
(0, 5, 8)	17
(0, 5, 9)	17
(0, 5, 10)	17
(0, 5, 11)	17
(0, 5, 12)	17
(0, 5, 13)	17
(0, 5, 14)	17
(0, 5, 15)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 5, 16)	17
(0, 5, 17)	17
(0, 5, 18)	17
(0, 5, 19)	17
(0, 5, 20)	17
(0, 5, 21)	17
(0, 5, 22)	17
(0, 5, 23)	17
(0, 5, 24)	17
(0, 5, 25)	17
(0, 5, 26)	17
(0, 5, 27)	17
(0, 5, 28)	17
(0, 5, 29)	17
(0, 5, 30)	17
(0, 5, 31)	17
(0, 5, 32)	17
(0, 5, 33)	17
(0, 5, 34)	17
(0, 5, 35)	17
(0, 5, 36)	17
(0, 5, 37)	17
(0, 5, 38)	17
(0, 5, 39)	17
(0, 5, 40)	17
(0, 5, 41)	17
(0, 5, 42)	17
(0, 5, 43)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 5, 44)	17
(0, 5, 45)	17
(0, 5, 46)	17
(0, 5, 47)	17
(0, 5, 48)	17
(0, 5, 49)	17
(0, 5, 50)	17
(0, 5, 51)	17
(0, 5, 52)	17
(0, 5, 53)	17
(0, 5, 54)	17
(0, 5, 55)	17
(0, 5, 56)	17
(0, 5, 57)	17
(0, 5, 58)	17
(0, 5, 59)	17
(0, 5, 60)	17
(0, 5, 61)	17
(0, 5, 62)	17
(0, 5, 63)	17
(0, 5, 64)	17
(0, 5, 65)	17
(0, 5, 66)	17
(0, 5, 67)	17
(0, 5, 68)	17
(0, 5, 69)	17
(0, 5, 70)	17
(0, 5, 71)	17

Table 9: Three witnesses results ($0 \leq n < 75$, top 500) [3] (Continued)

(0, 5, 72)	17
(0, 5, 73)	17
(0, 5, 74)	17
(0, 6, 0)	17
(0, 6, 1)	17
(0, 6, 2)	17
(0, 6, 3)	17
(0, 6, 4)	17
(0, 6, 5)	17
(0, 6, 6)	17
(0, 6, 7)	17
(0, 6, 8)	17
(0, 6, 9)	17
(0, 6, 10)	17
(0, 6, 11)	17
(0, 6, 12)	17
(0, 6, 13)	17
(0, 6, 14)	17
(0, 6, 15)	17
(0, 6, 16)	17
(0, 6, 17)	17
(0, 6, 18)	17
(0, 6, 19)	17
(0, 6, 20)	17
(0, 6, 21)	17
(0, 6, 22)	17
(0, 6, 23)	17
(0, 6, 24)	17

(0, 6, 25)	17
(0, 6, 26)	17
(0, 6, 27)	17
(0, 6, 28)	17
(0, 6, 29)	17
(0, 6, 30)	17
(0, 6, 31)	17
(0, 6, 32)	17
(0, 6, 33)	17
(0, 6, 34)	17
(0, 6, 35)	17
(0, 6, 36)	17
(0, 6, 37)	17
(0, 6, 38)	17
(0, 6, 39)	17
(0, 6, 40)	17
(0, 6, 41)	17
(0, 6, 42)	17
(0, 6, 43)	17
(0, 6, 44)	17
(0, 6, 45)	17
(0, 6, 46)	17
(0, 6, 47)	17
(0, 6, 48)	17
(0, 6, 49)	17

iv. Four witnesses

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3]

Witnesses ($0 \leq n < 15$)	Number of lies
(0, 0, 0, 0)	2
(0, 0, 0, 1)	2
(0, 0, 0, 2)	2
(0, 0, 0, 3)	2
(0, 0, 0, 4)	2
(0, 0, 0, 5)	2
(0, 0, 0, 6)	2
(0, 0, 0, 7)	2
(0, 0, 0, 8)	2
(0, 0, 0, 9)	2
(0, 0, 0, 10)	2
(0, 0, 0, 11)	2
(0, 0, 0, 12)	2
(0, 0, 0, 13)	2
(0, 0, 0, 14)	2
(0, 0, 1, 0)	2
(0, 0, 1, 1)	2
(0, 0, 1, 2)	2
(0, 0, 1, 3)	2
(0, 0, 1, 4)	2
(0, 0, 1, 5)	2
(0, 0, 1, 6)	2
(0, 0, 1, 7)	2
(0, 0, 1, 8)	2
(0, 0, 1, 9)	2
(0, 0, 1, 10)	2
(0, 0, 1, 11)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

Witnesses	Number of lies
(0, 0, 1, 12)	2
(0, 0, 1, 13)	2
(0, 0, 1, 14)	2
(0, 0, 2, 0)	2
(0, 0, 2, 1)	2
(0, 0, 2, 2)	2
(0, 0, 2, 3)	2
(0, 0, 2, 4)	2
(0, 0, 2, 5)	2
(0, 0, 2, 6)	2
(0, 0, 2, 7)	2
(0, 0, 2, 8)	2
(0, 0, 2, 9)	2
(0, 0, 2, 10)	2
(0, 0, 2, 11)	2
(0, 0, 2, 12)	2
(0, 0, 2, 13)	2
(0, 0, 2, 14)	2
(0, 0, 3, 0)	2
(0, 0, 3, 1)	2
(0, 0, 3, 2)	2
(0, 0, 3, 3)	2
(0, 0, 3, 4)	2
(0, 0, 3, 5)	2
(0, 0, 3, 6)	2
(0, 0, 3, 7)	2
(0, 0, 3, 8)	2
(0, 0, 3, 9)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 0, 3, 10)	2
(0, 0, 3, 11)	2
(0, 0, 3, 12)	2
(0, 0, 3, 13)	2
(0, 0, 3, 14)	2
(0, 0, 4, 0)	2
(0, 0, 4, 1)	2
(0, 0, 4, 2)	2
(0, 0, 4, 3)	2
(0, 0, 4, 4)	2
(0, 0, 4, 5)	2
(0, 0, 4, 6)	2
(0, 0, 4, 7)	2
(0, 0, 4, 8)	2
(0, 0, 4, 9)	2
(0, 0, 4, 10)	2
(0, 0, 4, 11)	2
(0, 0, 4, 12)	2
(0, 0, 4, 13)	2
(0, 0, 4, 14)	2
(0, 0, 5, 0)	2
(0, 0, 5, 1)	2
(0, 0, 5, 2)	2
(0, 0, 5, 3)	2
(0, 0, 5, 4)	2
(0, 0, 5, 5)	2
(0, 0, 5, 6)	2
(0, 0, 5, 7)	2

Continued on next page

(0, 0, 5, 8)	2
(0, 0, 5, 9)	2
(0, 0, 5, 10)	2
(0, 0, 5, 11)	2
(0, 0, 5, 12)	2
(0, 0, 5, 13)	2
(0, 0, 5, 14)	2
(0, 0, 6, 0)	2
(0, 0, 6, 1)	2
(0, 0, 6, 2)	2
(0, 0, 6, 3)	2
(0, 0, 6, 4)	2
(0, 0, 6, 5)	2
(0, 0, 6, 6)	2
(0, 0, 6, 7)	2
(0, 0, 6, 8)	2
(0, 0, 6, 9)	2
(0, 0, 6, 10)	2
(0, 0, 6, 11)	2
(0, 0, 6, 12)	2
(0, 0, 6, 13)	2
(0, 0, 6, 14)	2
(0, 0, 7, 0)	2
(0, 0, 7, 1)	2
(0, 0, 7, 2)	2
(0, 0, 7, 3)	2
(0, 0, 7, 4)	2
(0, 0, 7, 5)	2

Continued on next page

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 0, 7, 6)	2
(0, 0, 7, 7)	2
(0, 0, 7, 8)	2
(0, 0, 7, 9)	2
(0, 0, 7, 10)	2
(0, 0, 7, 11)	2
(0, 0, 7, 12)	2
(0, 0, 7, 13)	2
(0, 0, 7, 14)	2
(0, 0, 8, 0)	2
(0, 0, 8, 1)	2
(0, 0, 8, 2)	2
(0, 0, 8, 3)	2
(0, 0, 8, 4)	2
(0, 0, 8, 5)	2
(0, 0, 8, 6)	2
(0, 0, 8, 7)	2
(0, 0, 8, 8)	2
(0, 0, 8, 9)	2
(0, 0, 8, 10)	2
(0, 0, 8, 11)	2
(0, 0, 8, 12)	2
(0, 0, 8, 13)	2
(0, 0, 8, 14)	2
(0, 0, 9, 0)	2
(0, 0, 9, 1)	2
(0, 0, 9, 2)	2
(0, 0, 9, 3)	2

(0, 0, 9, 4)	2
(0, 0, 9, 5)	2
(0, 0, 9, 6)	2
(0, 0, 9, 7)	2
(0, 0, 9, 8)	2
(0, 0, 9, 9)	2
(0, 0, 9, 10)	2
(0, 0, 9, 11)	2
(0, 0, 9, 12)	2
(0, 0, 9, 13)	2
(0, 0, 9, 14)	2
(0, 0, 10, 0)	2
(0, 0, 10, 1)	2
(0, 0, 10, 2)	2
(0, 0, 10, 3)	2
(0, 0, 10, 4)	2
(0, 0, 10, 5)	2
(0, 0, 10, 6)	2
(0, 0, 10, 7)	2
(0, 0, 10, 8)	2
(0, 0, 10, 9)	2
(0, 0, 10, 10)	2
(0, 0, 10, 11)	2
(0, 0, 10, 12)	2
(0, 0, 10, 13)	2
(0, 0, 10, 14)	2
(0, 0, 11, 0)	2
(0, 0, 11, 1)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 0, 11, 2)	2
(0, 0, 11, 3)	2
(0, 0, 11, 4)	2
(0, 0, 11, 5)	2
(0, 0, 11, 6)	2
(0, 0, 11, 7)	2
(0, 0, 11, 8)	2
(0, 0, 11, 9)	2
(0, 0, 11, 10)	2
(0, 0, 11, 11)	2
(0, 0, 11, 12)	2
(0, 0, 11, 13)	2
(0, 0, 11, 14)	2
(0, 0, 12, 0)	2
(0, 0, 12, 1)	2
(0, 0, 12, 2)	2
(0, 0, 12, 3)	2
(0, 0, 12, 4)	2
(0, 0, 12, 5)	2
(0, 0, 12, 6)	2
(0, 0, 12, 7)	2
(0, 0, 12, 8)	2
(0, 0, 12, 9)	2
(0, 0, 12, 10)	2
(0, 0, 12, 11)	2
(0, 0, 12, 12)	2
(0, 0, 12, 13)	2
(0, 0, 12, 14)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 0, 13, 0)	2
(0, 0, 13, 1)	2
(0, 0, 13, 2)	2
(0, 0, 13, 3)	2
(0, 0, 13, 4)	2
(0, 0, 13, 5)	2
(0, 0, 13, 6)	2
(0, 0, 13, 7)	2
(0, 0, 13, 8)	2
(0, 0, 13, 9)	2
(0, 0, 13, 10)	2
(0, 0, 13, 11)	2
(0, 0, 13, 12)	2
(0, 0, 13, 13)	2
(0, 0, 13, 14)	2
(0, 0, 14, 0)	2
(0, 0, 14, 1)	2
(0, 0, 14, 2)	2
(0, 0, 14, 3)	2
(0, 0, 14, 4)	2
(0, 0, 14, 5)	2
(0, 0, 14, 6)	2
(0, 0, 14, 7)	2
(0, 0, 14, 8)	2
(0, 0, 14, 9)	2
(0, 0, 14, 10)	2
(0, 0, 14, 11)	2
(0, 0, 14, 12)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 0, 14, 13)	2
(0, 0, 14, 14)	2
(0, 1, 0, 0)	2
(0, 1, 0, 1)	2
(0, 1, 0, 2)	2
(0, 1, 0, 3)	2
(0, 1, 0, 4)	2
(0, 1, 0, 5)	2
(0, 1, 0, 6)	2
(0, 1, 0, 7)	2
(0, 1, 0, 8)	2
(0, 1, 0, 9)	2
(0, 1, 0, 10)	2
(0, 1, 0, 11)	2
(0, 1, 0, 12)	2
(0, 1, 0, 13)	2
(0, 1, 0, 14)	2
(0, 1, 1, 0)	2
(0, 1, 1, 1)	2
(0, 1, 1, 2)	2
(0, 1, 1, 3)	2
(0, 1, 1, 4)	2
(0, 1, 1, 5)	2
(0, 1, 1, 6)	2
(0, 1, 1, 7)	2
(0, 1, 1, 8)	2
(0, 1, 1, 9)	2
(0, 1, 1, 10)	2

(0, 1, 1, 11)	2
(0, 1, 1, 12)	2
(0, 1, 1, 13)	2
(0, 1, 1, 14)	2
(0, 1, 2, 0)	2
(0, 1, 2, 1)	2
(0, 1, 2, 2)	2
(0, 1, 2, 3)	2
(0, 1, 2, 4)	2
(0, 1, 2, 5)	2
(0, 1, 2, 6)	2
(0, 1, 2, 7)	2
(0, 1, 2, 8)	2
(0, 1, 2, 9)	2
(0, 1, 2, 10)	2
(0, 1, 2, 11)	2
(0, 1, 2, 12)	2
(0, 1, 2, 13)	2
(0, 1, 2, 14)	2
(0, 1, 3, 0)	2
(0, 1, 3, 1)	2
(0, 1, 3, 2)	2
(0, 1, 3, 3)	2
(0, 1, 3, 4)	2
(0, 1, 3, 5)	2
(0, 1, 3, 6)	2
(0, 1, 3, 7)	2
(0, 1, 3, 8)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 1, 3, 9)	2
(0, 1, 3, 10)	2
(0, 1, 3, 11)	2
(0, 1, 3, 12)	2
(0, 1, 3, 13)	2
(0, 1, 3, 14)	2
(0, 1, 4, 0)	2
(0, 1, 4, 1)	2
(0, 1, 4, 2)	2
(0, 1, 4, 3)	2
(0, 1, 4, 4)	2
(0, 1, 4, 5)	2
(0, 1, 4, 6)	2
(0, 1, 4, 7)	2
(0, 1, 4, 8)	2
(0, 1, 4, 9)	2
(0, 1, 4, 10)	2
(0, 1, 4, 11)	2
(0, 1, 4, 12)	2
(0, 1, 4, 13)	2
(0, 1, 4, 14)	2
(0, 1, 5, 0)	2
(0, 1, 5, 1)	2
(0, 1, 5, 2)	2
(0, 1, 5, 3)	2
(0, 1, 5, 4)	2
(0, 1, 5, 5)	2
(0, 1, 5, 6)	2

(0, 1, 5, 7)	2
(0, 1, 5, 8)	2
(0, 1, 5, 9)	2
(0, 1, 5, 10)	2
(0, 1, 5, 11)	2
(0, 1, 5, 12)	2
(0, 1, 5, 13)	2
(0, 1, 5, 14)	2
(0, 1, 6, 0)	2
(0, 1, 6, 1)	2
(0, 1, 6, 2)	2
(0, 1, 6, 3)	2
(0, 1, 6, 4)	2
(0, 1, 6, 5)	2
(0, 1, 6, 6)	2
(0, 1, 6, 7)	2
(0, 1, 6, 8)	2
(0, 1, 6, 9)	2
(0, 1, 6, 10)	2
(0, 1, 6, 11)	2
(0, 1, 6, 12)	2
(0, 1, 6, 13)	2
(0, 1, 6, 14)	2
(0, 1, 7, 0)	2
(0, 1, 7, 1)	2
(0, 1, 7, 2)	2
(0, 1, 7, 3)	2
(0, 1, 7, 4)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 1, 7, 5)	2
(0, 1, 7, 6)	2
(0, 1, 7, 7)	2
(0, 1, 7, 8)	2
(0, 1, 7, 9)	2
(0, 1, 7, 10)	2
(0, 1, 7, 11)	2
(0, 1, 7, 12)	2
(0, 1, 7, 13)	2
(0, 1, 7, 14)	2
(0, 1, 8, 0)	2
(0, 1, 8, 1)	2
(0, 1, 8, 2)	2
(0, 1, 8, 3)	2
(0, 1, 8, 4)	2
(0, 1, 8, 5)	2
(0, 1, 8, 6)	2
(0, 1, 8, 7)	2
(0, 1, 8, 8)	2
(0, 1, 8, 9)	2
(0, 1, 8, 10)	2
(0, 1, 8, 11)	2
(0, 1, 8, 12)	2
(0, 1, 8, 13)	2
(0, 1, 8, 14)	2
(0, 1, 9, 0)	2
(0, 1, 9, 1)	2
(0, 1, 9, 2)	2

(0, 1, 9, 3)	2
(0, 1, 9, 4)	2
(0, 1, 9, 5)	2
(0, 1, 9, 6)	2
(0, 1, 9, 7)	2
(0, 1, 9, 8)	2
(0, 1, 9, 9)	2
(0, 1, 9, 10)	2
(0, 1, 9, 11)	2
(0, 1, 9, 12)	2
(0, 1, 9, 13)	2
(0, 1, 9, 14)	2
(0, 1, 10, 0)	2
(0, 1, 10, 1)	2
(0, 1, 10, 2)	2
(0, 1, 10, 3)	2
(0, 1, 10, 4)	2
(0, 1, 10, 5)	2
(0, 1, 10, 6)	2
(0, 1, 10, 7)	2
(0, 1, 10, 8)	2
(0, 1, 10, 9)	2
(0, 1, 10, 10)	2
(0, 1, 10, 11)	2
(0, 1, 10, 12)	2
(0, 1, 10, 13)	2
(0, 1, 10, 14)	2
(0, 1, 11, 0)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 1, 11, 1)	2
(0, 1, 11, 2)	2
(0, 1, 11, 3)	2
(0, 1, 11, 4)	2
(0, 1, 11, 5)	2
(0, 1, 11, 6)	2
(0, 1, 11, 7)	2
(0, 1, 11, 8)	2
(0, 1, 11, 9)	2
(0, 1, 11, 10)	2
(0, 1, 11, 11)	2
(0, 1, 11, 12)	2
(0, 1, 11, 13)	2
(0, 1, 11, 14)	2
(0, 1, 12, 0)	2
(0, 1, 12, 1)	2
(0, 1, 12, 2)	2
(0, 1, 12, 3)	2
(0, 1, 12, 4)	2
(0, 1, 12, 5)	2
(0, 1, 12, 6)	2
(0, 1, 12, 7)	2
(0, 1, 12, 8)	2
(0, 1, 12, 9)	2
(0, 1, 12, 10)	2
(0, 1, 12, 11)	2
(0, 1, 12, 12)	2
(0, 1, 12, 13)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 1, 12, 14)	2
(0, 1, 13, 0)	2
(0, 1, 13, 1)	2
(0, 1, 13, 2)	2
(0, 1, 13, 3)	2
(0, 1, 13, 4)	2
(0, 1, 13, 5)	2
(0, 1, 13, 6)	2
(0, 1, 13, 7)	2
(0, 1, 13, 8)	2
(0, 1, 13, 9)	2
(0, 1, 13, 10)	2
(0, 1, 13, 11)	2
(0, 1, 13, 12)	2
(0, 1, 13, 13)	2
(0, 1, 13, 14)	2
(0, 1, 14, 0)	2
(0, 1, 14, 1)	2
(0, 1, 14, 2)	2
(0, 1, 14, 3)	2
(0, 1, 14, 4)	2
(0, 1, 14, 5)	2
(0, 1, 14, 6)	2
(0, 1, 14, 7)	2
(0, 1, 14, 8)	2
(0, 1, 14, 9)	2
(0, 1, 14, 10)	2
(0, 1, 14, 11)	2

Table 10: Four witnesses results ($0 \leq n < 15$, top 500) [3] (Continued)

(0, 1, 14, 12)	2
(0, 1, 14, 13)	2
(0, 1, 14, 14)	2
(0, 2, 0, 0)	2
(0, 2, 0, 1)	2
(0, 2, 0, 2)	2
(0, 2, 0, 3)	2
(0, 2, 0, 4)	2
(0, 2, 0, 5)	2
(0, 2, 0, 6)	2
(0, 2, 0, 7)	2
(0, 2, 0, 8)	2
(0, 2, 0, 9)	2
(0, 2, 0, 10)	2
(0, 2, 0, 11)	2
(0, 2, 0, 12)	2
(0, 2, 0, 13)	2
(0, 2, 0, 14)	2
(0, 2, 1, 0)	2
(0, 2, 1, 1)	2
(0, 2, 1, 2)	2
(0, 2, 1, 3)	2
(0, 2, 1, 4)	2
(0, 2, 1, 5)	2
(0, 2, 1, 6)	2
(0, 2, 1, 7)	2
(0, 2, 1, 8)	2
(0, 2, 1, 9)	2

(0, 2, 1, 10)	2
(0, 2, 1, 11)	2
(0, 2, 1, 12)	2
(0, 2, 1, 13)	2
(0, 2, 1, 14)	2
(0, 2, 2, 0)	2
(0, 2, 2, 1)	2
(0, 2, 2, 2)	2
(0, 2, 2, 3)	2
(0, 2, 2, 4)	2
(0, 2, 2, 5)	2
(0, 2, 2, 6)	2
(0, 2, 2, 7)	2
(0, 2, 2, 8)	2
(0, 2, 2, 9)	2
(0, 2, 2, 10)	2
(0, 2, 2, 11)	2
(0, 2, 2, 12)	2
(0, 2, 2, 13)	2
(0, 2, 2, 14)	2
(0, 2, 3, 0)	2
(0, 2, 3, 1)	2
(0, 2, 3, 2)	2
(0, 2, 3, 3)	2
(0, 2, 3, 4)	2

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3]

Witnesses ($0 \leq n < 20$)	Number of lies
(0, 0, 0, 0)	4
(0, 0, 0, 1)	4
(0, 0, 0, 2)	4
(0, 0, 0, 3)	4
(0, 0, 0, 4)	4
(0, 0, 0, 5)	4
(0, 0, 0, 6)	4
(0, 0, 0, 7)	4
(0, 0, 0, 8)	4
(0, 0, 0, 9)	4
(0, 0, 0, 10)	4
(0, 0, 0, 11)	4
(0, 0, 0, 12)	4
(0, 0, 0, 13)	4
(0, 0, 0, 14)	4
(0, 0, 0, 15)	4
(0, 0, 0, 16)	4
(0, 0, 0, 17)	4
(0, 0, 0, 18)	4
(0, 0, 1, 0)	4
(0, 0, 1, 1)	4
(0, 0, 1, 2)	4
(0, 0, 1, 3)	4
(0, 0, 1, 4)	4
(0, 0, 1, 5)	4
(0, 0, 1, 6)	4
(0, 0, 1, 7)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 1, 8)	4
(0, 0, 1, 9)	4
(0, 0, 1, 10)	4
(0, 0, 1, 11)	4
(0, 0, 1, 12)	4
(0, 0, 1, 13)	4
(0, 0, 1, 14)	4
(0, 0, 1, 15)	4
(0, 0, 1, 16)	4
(0, 0, 1, 17)	4
(0, 0, 1, 18)	4
(0, 0, 2, 0)	4
(0, 0, 2, 1)	4
(0, 0, 2, 2)	4
(0, 0, 2, 3)	4
(0, 0, 2, 4)	4
(0, 0, 2, 5)	4
(0, 0, 2, 6)	4
(0, 0, 2, 7)	4
(0, 0, 2, 8)	4
(0, 0, 2, 9)	4
(0, 0, 2, 10)	4
(0, 0, 2, 11)	4
(0, 0, 2, 12)	4
(0, 0, 2, 13)	4
(0, 0, 2, 14)	4
(0, 0, 2, 15)	4
(0, 0, 2, 16)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 2, 17)	4
(0, 0, 2, 18)	4
(0, 0, 3, 0)	4
(0, 0, 3, 1)	4
(0, 0, 3, 2)	4
(0, 0, 3, 3)	4
(0, 0, 3, 4)	4
(0, 0, 3, 5)	4
(0, 0, 3, 6)	4
(0, 0, 3, 7)	4
(0, 0, 3, 8)	4
(0, 0, 3, 9)	4
(0, 0, 3, 10)	4
(0, 0, 3, 11)	4
(0, 0, 3, 12)	4
(0, 0, 3, 13)	4
(0, 0, 3, 14)	4
(0, 0, 3, 15)	4
(0, 0, 3, 16)	4
(0, 0, 3, 17)	4
(0, 0, 3, 18)	4
(0, 0, 4, 0)	4
(0, 0, 4, 1)	4
(0, 0, 4, 2)	4
(0, 0, 4, 3)	4
(0, 0, 4, 4)	4
(0, 0, 4, 5)	4
(0, 0, 4, 6)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 4, 7)	4
(0, 0, 4, 8)	4
(0, 0, 4, 9)	4
(0, 0, 4, 10)	4
(0, 0, 4, 11)	4
(0, 0, 4, 12)	4
(0, 0, 4, 13)	4
(0, 0, 4, 14)	4
(0, 0, 4, 15)	4
(0, 0, 4, 16)	4
(0, 0, 4, 17)	4
(0, 0, 4, 18)	4
(0, 0, 5, 0)	4
(0, 0, 5, 1)	4
(0, 0, 5, 2)	4
(0, 0, 5, 3)	4
(0, 0, 5, 4)	4
(0, 0, 5, 5)	4
(0, 0, 5, 6)	4
(0, 0, 5, 7)	4
(0, 0, 5, 8)	4
(0, 0, 5, 9)	4
(0, 0, 5, 10)	4
(0, 0, 5, 11)	4
(0, 0, 5, 12)	4
(0, 0, 5, 13)	4
(0, 0, 5, 14)	4
(0, 0, 5, 15)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) *[3]* (Continued)

(0, 0, 5, 16)	4
(0, 0, 5, 17)	4
(0, 0, 5, 18)	4
(0, 0, 6, 0)	4
(0, 0, 6, 1)	4
(0, 0, 6, 2)	4
(0, 0, 6, 3)	4
(0, 0, 6, 4)	4
(0, 0, 6, 5)	4
(0, 0, 6, 6)	4
(0, 0, 6, 7)	4
(0, 0, 6, 8)	4
(0, 0, 6, 9)	4
(0, 0, 6, 10)	4
(0, 0, 6, 11)	4
(0, 0, 6, 12)	4
(0, 0, 6, 13)	4
(0, 0, 6, 14)	4
(0, 0, 6, 15)	4
(0, 0, 6, 16)	4
(0, 0, 6, 17)	4
(0, 0, 6, 18)	4
(0, 0, 7, 0)	4
(0, 0, 7, 1)	4
(0, 0, 7, 2)	4
(0, 0, 7, 3)	4
(0, 0, 7, 4)	4
(0, 0, 7, 5)	4

Continued on next page

(0, 0, 7, 6)	4
(0, 0, 7, 7)	4
(0, 0, 7, 8)	4
(0, 0, 7, 9)	4
(0, 0, 7, 10)	4
(0, 0, 7, 11)	4
(0, 0, 7, 12)	4
(0, 0, 7, 13)	4
(0, 0, 7, 14)	4
(0, 0, 7, 15)	4
(0, 0, 7, 16)	4
(0, 0, 7, 17)	4
(0, 0, 7, 18)	4
(0, 0, 8, 0)	4
(0, 0, 8, 1)	4
(0, 0, 8, 2)	4
(0, 0, 8, 3)	4
(0, 0, 8, 4)	4
(0, 0, 8, 5)	4
(0, 0, 8, 6)	4
(0, 0, 8, 7)	4
(0, 0, 8, 8)	4
(0, 0, 8, 9)	4
(0, 0, 8, 10)	4
(0, 0, 8, 11)	4
(0, 0, 8, 12)	4
(0, 0, 8, 13)	4
(0, 0, 8, 14)	4

Continued on next page

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 8, 15)	4
(0, 0, 8, 16)	4
(0, 0, 8, 17)	4
(0, 0, 8, 18)	4
(0, 0, 9, 0)	4
(0, 0, 9, 1)	4
(0, 0, 9, 2)	4
(0, 0, 9, 3)	4
(0, 0, 9, 4)	4
(0, 0, 9, 5)	4
(0, 0, 9, 6)	4
(0, 0, 9, 7)	4
(0, 0, 9, 8)	4
(0, 0, 9, 9)	4
(0, 0, 9, 10)	4
(0, 0, 9, 11)	4
(0, 0, 9, 12)	4
(0, 0, 9, 13)	4
(0, 0, 9, 14)	4
(0, 0, 9, 15)	4
(0, 0, 9, 16)	4
(0, 0, 9, 17)	4
(0, 0, 9, 18)	4
(0, 0, 10, 0)	4
(0, 0, 10, 1)	4
(0, 0, 10, 2)	4
(0, 0, 10, 3)	4
(0, 0, 10, 4)	4

(0, 0, 10, 5)	4
(0, 0, 10, 6)	4
(0, 0, 10, 7)	4
(0, 0, 10, 8)	4
(0, 0, 10, 9)	4
(0, 0, 10, 10)	4
(0, 0, 10, 11)	4
(0, 0, 10, 12)	4
(0, 0, 10, 13)	4
(0, 0, 10, 14)	4
(0, 0, 10, 15)	4
(0, 0, 10, 16)	4
(0, 0, 10, 17)	4
(0, 0, 10, 18)	4
(0, 0, 11, 0)	4
(0, 0, 11, 1)	4
(0, 0, 11, 2)	4
(0, 0, 11, 3)	4
(0, 0, 11, 4)	4
(0, 0, 11, 5)	4
(0, 0, 11, 6)	4
(0, 0, 11, 7)	4
(0, 0, 11, 8)	4
(0, 0, 11, 9)	4
(0, 0, 11, 10)	4
(0, 0, 11, 11)	4
(0, 0, 11, 12)	4
(0, 0, 11, 13)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 11, 14)	4
(0, 0, 11, 15)	4
(0, 0, 11, 16)	4
(0, 0, 11, 17)	4
(0, 0, 11, 18)	4
(0, 0, 12, 0)	4
(0, 0, 12, 1)	4
(0, 0, 12, 2)	4
(0, 0, 12, 3)	4
(0, 0, 12, 4)	4
(0, 0, 12, 5)	4
(0, 0, 12, 6)	4
(0, 0, 12, 7)	4
(0, 0, 12, 8)	4
(0, 0, 12, 9)	4
(0, 0, 12, 10)	4
(0, 0, 12, 11)	4
(0, 0, 12, 12)	4
(0, 0, 12, 13)	4
(0, 0, 12, 14)	4
(0, 0, 12, 15)	4
(0, 0, 12, 16)	4
(0, 0, 12, 17)	4
(0, 0, 12, 18)	4
(0, 0, 13, 0)	4
(0, 0, 13, 1)	4
(0, 0, 13, 2)	4
(0, 0, 13, 3)	4

(0, 0, 13, 4)	4
(0, 0, 13, 5)	4
(0, 0, 13, 6)	4
(0, 0, 13, 7)	4
(0, 0, 13, 8)	4
(0, 0, 13, 9)	4
(0, 0, 13, 10)	4
(0, 0, 13, 11)	4
(0, 0, 13, 12)	4
(0, 0, 13, 13)	4
(0, 0, 13, 14)	4
(0, 0, 13, 15)	4
(0, 0, 13, 16)	4
(0, 0, 13, 17)	4
(0, 0, 13, 18)	4
(0, 0, 14, 0)	4
(0, 0, 14, 1)	4
(0, 0, 14, 2)	4
(0, 0, 14, 3)	4
(0, 0, 14, 4)	4
(0, 0, 14, 5)	4
(0, 0, 14, 6)	4
(0, 0, 14, 7)	4
(0, 0, 14, 8)	4
(0, 0, 14, 9)	4
(0, 0, 14, 10)	4
(0, 0, 14, 11)	4
(0, 0, 14, 12)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 14, 13)	4
(0, 0, 14, 14)	4
(0, 0, 14, 15)	4
(0, 0, 14, 16)	4
(0, 0, 14, 17)	4
(0, 0, 14, 18)	4
(0, 0, 15, 0)	4
(0, 0, 15, 1)	4
(0, 0, 15, 2)	4
(0, 0, 15, 3)	4
(0, 0, 15, 4)	4
(0, 0, 15, 5)	4
(0, 0, 15, 6)	4
(0, 0, 15, 7)	4
(0, 0, 15, 8)	4
(0, 0, 15, 9)	4
(0, 0, 15, 10)	4
(0, 0, 15, 11)	4
(0, 0, 15, 12)	4
(0, 0, 15, 13)	4
(0, 0, 15, 14)	4
(0, 0, 15, 15)	4
(0, 0, 15, 16)	4
(0, 0, 15, 17)	4
(0, 0, 15, 18)	4
(0, 0, 16, 0)	4
(0, 0, 16, 1)	4
(0, 0, 16, 2)	4

Continued on next page

(0, 0, 16, 3)	4
(0, 0, 16, 4)	4
(0, 0, 16, 5)	4
(0, 0, 16, 6)	4
(0, 0, 16, 7)	4
(0, 0, 16, 8)	4
(0, 0, 16, 9)	4
(0, 0, 16, 10)	4
(0, 0, 16, 11)	4
(0, 0, 16, 12)	4
(0, 0, 16, 13)	4
(0, 0, 16, 14)	4
(0, 0, 16, 15)	4
(0, 0, 16, 16)	4
(0, 0, 16, 17)	4
(0, 0, 16, 18)	4
(0, 0, 17, 0)	4
(0, 0, 17, 1)	4
(0, 0, 17, 2)	4
(0, 0, 17, 3)	4
(0, 0, 17, 4)	4
(0, 0, 17, 5)	4
(0, 0, 17, 6)	4
(0, 0, 17, 7)	4
(0, 0, 17, 8)	4
(0, 0, 17, 9)	4
(0, 0, 17, 10)	4
(0, 0, 17, 11)	4

Continued on next page

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 0, 17, 12)	4
(0, 0, 17, 13)	4
(0, 0, 17, 14)	4
(0, 0, 17, 15)	4
(0, 0, 17, 16)	4
(0, 0, 17, 17)	4
(0, 0, 17, 18)	4
(0, 0, 18, 0)	4
(0, 0, 18, 1)	4
(0, 0, 18, 2)	4
(0, 0, 18, 3)	4
(0, 0, 18, 4)	4
(0, 0, 18, 5)	4
(0, 0, 18, 6)	4
(0, 0, 18, 7)	4
(0, 0, 18, 8)	4
(0, 0, 18, 9)	4
(0, 0, 18, 10)	4
(0, 0, 18, 11)	4
(0, 0, 18, 12)	4
(0, 0, 18, 13)	4
(0, 0, 18, 14)	4
(0, 0, 18, 15)	4
(0, 0, 18, 16)	4
(0, 0, 18, 17)	4
(0, 0, 18, 18)	4
(0, 1, 0, 0)	4
(0, 1, 0, 1)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 1, 0, 2)	4
(0, 1, 0, 3)	4
(0, 1, 0, 4)	4
(0, 1, 0, 5)	4
(0, 1, 0, 6)	4
(0, 1, 0, 7)	4
(0, 1, 0, 8)	4
(0, 1, 0, 9)	4
(0, 1, 0, 10)	4
(0, 1, 0, 11)	4
(0, 1, 0, 12)	4
(0, 1, 0, 13)	4
(0, 1, 0, 14)	4
(0, 1, 0, 15)	4
(0, 1, 0, 16)	4
(0, 1, 0, 17)	4
(0, 1, 0, 18)	4
(0, 1, 1, 0)	4
(0, 1, 1, 1)	4
(0, 1, 1, 2)	4
(0, 1, 1, 3)	4
(0, 1, 1, 4)	4
(0, 1, 1, 5)	4
(0, 1, 1, 6)	4
(0, 1, 1, 7)	4
(0, 1, 1, 8)	4
(0, 1, 1, 9)	4
(0, 1, 1, 10)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 1, 1, 11)	4
(0, 1, 1, 12)	4
(0, 1, 1, 13)	4
(0, 1, 1, 14)	4
(0, 1, 1, 15)	4
(0, 1, 1, 16)	4
(0, 1, 1, 17)	4
(0, 1, 1, 18)	4
(0, 1, 2, 0)	4
(0, 1, 2, 1)	4
(0, 1, 2, 2)	4
(0, 1, 2, 3)	4
(0, 1, 2, 4)	4
(0, 1, 2, 5)	4
(0, 1, 2, 6)	4
(0, 1, 2, 7)	4
(0, 1, 2, 8)	4
(0, 1, 2, 9)	4
(0, 1, 2, 10)	4
(0, 1, 2, 11)	4
(0, 1, 2, 12)	4
(0, 1, 2, 13)	4
(0, 1, 2, 14)	4
(0, 1, 2, 15)	4
(0, 1, 2, 16)	4
(0, 1, 2, 17)	4
(0, 1, 2, 18)	4
(0, 1, 3, 0)	4

Continued on next page

(0, 1, 3, 1)	4
(0, 1, 3, 2)	4
(0, 1, 3, 3)	4
(0, 1, 3, 4)	4
(0, 1, 3, 5)	4
(0, 1, 3, 6)	4
(0, 1, 3, 7)	4
(0, 1, 3, 8)	4
(0, 1, 3, 9)	4
(0, 1, 3, 10)	4
(0, 1, 3, 11)	4
(0, 1, 3, 12)	4
(0, 1, 3, 13)	4
(0, 1, 3, 14)	4
(0, 1, 3, 15)	4
(0, 1, 3, 16)	4
(0, 1, 3, 17)	4
(0, 1, 3, 18)	4
(0, 1, 4, 0)	4
(0, 1, 4, 1)	4
(0, 1, 4, 2)	4
(0, 1, 4, 3)	4
(0, 1, 4, 4)	4
(0, 1, 4, 5)	4
(0, 1, 4, 6)	4
(0, 1, 4, 7)	4
(0, 1, 4, 8)	4
(0, 1, 4, 9)	4

Continued on next page

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 1, 4, 10)	4
(0, 1, 4, 11)	4
(0, 1, 4, 12)	4
(0, 1, 4, 13)	4
(0, 1, 4, 14)	4
(0, 1, 4, 15)	4
(0, 1, 4, 16)	4
(0, 1, 4, 17)	4
(0, 1, 4, 18)	4
(0, 1, 5, 0)	4
(0, 1, 5, 1)	4
(0, 1, 5, 2)	4
(0, 1, 5, 3)	4
(0, 1, 5, 4)	4
(0, 1, 5, 5)	4
(0, 1, 5, 6)	4
(0, 1, 5, 7)	4
(0, 1, 5, 8)	4
(0, 1, 5, 9)	4
(0, 1, 5, 10)	4
(0, 1, 5, 11)	4
(0, 1, 5, 12)	4
(0, 1, 5, 13)	4
(0, 1, 5, 14)	4
(0, 1, 5, 15)	4
(0, 1, 5, 16)	4
(0, 1, 5, 17)	4
(0, 1, 5, 18)	4

Table 11: Four witnesses results ($0 \leq n < 20$, top 500) [3] (Continued)

(0, 1, 6, 0)	4
(0, 1, 6, 1)	4
(0, 1, 6, 2)	4
(0, 1, 6, 3)	4
(0, 1, 6, 4)	4
(0, 1, 6, 5)	4
(0, 1, 6, 6)	4
(0, 1, 6, 7)	4
(0, 1, 6, 8)	4
(0, 1, 6, 9)	4
(0, 1, 6, 10)	4
(0, 1, 6, 11)	4
(0, 1, 6, 12)	4
(0, 1, 6, 13)	4
(0, 1, 6, 14)	4
(0, 1, 6, 15)	4
(0, 1, 6, 16)	4
(0, 1, 6, 17)	4
(0, 1, 6, 18)	4
(0, 1, 7, 0)	4
(0, 1, 7, 1)	4
(0, 1, 7, 2)	4
(0, 1, 7, 3)	4
(0, 1, 7, 4)	4
(0, 1, 7, 5)	4

Continued on next page

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3]

Witnesses ($0 \leq n < 25$)	Number of lies
(0, 0, 0, 0)	5
(0, 0, 0, 1)	5
(0, 0, 0, 2)	5
(0, 0, 0, 3)	5
(0, 0, 0, 4)	5
(0, 0, 0, 5)	5
(0, 0, 0, 6)	5
(0, 0, 0, 7)	5
(0, 0, 0, 8)	5
(0, 0, 0, 9)	5
(0, 0, 0, 10)	5
(0, 0, 0, 11)	5
(0, 0, 0, 12)	5
(0, 0, 0, 13)	5
(0, 0, 0, 14)	5
(0, 0, 0, 15)	5
(0, 0, 0, 16)	5
(0, 0, 0, 17)	5
(0, 0, 0, 18)	5
(0, 0, 0, 19)	5
(0, 0, 0, 20)	5
(0, 0, 0, 21)	5
(0, 0, 0, 22)	5
(0, 0, 0, 23)	5
(0, 0, 0, 24)	5
(0, 0, 1, 0)	5
(0, 0, 1, 1)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 1, 2)	5
(0, 0, 1, 3)	5
(0, 0, 1, 4)	5
(0, 0, 1, 5)	5
(0, 0, 1, 6)	5
(0, 0, 1, 7)	5
(0, 0, 1, 8)	5
(0, 0, 1, 9)	5
(0, 0, 1, 10)	5
(0, 0, 1, 11)	5
(0, 0, 1, 12)	5
(0, 0, 1, 13)	5
(0, 0, 1, 14)	5
(0, 0, 1, 15)	5
(0, 0, 1, 16)	5
(0, 0, 1, 17)	5
(0, 0, 1, 18)	5
(0, 0, 1, 19)	5
(0, 0, 1, 20)	5
(0, 0, 1, 21)	5
(0, 0, 1, 22)	5
(0, 0, 1, 23)	5
(0, 0, 1, 24)	5
(0, 0, 2, 0)	5
(0, 0, 2, 1)	5
(0, 0, 2, 2)	5
(0, 0, 2, 3)	5
(0, 0, 2, 4)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 2, 5)	5
(0, 0, 2, 6)	5
(0, 0, 2, 7)	5
(0, 0, 2, 8)	5
(0, 0, 2, 9)	5
(0, 0, 2, 10)	5
(0, 0, 2, 11)	5
(0, 0, 2, 12)	5
(0, 0, 2, 13)	5
(0, 0, 2, 14)	5
(0, 0, 2, 15)	5
(0, 0, 2, 16)	5
(0, 0, 2, 17)	5
(0, 0, 2, 18)	5
(0, 0, 2, 19)	5
(0, 0, 2, 20)	5
(0, 0, 2, 21)	5
(0, 0, 2, 22)	5
(0, 0, 2, 23)	5
(0, 0, 2, 24)	5
(0, 0, 3, 0)	5
(0, 0, 3, 1)	5
(0, 0, 3, 2)	5
(0, 0, 3, 3)	5
(0, 0, 3, 4)	5
(0, 0, 3, 5)	5
(0, 0, 3, 6)	5
(0, 0, 3, 7)	5

Continued on next page

(0, 0, 3, 8)	5
(0, 0, 3, 9)	5
(0, 0, 3, 10)	5
(0, 0, 3, 11)	5
(0, 0, 3, 12)	5
(0, 0, 3, 13)	5
(0, 0, 3, 14)	5
(0, 0, 3, 15)	5
(0, 0, 3, 16)	5
(0, 0, 3, 17)	5
(0, 0, 3, 18)	5
(0, 0, 3, 19)	5
(0, 0, 3, 20)	5
(0, 0, 3, 21)	5
(0, 0, 3, 22)	5
(0, 0, 3, 23)	5
(0, 0, 3, 24)	5
(0, 0, 4, 0)	5
(0, 0, 4, 1)	5
(0, 0, 4, 2)	5
(0, 0, 4, 3)	5
(0, 0, 4, 4)	5
(0, 0, 4, 5)	5
(0, 0, 4, 6)	5
(0, 0, 4, 7)	5
(0, 0, 4, 8)	5
(0, 0, 4, 9)	5
(0, 0, 4, 10)	5

Continued on next page

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 4, 11)	5
(0, 0, 4, 12)	5
(0, 0, 4, 13)	5
(0, 0, 4, 14)	5
(0, 0, 4, 15)	5
(0, 0, 4, 16)	5
(0, 0, 4, 17)	5
(0, 0, 4, 18)	5
(0, 0, 4, 19)	5
(0, 0, 4, 20)	5
(0, 0, 4, 21)	5
(0, 0, 4, 22)	5
(0, 0, 4, 23)	5
(0, 0, 4, 24)	5
(0, 0, 5, 0)	5
(0, 0, 5, 1)	5
(0, 0, 5, 2)	5
(0, 0, 5, 3)	5
(0, 0, 5, 4)	5
(0, 0, 5, 5)	5
(0, 0, 5, 6)	5
(0, 0, 5, 7)	5
(0, 0, 5, 8)	5
(0, 0, 5, 9)	5
(0, 0, 5, 10)	5
(0, 0, 5, 11)	5
(0, 0, 5, 12)	5
(0, 0, 5, 13)	5

(0, 0, 5, 14)	5
(0, 0, 5, 15)	5
(0, 0, 5, 16)	5
(0, 0, 5, 17)	5
(0, 0, 5, 18)	5
(0, 0, 5, 19)	5
(0, 0, 5, 20)	5
(0, 0, 5, 21)	5
(0, 0, 5, 22)	5
(0, 0, 5, 23)	5
(0, 0, 5, 24)	5
(0, 0, 6, 0)	5
(0, 0, 6, 1)	5
(0, 0, 6, 2)	5
(0, 0, 6, 3)	5
(0, 0, 6, 4)	5
(0, 0, 6, 5)	5
(0, 0, 6, 6)	5
(0, 0, 6, 7)	5
(0, 0, 6, 8)	5
(0, 0, 6, 9)	5
(0, 0, 6, 10)	5
(0, 0, 6, 11)	5
(0, 0, 6, 12)	5
(0, 0, 6, 13)	5
(0, 0, 6, 14)	5
(0, 0, 6, 15)	5
(0, 0, 6, 16)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 6, 17)	5
(0, 0, 6, 18)	5
(0, 0, 6, 19)	5
(0, 0, 6, 20)	5
(0, 0, 6, 21)	5
(0, 0, 6, 22)	5
(0, 0, 6, 23)	5
(0, 0, 6, 24)	5
(0, 0, 7, 0)	5
(0, 0, 7, 1)	5
(0, 0, 7, 2)	5
(0, 0, 7, 3)	5
(0, 0, 7, 4)	5
(0, 0, 7, 5)	5
(0, 0, 7, 6)	5
(0, 0, 7, 7)	5
(0, 0, 7, 8)	5
(0, 0, 7, 9)	5
(0, 0, 7, 10)	5
(0, 0, 7, 11)	5
(0, 0, 7, 12)	5
(0, 0, 7, 13)	5
(0, 0, 7, 14)	5
(0, 0, 7, 15)	5
(0, 0, 7, 16)	5
(0, 0, 7, 17)	5
(0, 0, 7, 18)	5
(0, 0, 7, 19)	5

Continued on next page

(0, 0, 7, 20)	5
(0, 0, 7, 21)	5
(0, 0, 7, 22)	5
(0, 0, 7, 23)	5
(0, 0, 7, 24)	5
(0, 0, 8, 0)	5
(0, 0, 8, 1)	5
(0, 0, 8, 2)	5
(0, 0, 8, 3)	5
(0, 0, 8, 4)	5
(0, 0, 8, 5)	5
(0, 0, 8, 6)	5
(0, 0, 8, 7)	5
(0, 0, 8, 8)	5
(0, 0, 8, 9)	5
(0, 0, 8, 10)	5
(0, 0, 8, 11)	5
(0, 0, 8, 12)	5
(0, 0, 8, 13)	5
(0, 0, 8, 14)	5
(0, 0, 8, 15)	5
(0, 0, 8, 16)	5
(0, 0, 8, 17)	5
(0, 0, 8, 18)	5
(0, 0, 8, 19)	5
(0, 0, 8, 20)	5
(0, 0, 8, 21)	5
(0, 0, 8, 22)	5

Continued on next page

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 8, 23)	5
(0, 0, 8, 24)	5
(0, 0, 9, 0)	5
(0, 0, 9, 1)	5
(0, 0, 9, 2)	5
(0, 0, 9, 3)	5
(0, 0, 9, 4)	5
(0, 0, 9, 5)	5
(0, 0, 9, 6)	5
(0, 0, 9, 7)	5
(0, 0, 9, 8)	5
(0, 0, 9, 9)	5
(0, 0, 9, 10)	5
(0, 0, 9, 11)	5
(0, 0, 9, 12)	5
(0, 0, 9, 13)	5
(0, 0, 9, 14)	5
(0, 0, 9, 15)	5
(0, 0, 9, 16)	5
(0, 0, 9, 17)	5
(0, 0, 9, 18)	5
(0, 0, 9, 19)	5
(0, 0, 9, 20)	5
(0, 0, 9, 21)	5
(0, 0, 9, 22)	5
(0, 0, 9, 23)	5
(0, 0, 9, 24)	5
(0, 0, 10, 0)	5

(0, 0, 10, 1)	5
(0, 0, 10, 2)	5
(0, 0, 10, 3)	5
(0, 0, 10, 4)	5
(0, 0, 10, 5)	5
(0, 0, 10, 6)	5
(0, 0, 10, 7)	5
(0, 0, 10, 8)	5
(0, 0, 10, 9)	5
(0, 0, 10, 10)	5
(0, 0, 10, 11)	5
(0, 0, 10, 12)	5
(0, 0, 10, 13)	5
(0, 0, 10, 14)	5
(0, 0, 10, 15)	5
(0, 0, 10, 16)	5
(0, 0, 10, 17)	5
(0, 0, 10, 18)	5
(0, 0, 10, 19)	5
(0, 0, 10, 20)	5
(0, 0, 10, 21)	5
(0, 0, 10, 22)	5
(0, 0, 10, 23)	5
(0, 0, 10, 24)	5
(0, 0, 11, 0)	5
(0, 0, 11, 1)	5
(0, 0, 11, 2)	5
(0, 0, 11, 3)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 11, 4)	5
(0, 0, 11, 5)	5
(0, 0, 11, 6)	5
(0, 0, 11, 7)	5
(0, 0, 11, 8)	5
(0, 0, 11, 9)	5
(0, 0, 11, 10)	5
(0, 0, 11, 11)	5
(0, 0, 11, 12)	5
(0, 0, 11, 13)	5
(0, 0, 11, 14)	5
(0, 0, 11, 15)	5
(0, 0, 11, 16)	5
(0, 0, 11, 17)	5
(0, 0, 11, 18)	5
(0, 0, 11, 19)	5
(0, 0, 11, 20)	5
(0, 0, 11, 21)	5
(0, 0, 11, 22)	5
(0, 0, 11, 23)	5
(0, 0, 11, 24)	5
(0, 0, 12, 0)	5
(0, 0, 12, 1)	5
(0, 0, 12, 2)	5
(0, 0, 12, 3)	5
(0, 0, 12, 4)	5
(0, 0, 12, 5)	5
(0, 0, 12, 6)	5

Continued on next page

(0, 0, 12, 7)	5
(0, 0, 12, 8)	5
(0, 0, 12, 9)	5
(0, 0, 12, 10)	5
(0, 0, 12, 11)	5
(0, 0, 12, 12)	5
(0, 0, 12, 13)	5
(0, 0, 12, 14)	5
(0, 0, 12, 15)	5
(0, 0, 12, 16)	5
(0, 0, 12, 17)	5
(0, 0, 12, 18)	5
(0, 0, 12, 19)	5
(0, 0, 12, 20)	5
(0, 0, 12, 21)	5
(0, 0, 12, 22)	5
(0, 0, 12, 23)	5
(0, 0, 12, 24)	5
(0, 0, 13, 0)	5
(0, 0, 13, 1)	5
(0, 0, 13, 2)	5
(0, 0, 13, 3)	5
(0, 0, 13, 4)	5
(0, 0, 13, 5)	5
(0, 0, 13, 6)	5
(0, 0, 13, 7)	5
(0, 0, 13, 8)	5
(0, 0, 13, 9)	5

Continued on next page

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 13, 10)	5
(0, 0, 13, 11)	5
(0, 0, 13, 12)	5
(0, 0, 13, 13)	5
(0, 0, 13, 14)	5
(0, 0, 13, 15)	5
(0, 0, 13, 16)	5
(0, 0, 13, 17)	5
(0, 0, 13, 18)	5
(0, 0, 13, 19)	5
(0, 0, 13, 20)	5
(0, 0, 13, 21)	5
(0, 0, 13, 22)	5
(0, 0, 13, 23)	5
(0, 0, 13, 24)	5
(0, 0, 14, 0)	5
(0, 0, 14, 1)	5
(0, 0, 14, 2)	5
(0, 0, 14, 3)	5
(0, 0, 14, 4)	5
(0, 0, 14, 5)	5
(0, 0, 14, 6)	5
(0, 0, 14, 7)	5
(0, 0, 14, 8)	5
(0, 0, 14, 9)	5
(0, 0, 14, 10)	5
(0, 0, 14, 11)	5
(0, 0, 14, 12)	5

(0, 0, 14, 13)	5
(0, 0, 14, 14)	5
(0, 0, 14, 15)	5
(0, 0, 14, 16)	5
(0, 0, 14, 17)	5
(0, 0, 14, 18)	5
(0, 0, 14, 19)	5
(0, 0, 14, 20)	5
(0, 0, 14, 21)	5
(0, 0, 14, 22)	5
(0, 0, 14, 23)	5
(0, 0, 14, 24)	5
(0, 0, 15, 0)	5
(0, 0, 15, 1)	5
(0, 0, 15, 2)	5
(0, 0, 15, 3)	5
(0, 0, 15, 4)	5
(0, 0, 15, 5)	5
(0, 0, 15, 6)	5
(0, 0, 15, 7)	5
(0, 0, 15, 8)	5
(0, 0, 15, 9)	5
(0, 0, 15, 10)	5
(0, 0, 15, 11)	5
(0, 0, 15, 12)	5
(0, 0, 15, 13)	5
(0, 0, 15, 14)	5
(0, 0, 15, 15)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 15, 16)	5
(0, 0, 15, 17)	5
(0, 0, 15, 18)	5
(0, 0, 15, 19)	5
(0, 0, 15, 20)	5
(0, 0, 15, 21)	5
(0, 0, 15, 22)	5
(0, 0, 15, 23)	5
(0, 0, 15, 24)	5
(0, 0, 16, 0)	5
(0, 0, 16, 1)	5
(0, 0, 16, 2)	5
(0, 0, 16, 3)	5
(0, 0, 16, 4)	5
(0, 0, 16, 5)	5
(0, 0, 16, 6)	5
(0, 0, 16, 7)	5
(0, 0, 16, 8)	5
(0, 0, 16, 9)	5
(0, 0, 16, 10)	5
(0, 0, 16, 11)	5
(0, 0, 16, 12)	5
(0, 0, 16, 13)	5
(0, 0, 16, 14)	5
(0, 0, 16, 15)	5
(0, 0, 16, 16)	5
(0, 0, 16, 17)	5
(0, 0, 16, 18)	5

(0, 0, 16, 19)	5
(0, 0, 16, 20)	5
(0, 0, 16, 21)	5
(0, 0, 16, 22)	5
(0, 0, 16, 23)	5
(0, 0, 16, 24)	5
(0, 0, 17, 0)	5
(0, 0, 17, 1)	5
(0, 0, 17, 2)	5
(0, 0, 17, 3)	5
(0, 0, 17, 4)	5
(0, 0, 17, 5)	5
(0, 0, 17, 6)	5
(0, 0, 17, 7)	5
(0, 0, 17, 8)	5
(0, 0, 17, 9)	5
(0, 0, 17, 10)	5
(0, 0, 17, 11)	5
(0, 0, 17, 12)	5
(0, 0, 17, 13)	5
(0, 0, 17, 14)	5
(0, 0, 17, 15)	5
(0, 0, 17, 16)	5
(0, 0, 17, 17)	5
(0, 0, 17, 18)	5
(0, 0, 17, 19)	5
(0, 0, 17, 20)	5
(0, 0, 17, 21)	5

Continued on next page

Continued on next page

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 17, 22)	5
(0, 0, 17, 23)	5
(0, 0, 17, 24)	5
(0, 0, 18, 0)	5
(0, 0, 18, 1)	5
(0, 0, 18, 2)	5
(0, 0, 18, 3)	5
(0, 0, 18, 4)	5
(0, 0, 18, 5)	5
(0, 0, 18, 6)	5
(0, 0, 18, 7)	5
(0, 0, 18, 8)	5
(0, 0, 18, 9)	5
(0, 0, 18, 10)	5
(0, 0, 18, 11)	5
(0, 0, 18, 12)	5
(0, 0, 18, 13)	5
(0, 0, 18, 14)	5
(0, 0, 18, 15)	5
(0, 0, 18, 16)	5
(0, 0, 18, 17)	5
(0, 0, 18, 18)	5
(0, 0, 18, 19)	5
(0, 0, 18, 20)	5
(0, 0, 18, 21)	5
(0, 0, 18, 22)	5
(0, 0, 18, 23)	5
(0, 0, 18, 24)	5

Table 12: Four witnesses results ($0 \leq n < 25$, top 500) [3] (Continued)

(0, 0, 19, 0)	5
(0, 0, 19, 1)	5
(0, 0, 19, 2)	5
(0, 0, 19, 3)	5
(0, 0, 19, 4)	5
(0, 0, 19, 5)	5
(0, 0, 19, 6)	5
(0, 0, 19, 7)	5
(0, 0, 19, 8)	5
(0, 0, 19, 9)	5
(0, 0, 19, 10)	5
(0, 0, 19, 11)	5
(0, 0, 19, 12)	5
(0, 0, 19, 13)	5
(0, 0, 19, 14)	5
(0, 0, 19, 15)	5
(0, 0, 19, 16)	5
(0, 0, 19, 17)	5
(0, 0, 19, 18)	5
(0, 0, 19, 19)	5
(0, 0, 19, 20)	5
(0, 0, 19, 21)	5
(0, 0, 19, 22)	5
(0, 0, 19, 23)	5
(0, 0, 19, 24)	5

References

[1] Michael O. Rabin, "Probabilistic algorithm for testing primality", Journal of Number Theory, Volume 12, Issue 1, February 1980, Pages 128-138, `https://doi.org/10.1016/0022-314X(80)90084-0`.

[2] Rosetta Code, Miller-Rabin primality test, `https://rosettacode.org/wiki/Miller-Rabin_primality_test`.

[3] Arjun Yadav, Liars in the Miller-Rabin primality test repository, `https://github.com/y-arjun-y/liars-miller-rabin`.

[4] Python 3.10.1 documentation, itertools, `https://docs.python.org/3/library/itertools.html`.

[5] Numberphile, Witness Numbers (and the truthful 1,662,803), `https://www.youtube.com/watch?v=_MscGSN5J6o`.