

Interesting and realizable combinatorics with 9 lines

1/ [[1, 2], [1, 3, 4], [1, 5, 6], [1, 7, 8], [1, 9], [2, 3, 5], [2, 4, 7], [2, 6, 8], [2, 9], [3, 6], [3, 7], [3, 8, 9], [4, 5], [4, 6, 9], [4, 8], [5, 7, 9], [5, 8], [6, 7]]

Cycle : [1, 2, 9]

- Modulo: 2 Character: (0, 0, 1, 1, 1, 1, 1, 1, 0)
 - Modulo: 3 Character: (0, 0, 1, 2, 2, 1, 1, 2, 0)
 - Modulo: 5 Character: (0, 0, 1, 4, 4, 1, 1, 4, 0)
 - Modulo: 7 Character: (0, 0, 1, 6, 6, 1, 1, 6, 0)

Cycle : [3, 6, 7]

- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 1, 1)
 - Modulo: 3 Character: (1, 1, 0, 2, 2, 0, 0, 2, 1)
 - Modulo: 5 Character: (1, 1, 0, 4, 4, 0, 0, 4, 1)
 - Modulo: 7 Character: (1, 1, 0, 6, 6, 0, 0, 6, 1)

Cycle : [4, 5, 8]

- Modulo: 2 Character: (1, 1, 1, 0, 0, 1, 1, 0, 1)
 - Modulo: 3 Character: (1, 1, 2, 0, 0, 2, 2, 0, 1)
 - Modulo: 5 Character: (1, 1, 4, 0, 0, 4, 4, 0, 1)
 - Modulo: 7 Character: (1, 1, 6, 0, 0, 6, 6, 0, 1)

2/ [[1, 2], [1, 3, 4], [1, 5, 6], [1, 7, 8], [1, 9], [2, 3, 5], [2, 4, 7], [2, 6, 8], [2, 9], [3, 6, 9], [3, 7], [3, 8], [4, 5], [4, 6], [4, 8, 9], [5, 7, 9], [5, 8], [6, 7]]

Cycle : [1, 2, 9]

- Modulo: 2 Character: (0, 0, 1, 1, 1, 1, 1, 1, 0)

3/ [[1, 2], [1, 3, 5], [1, 4, 6], [1, 7], [1, 8, 9], [2, 3, 4], [2, 5, 6], [2, 7, 8], [2, 9], [3, 6, 7], [3, 8], [3, 9], [4, 5, 7], [4, 8], [4, 9], [5, 8], [5, 9], [6, 8], [6, 9], [7, 9]]

Cycle : [1, 2, 7]

- Modulo: 2 Character: (0, 0, 1, 1, 1, 1, 0, 0, 0)

4/ [[1, 2, 3], [1, 4, 5], [1, 6, 7], [1, 8, 9], [2, 4, 6], [2, 5, 8], [2, 7, 9], [3, 4, 9], [3, 5, 7], [3, 6, 8], [4, 7], [4, 8], [5, 6], [5, 9], [6, 9], [7, 8]]

Cycle : [4, 7, 8]

- Modulo: 2 Character: (1, 1, 1, 0, 1, 1, 0, 0, 1)
 - Modulo: 3 Character: (1, 1, 1, 0, 2, 2, 0, 0, 2)
 - Modulo: 5 Character: (1, 1, 1, 0, 4, 4, 0, 0, 4)
 - Modulo: 7 Character: (1, 1, 1, 0, 6, 6, 0, 0, 6)

Cycle : [5, 6, 9]

- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 1, 1, 0)
 - Modulo: 3 Character: (1, 1, 1, 2, 0, 0, 2, 2, 0)
 - Modulo: 5 Character: (1, 1, 1, 4, 0, 0, 4, 4, 0)
 - Modulo: 7 Character: (1, 1, 1, 6, 0, 0, 6, 6, 0)

5/ [[1, 2, 3], [1, 4, 7], [1, 5, 6], [1, 8], [1, 9], [2, 4, 6], [2, 5, 7], [2, 8], [2, 9], [3, 4, 5], [3, 6, 8], [3, 7], [3, 9], [4, 8], [4, 9], [5, 8], [5, 9], [6, 7], [6, 9], [7, 8], [7, 9], [8, 9]]

Cycle : [3, 6, 7]

- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)

6/ [[1, 2, 3, 6, 7], [1, 4, 8], [1, 5, 9], [2, 4, 9], [2, 5, 8], [3, 4, 5], [3, 8], [3, 9], [4, 6], [4, 7], [5, 6], [5, 7], [6, 8], [6, 9], [7, 8], [7, 9], [8, 9]]

Cycle : [3, 8, 9]

- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)

7/ [[1, 2, 3, 7], [1, 4, 8], [1, 5, 9], [1, 6], [2, 4], [2, 5, 8], [2, 6, 9], [3, 4, 9], [3, 5], [3, 6, 8], [4, 5, 6, 7], [7, 8], [7, 9], [8, 9]]
Cycle : [7, 8, 9]
- Modulo: 3 Character: (1, 1, 1, 2, 2, 2, 0, 0, 0)

8/ [[1, 2, 3, 8], [1, 4, 7], [1, 5, 6], [1, 9], [2, 4, 6], [2, 5, 7], [2, 9], [3, 4, 5], [3, 6, 9], [3, 7], [4, 8], [4, 9], [5, 8], [5, 9], [6, 7], [6, 8], [7, 8], [7, 9], [8, 9]]
Cycle : [3, 6, 7]
- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)

9/ [[1, 2, 3, 8], [1, 4, 7], [1, 5, 6], [1, 9], [2, 4, 6], [2, 5, 7], [2, 9], [3, 4, 5], [3, 6, 9], [3, 7], [4, 8], [4, 9], [5, 8], [5, 9], [6, 7], [6, 8], [7, 8, 9]]
Cycle : [3, 6, 7]
- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)

10/ [[1, 2, 3, 9], [1, 4, 7, 8], [1, 5, 6], [2, 4, 6], [2, 5, 7], [2, 8], [3, 4, 5], [3, 6, 8], [3, 7], [4, 9], [5, 8], [5, 9], [6, 7], [6, 9], [7, 9], [8, 9]]
Cycle : [2, 5, 8]
- Modulo: 2 Character: (1, 0, 1, 1, 0, 1, 0, 0, 0)
Cycle : [3, 6, 7]
- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)

11/ [[1, 2, 4], [1, 3, 5], [1, 6], [1, 7], [1, 8, 9], [2, 3, 6], [2, 5, 7], [2, 8], [2, 9], [3, 4, 7], [3, 8], [3, 9], [4, 5, 6], [4, 8], [4, 9], [5, 8], [5, 9], [6, 7], [6, 8], [6, 9], [7, 8], [7, 9]]
Cycle : [1, 6, 7]
- Modulo: 2 Character: (0, 1, 1, 1, 1, 0, 0, 0, 0)

12/ [[1, 2, 4], [1, 3, 5], [1, 6, 8, 9], [1, 7], [2, 3, 7, 8], [2, 5, 6], [2, 9], [3, 4, 6], [3, 9], [4, 5, 7, 9], [4, 8], [5, 8], [6, 7]]
Cycle : [1, 6, 7]
- Modulo: 2 Character: (0, 1, 1, 1, 1, 0, 0, 0, 0)
Cycle : [2, 3, 9]
- Modulo: 2 Character: (1, 0, 0, 1, 1, 1, 0, 0, 0)
Cycle : [4, 5, 8]
- Modulo: 2 Character: (1, 1, 1, 0, 0, 1, 0, 0, 0)

13/ [[1, 2, 4], [1, 3, 6], [1, 5, 7], [1, 8, 9], [2, 3, 7, 8], [2, 5, 6], [2, 9], [3, 4, 5], [3, 9], [4, 6, 9], [4, 7], [4, 8], [5, 8], [5, 9], [6, 7], [6, 8], [7, 9]]
Cycle : [4, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)

14/ [[1, 2, 4], [1, 3, 8], [1, 5, 7], [1, 6, 9], [2, 3, 7], [2, 5, 9], [2, 6, 8], [3, 4, 5, 6], [3, 9], [4, 7, 8], [4, 9], [5, 8], [6, 7], [7, 9], [8, 9]]
Cycle : [1, 6, 7]
- Modulo: 2 Character: (0, 1, 1, 1, 0, 0, 0, 1, 0)
Cycle : [2, 5, 8]
- Modulo: 2 Character: (1, 0, 1, 1, 0, 0, 1, 0, 0)

15/ [[1, 2, 5], [1, 3, 6], [1, 4, 7], [1, 8], [1, 9], [2, 3, 7], [2, 4, 6], [2, 8], [2, 9], [3, 4, 5], [3, 8], [3, 9], [4, 8], [4, 9], [5, 6], [5, 7], [5, 8], [5, 9], [6, 7], [6, 8], [6, 9], [7, 8], [7, 9], [8, 9]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

16/ [[1, 2, 5, 7], [1, 3, 6], [1, 4, 9], [1, 8], [2, 3, 9], [2, 4, 6],
[2, 8], [3, 4, 5, 8], [3, 7], [4, 7], [5, 6], [5, 9], [6, 7, 8], [6, 9],
[7, 9], [8, 9]]
Cycle : [5, 6, 9]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

17/ [[1, 2, 5, 8], [1, 3, 6], [1, 4, 7], [1, 9], [2, 3, 7], [2, 4, 6],
[2, 9], [3, 4, 5], [3, 8], [3, 9], [4, 8], [4, 9], [5, 6], [5, 7], [5, 9],
[6, 7], [6, 8], [6, 9], [7, 8], [7, 9], [8, 9]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

18/ [[1, 2, 5, 8], [1, 3, 6], [1, 4, 7], [1, 9], [2, 3, 7], [2, 4, 6],
[2, 9], [3, 4, 5, 9], [3, 8], [4, 8], [5, 6], [5, 7], [6, 7], [6, 8], [6,
9], [7, 8], [7, 9], [8, 9]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

19/ [[1, 2, 5, 8], [1, 3, 6, 9], [1, 4, 7], [2, 3, 7], [2, 4, 6], [2,
9], [3, 4, 5], [3, 8], [4, 8], [4, 9], [5, 6], [5, 7], [5, 9], [6, 7], [6,
8], [7, 8], [7, 9], [8, 9]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

20/ [[1, 2, 6], [1, 3, 5], [1, 4, 9], [1, 7, 8], [2, 3, 4, 8], [2, 5,
7], [2, 9], [3, 6, 7], [3, 9], [4, 5, 6], [4, 7], [5, 8], [5, 9], [6, 8],
[6, 9], [7, 9], [8, 9]]
Cycle : [1, 4, 7]
- Modulo: 2 Character: (0, 1, 1, 0, 1, 1, 0, 0, 0)
Cycle : [5, 6, 8]
- Modulo: 2 Character: (1, 1, 1, 0, 0, 0, 1, 0, 0)

21/ [[1, 2, 6], [1, 3, 5, 8], [1, 4, 7], [1, 9], [2, 3, 7], [2, 4, 5,
9], [2, 8], [3, 4, 6], [3, 9], [4, 8], [5, 6], [5, 7], [6, 7, 8], [6, 9],
[7, 9], [8, 9]]
Cycle : [2, 4, 8]
- Modulo: 2 Character: (1, 0, 1, 0, 0, 1, 1, 0, 0)
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

22/ [[1, 2, 6], [1, 3, 7], [1, 4, 5], [1, 8, 9], [2, 3, 4], [2, 5, 7],
[2, 8], [2, 9], [3, 5, 6], [3, 8], [3, 9], [4, 6, 8], [4, 7], [4, 9], [5,
8], [5, 9], [6, 7], [6, 9], [7, 8], [7, 9]]
Cycle : [4, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)

23/ [[1, 2, 6, 7], [1, 3, 8], [1, 4, 5], [1, 9], [2, 3, 4], [2, 5, 8],
[2, 9], [3, 5, 7], [3, 6], [3, 9], [4, 6, 9], [4, 7], [4, 8], [5, 6], [5,
9], [6, 8], [7, 8], [7, 9], [8, 9]]
Cycle : [4, 7, 8]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)

24/ [[1, 2, 6, 8], [1, 3, 7, 9], [1, 4, 5], [2, 3, 5], [2, 4, 7], [2,
9], [3, 4, 6], [3, 8], [4, 8], [4, 9], [5, 6], [5, 7], [5, 8, 9], [6, 7],
[6, 9], [7, 8]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

25/ [[1, 2, 7], [1, 3, 4], [1, 5, 6], [1, 8, 9], [2, 3, 5], [2, 4, 8],
[2, 6, 9], [3, 6, 7], [3, 8], [3, 9], [4, 5, 7], [4, 6], [4, 9], [5, 8],
[5, 9], [6, 8], [7, 8], [7, 9]]
Cycle : [2, 4, 6]
- Modulo: 2 Character: (1, 0, 1, 0, 1, 0, 1, 0, 0)

26/ [[1, 2, 7], [1, 3, 4, 8], [1, 5, 6, 9], [2, 3, 9], [2, 4, 5], [2,
6, 8], [3, 5, 7], [3, 6], [4, 6, 7], [4, 9], [5, 8], [7, 8], [7, 9], [8,
9]]
Cycle : [2, 3, 6]
- Modulo: 2 Character: (1, 0, 0, 1, 1, 0, 1, 0, 0)
Cycle : [4, 7, 9]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)
Cycle : [5, 7, 8]
- Modulo: 2 Character: (1, 1, 0, 1, 0, 1, 0, 0, 0)

27/ [[1, 2, 7], [1, 3, 5], [1, 4, 8], [1, 6, 9], [2, 3, 4], [2, 5, 6],
[2, 8], [2, 9], [3, 6, 7], [3, 8], [3, 9], [4, 5, 7], [4, 6], [4, 9], [5,
8], [5, 9], [6, 8], [7, 8], [7, 9], [8, 9]]
Cycle : [1, 4, 6]
- Modulo: 2 Character: (0, 1, 1, 0, 1, 0, 1, 0, 0)

28/ [[1, 2, 7], [1, 3, 6], [1, 4, 5], [1, 8, 9], [2, 3, 5], [2, 4, 6],
[2, 8], [2, 9], [3, 4, 7], [3, 8], [3, 9], [4, 8], [4, 9], [5, 6], [5, 7],
[5, 8], [5, 9], [6, 7], [6, 8], [6, 9], [7, 8], [7, 9]]
Cycle : [5, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

29/ [[1, 2, 7], [1, 3, 8], [1, 4, 6], [1, 5, 9], [2, 3, 5, 6], [2, 4,
8], [2, 9], [3, 4, 7], [3, 9], [4, 5], [4, 9], [5, 7], [5, 8], [6, 7], [6,
8], [6, 9], [7, 8], [7, 9], [8, 9]]
Cycle : [6, 7, 8]
- Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)

30/ [[1, 2, 7, 8], [1, 3, 4], [1, 5, 6], [1, 9], [2, 3, 5], [2, 4, 6],
[2, 9], [3, 6, 8], [3, 7], [3, 9], [4, 5, 7], [4, 8], [4, 9], [5, 8], [5,
9], [6, 7], [6, 9], [7, 9], [8, 9]]
Cycle : [3, 6, 7]
- Modulo: 2 Character: (1, 1, 0, 1, 1, 0, 0, 0, 0)
Cycle : [4, 5, 8]
- Modulo: 2 Character: (1, 1, 1, 0, 0, 1, 0, 0, 0)

31/ [[1, 2, 7, 8], [1, 3, 4], [1, 5, 6], [1, 9], [2, 3, 6], [2, 4, 5],
[2, 9], [3, 5, 7], [3, 8], [3, 9], [4, 6, 9], [4, 7], [4, 8], [5, 8], [5,
9], [6, 7], [6, 8], [7, 9], [8, 9]]
Cycle : [4, 6, 7]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)

32/ [[1, 2, 8], [1, 3, 6], [1, 4, 5], [1, 7, 9], [2, 3, 4, 7], [2, 5,
6], [2, 9], [3, 5, 8], [3, 9], [4, 6, 9], [4, 8], [5, 7], [5, 9], [6, 7],
[6, 8], [7, 8], [8, 9]]
Cycle : [4, 6, 8]
- Modulo: 2 Character: (1, 1, 1, 0, 1, 0, 0, 0, 0)

33/ [[1, 2, 8, 9], [1, 3, 5], [1, 4, 6], [1, 7], [2, 3, 6], [2, 4, 5],
[2, 7], [3, 4, 7], [3, 8], [3, 9], [4, 8], [4, 9], [5, 6, 7], [5, 8], [5,
9], [6, 8], [6, 9], [7, 8], [7, 9]]
Cycle : [1, 2, 7]
- Modulo: 2 Character: (0, 0, 1, 1, 1, 1, 0, 0, 0)

34/ [[1, 2, 9], [1, 3, 5, 6], [1, 4, 7, 8], [2, 3, 7], [2, 4, 5], [2,
6, 8], [3, 4, 9], [3, 8], [4, 6], [5, 7], [5, 8], [5, 9], [6, 7], [6, 9],
[7, 9], [8, 9]]
 Cycle : [5, 7, 9]
 - Modulo: 2 Character: (1, 1, 1, 1, 0, 0, 0, 0, 0)