Latin Squares

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Finite Sets

$S = \{a, b, c\}$

$|S| = 3$

$[n] = \{0, 1, 2, \ldots, n-1\}$

$|[n]| = n$

Latin Square

$L = \{(i, j, k)\} \subset [n]^3$
such that
$\forall x \in [n] : \{(y, k) \mid (x, y, k) \in L\} = [n]^2$
and
$\forall y \in [n] : \{(x, k) \mid (x, y, k) \in L\} = [n]^2$.

Latin square – from wolfram mathworld, 2023. URL `https://mathworld.wolfram.com/LatinSquare.html`

1	2
2	1

Figure 1: Latin Square, order 2.

1	2	3
2	3	1
3	1	2

Figure 2: Latin Square, order 3.

2	1	3
1	3	2
3	2	1

Figure 3: Latin Square, order 3.

1	2	3	4
2	3	4	1
3	4	1	2
4	1	2	3

Figure 4: Latin Square, order 4.