Permutation Matrices

1 Why

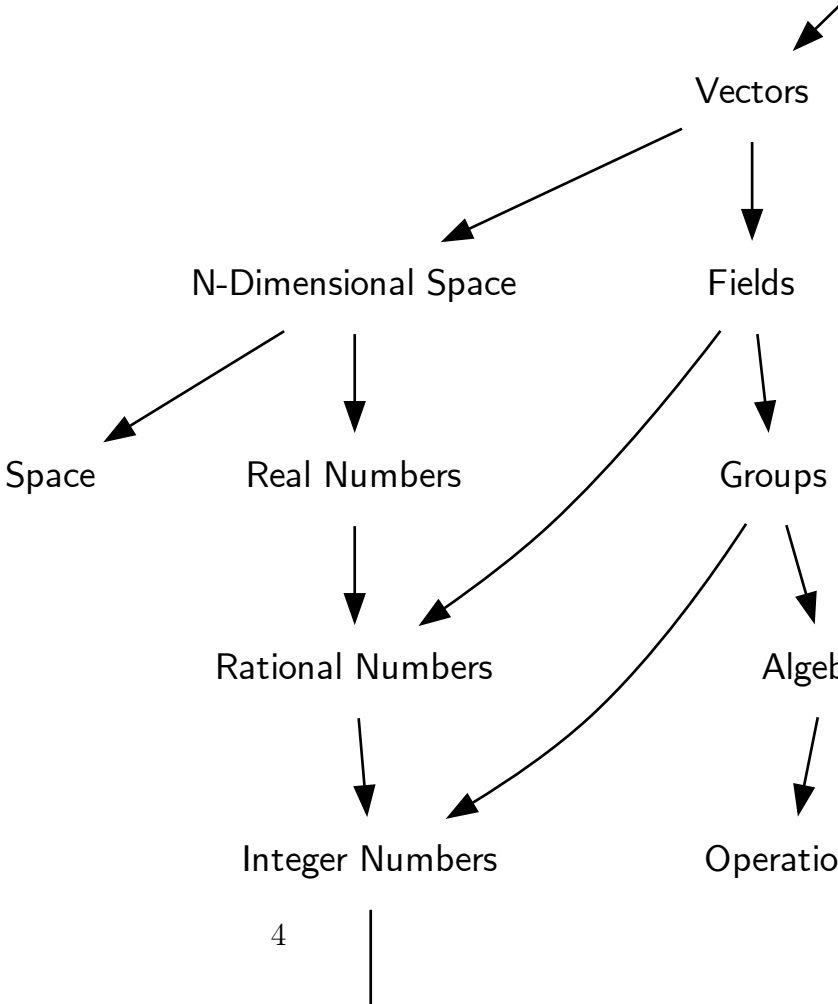
Permutations of the set $\{1, 2, \ldots, n\}$ correspond to matrices over $\mathbf{N}$.

2 Definition

The *matrix* corresponding to a permutation of $\{1, 2, \ldots, n\}$ is a matrix of natural numbers whose i, jth element is 1 if the permutation maps i to j; for $i, j \in \{1, 2, \ldots, n\}$.

3 Notation

Let $\sigma : \{1, 2, \ldots, n\} \to \{1, 2, \ldots, n\}$ be a permutation. Let $M \in \mathbf{N}^{n \times n}$ be such that M_{ij} is one if $\sigma(i) = j$ and 0 otherwise. Then M is the permutation matrix of σ.


Vectors
N-Dimensional Space
Fields
Space
Real Numbers
Groups
Rational Numbers
Integer Numbers