



## Fields

### 1 Why

We generalize the algebraic structure of addition and multiplication over the rationals.

### 2 Definition

A *field* is two algebras over the same ground set with: (1) both algebras are commutative groups (2) the operation of the second algebra distributes over the operation of the first algebra.

We call the operation of the first algebra *field addition*. We call the operation of the second algebra *field multiplication*.

#### 2.1 Notation

We denote an arbitrary field by  $\mathbf{F}$ , a mnemonic for “field.”

TODO