Fields.

Definition 1. A **field** is an algebraic structure $\mathbb{F} = \langle F; +, -, 0, \cdot, 1\rangle$ which satisfies the following

(1) Additive laws[1]:
  (a) (Associative law) $\forall x \forall y \forall z((x + (y + z)) = ((x + y) + z))$.
  (b) (Commutative law) $\forall x \forall y(x + y = y + x)$.
  (c) (Unit law) $\forall x(x + 0 = x)$
  (d) (Inverse law) $\forall x(x + (-x) = 0)$
(2) Multiplicative laws:
  (a) (Associative law) $\forall x \forall y \forall z((x(yz)) = ((xy)z))$.
  (b) (Commutative law) $\forall x \forall y(xy = yx)$.
  (c) (Unit law) $\forall x(x1 = x)$
(3) Law linking addition to multiplication:
  (a) (Distributive law): $\forall x \forall y \forall z(x(y + z) = xy + xz)$.
(4) Other defining properties that are not laws:
  (a) $0 \neq 1$.
  (b) $\forall x((x \neq 0) \rightarrow \exists y(xy = 1))$.

If you know the definition of "commutative group", the axioms for fields say that $\mathbb{F}$ is additively a commutative group, $\mathbb{F} - \{0\}$ is multiplicatively a commutative group, and the additive and multiplicative structures are linked by the distributive law.

These axioms say the following: a field is an algebraic structure that satisfies all equational laws true in the real numbers, and satisfies the properties listed under Item (4) ($0 \neq 1$, and also satisfies the property that every nonzero element has a multiplicative inverse).

Examples. $\mathbb{Q}, \mathbb{R}, \mathbb{C}$ and $\mathbb{Z}/p\mathbb{Z}$ (integers modulo p, p prime).
Nonexamples. $\mathbb{N}, \mathbb{Z}$, and $\mathbb{Z}/n\mathbb{Z}$ (integers modulo n, n not prime).

The smallest field has two elements. It is $\mathbb{F}_2 = \mathbb{Z}/2\mathbb{Z}$. Its operation tables are

$+$	0	1
0	0	1
1	1	0

$-$	0	1
	0	1

$\cdot$	0	1
0	0	0
1	0	1

The second smallest field is $\mathbb{F}_3 = \mathbb{Z}/3\mathbb{Z}$. Its tables are

$+$	0	1	2
0	0	1	2
1	1	2	0
2	2	0	1

$-$	0	1	2
	0	2	1

$+$	0	1	2
0	0	0	0
1	0	1	2
2	0	2	1

[1]A **law** or **identity** is a universally quantified equation.