



Math for the people, by the people.

rig

Canonical name	Rig
Date of creation	2013-03-22 14:44:29
Last modified on	2013-03-22 14:44:29
Owner	HkBst (6197)
Last modified by	HkBst (6197)
Numerical id	8
Author	HkBst (6197)
Entry type	Definition
Classification	msc 20M99
Related topic	semigroup
Related topic	ring

A *rig* $(R, +, \cdot)$ is a set R together with two binary operations $+: R^2 \rightarrow R: (a, b) \mapsto a + b$ and $\cdot: R^2 \rightarrow R: (a, b) \mapsto ab$, such that both $(R, +)$ and (R, \cdot) are monoids, where \cdot distributes over $+$. That is if $\{a, b, c, d\} \subset R$ then $(a + b)(c + d) = ac + ad + bc + bd$. The natural numbers with ordinary addition and multiplication $(\mathbf{N}, +, \cdot)$ is a rig.

A rig $(R, +, \cdot)$ is a ring if $(R, +)$ is a group. The integers with ordinary addition and multiplication $(\mathbf{Z}, +, \cdot)$ is a ring.