

Let V_1, V_2, \dots, V_n, W be vector spaces over a field K . A mapping

$$M : V_1 \times V_2 \times \cdots \times V_n \rightarrow W$$

is called *multi-linear* or n -linear, if M is linear in each of its arguments.

Notes.

- A bilinear mapping is another name for a 2-linear mapping.
- This definition generalizes in an obvious way to rings and modules.
- An excellent example of a multi-linear map is the determinant operation.