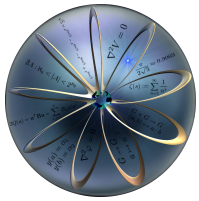

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blade

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A blade is a term often used to describe a basis entity in the space defined by a geometric algebra. Since a geometric algebra is a multi-graded space, the basis entities also have multiple grades. To distinguish the various graded entities, the blades are often prefixed by their grade. For example a grade-k basis entity would be called a k-blade.

The number of linearly independent k-blades in a particular geometric algebra is dependent on the number of dimensions of the manifold on which the algebra is defined. For an n-dimensional manifold, the number of k-blades is given by the binomial coefficient.

$$N_k = \left(\begin{array}{c} n \\ k \end{array} \right)$$

The total number of basis blades of all grades in a geometric algebra defined on an n-manifold is then:

$$N = \sum_{k=0}^{n} N_k = 2^n$$