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left and right unity of ring

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Defines	right unity

If a ring $(R,\,+,\,\cdot)$ left identity element e, i.e. if

$$e\cdot a = a \quad \forall a,$$

then e is called the *left unity* of R.

If a ring R right identity element e', i.e. if

$$a\cdot e' = a \quad \forall a,$$

then e' is called the *right unity* of R.

A ring may have several left or right unities (see e.g. the Klein four-ring).

If a ring R has both a left unity e and a right unity e', then they must coincide, since

$$e' = e\cdot e' = e.$$

This situation means that every right unity equals to e, likewise every left unity. Then we speak simply of a unity of the ring.