center (rings)

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If A is a ring, the center of A, sometimes denoted $\mathrm{Z}(A)$, is the set of all elements in A that commute with all other elements of A. That is,

$$\mathrm{Z}(A) = \{a \in A \mid ax = xa \forall x \in A\}$$

Note that $0 \in \mathrm{Z}(A)$ so the center is non-empty. If we assume that A is a ring with a multiplicative unity 1, then 1 is in the center as well. The center of A is also a subring of A.