

1.20: Centralizer

The **centralizer** $C_G(g)$ of an element g of a group G is the set of elements of G which commute with g :

$$C_G(g) = \{x \in G : xg = gx\}.$$

If H is a subgroup of G , then $C_H(g) = C_G(g) \cap H$.

More generally, if S is any subset of G (not necessarily a subgroup), the centralizer of S in G is defined as

$$C_G(S) = \{x \in G : \forall s \in S, xs = sx\}.$$

If $S = \{g\}$, then $C(S) = C(g)$.

$C(S)$ is a subgroup of G ; in fact, if x, y are in $C(S)$, then $xy^{-1}s = xsy^{-1} = sxy^{-1}$.

This page titled [1.20: Centralizer](#) is shared under a [CC BY 4.0](#) license and was authored, remixed, and/or curated by [Online Dictionary of Crystallography](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.