



Math for the people, by the people.

fix

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Synonym	fixed
Related topic	Fixed

In mathematical statements, mathematical objects such as points and numbers are described as being *fixed*. A possible meaning for this usage is that the mathematical object in question is not allowed to vary throughout the statement or proof (or, in some cases, a portion thereof). Although a fixed object typically does not vary, it is almost always arbitrary. This may seem paradoxical, but it is quite logical: An object is chosen arbitrarily, then it is never allowed to vary. See the entry *betweenness in rays* for an example of this usage.

The usage of the *fix* and *fixed* may also that a mapping sends the mathematical object to itself. These two usages are technically not the same. The former usage (described in the previous paragraph) states a property of the mathematical object in question and is always either part of an implication (as in “If $x \in \mathbb{R}$ is fixed, then...”) or a command made by the author to the reader (as in “Let $x \in \mathbb{R}$ be fixed.” and “Fix $x \in \mathbb{R}$.”). The latter usage (described in this paragraph) states a property of a mapping and may or may not be part of a conditional statement or a command. The word “fixes” *always* refers to this usage (as in “Note that f fixes x .”). See the entry <http://planetmath.org/Fixedfix> (transformation actions) for a further explanation of the latter usage.