Every [well-ordered set](https://en.wikipedia.org/wiki/Well-ordered_set) is order-equivalent to exactly one [ordinal number](https://en.wikipedia.org/wiki/Ordinal_number_(mathematics)), by definition. The ordinal numbers are taken to be the [canonical representatives](https://en.wikipedia.org/wiki/Canonical_form) of their classes, and so the order type of a well-ordered set is usually identified with the corresponding ordinal.

The cardinality of any infinite [ordinal number](https://en.wikipedia.org/wiki/Ordinal_number) is an aleph number. Every aleph is the cardinality of some ordinal. The least of these is its [initial ordinal](https://en.wikipedia.org/wiki/Initial_ordinal). Any set whose cardinality is an aleph is [equinumerous](https://en.wikipedia.org/wiki/Equinumerous) with an ordinal and is thus [well-orderable](https://en.wikipedia.org/wiki/Well-order).

Each [finite set](https://en.wikipedia.org/wiki/Finite_set) is well-orderable, but does not have an aleph as its cardinality.

The assumption that the cardinality of each [infinite set](https://en.wikipedia.org/wiki/Infinite_set) is an aleph number is equivalent over ZF to the existence of a well-ordering of every set, which in turn is equivalent to the [axiom of choice](https://en.wikipedia.org/wiki/Axiom_of_choice). ZFC set theory, which includes the axiom of choice, implies that every infinite set has an aleph number as its cardinality (i.e. is equinumerous with its initial ordinal), and thus the initial ordinals of the aleph numbers serve as a class of representatives for all possible infinite cardinal numbers.

When cardinality is studied in ZF without the axiom of choice, it is no longer possible to prove that each infinite set has some aleph number as its cardinality; the sets whose cardinality is an aleph number are exactly the infinite sets that can be well-ordered.

Scott's trick assigns representatives differently, using the fact that for every set A there is a least rank V\_{\alpha } in the cumulative hierarchy when some set of the same cardinality as A appears. Thus one may define the representative of the cardinal number of A to be the set of all sets of rank V\_{\alpha } that have the same cardinality as A. This definition assigns a representative to every cardinal number even when not every set can be well-ordered (an assumption equivalent to the axiom of choice). It can be carried out in Zermelo–Fraenkel set theory, without using the axiom of choice, but making essential use of the axiom of regularity.