



## Why

We often have two algebras for which we can identify elements of the ground set.

## Definition

Let  $(A, +_A)$  and  $(B, +_B)$  be two algebras.<sup>1</sup>

An *isomorphism* between these two algebras is a bijection  $f : A \rightarrow B$  satisfying:

$$f(a +_A a') = f(a) +_B f(a')$$

and

$$f^{-1}(b +_B b') = f^{-1}(b) +_A f^{-1}(b').$$

If there exists an isomorphism between two algebras we say that the algebras are *isomorphic*.

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<sup>1</sup>Future editions will change this notation to avoid clashes with right and left identity elements (see **Identity Elements**).



