ordered pair

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For any sets a and b, the *ordered pair* (a, b) is the set $\{\{a\}, \{a, b\}\}$. The characterizing property of an ordered pair is:

$$(a, b) = (c, d) \iff a = b \text{ and } c = d,$$

and the above construction of ordered pair, as weird as it seems, is actually the simplest possible formulation which achieves this property.