Theorem (2.2.11b)**.** *Let A and B be sets. The intersection of A and B is commutative.*

Proof. Let x be an element in $A \cap B$. By the definition of intersection, $(x \in A) \wedge (x \in B)$. Because logical conjunction is commutative, the definition is equivalently stated as $(x \in B) \wedge (x \in A)$. Meaning that $x \in (B \cap A)$. So $A \cap B = B \cap A$, and indeed the intersection of two sets is commutative. ■