Two Distributive Laws

1. \( (\bigcup_{j} A_j) \cap B = \bigcup_{j} (A_j \cap B) \)
   
   An outcome is in \(\bigcup_{j} A_j \cap B\) if it is in \(B\) and in at least one of the \(A_j\)'s. Equivalently, it is in at least one \(A_j \cap B\).

2. \( (\bigcap_{j} A_j) \cup B = \bigcap_{j} (A_j \cup B) \)
   
   An outcome is in \(\bigcap_{j} A_j \cup B\) if it is in \(B\) or all of the \(A_j\)'s. Equivalently, it is in \(B\) or all of the \(A_j\)'s (or both).