We can use a recursive definition to describe all compound propositions that use propositional variables from a specified collection. Here's the definition for all compound propositions whose propositional variables are in  $\{p,q\}$ .

Basis Step: p and q are each a compound proposition

Recursive Step: If x is a compound proposition then so is  $(\neg x)$  and if

x and y are both compound propositions then so is each of

 $(x \land y), (x \oplus y), (x \lor y), (x \to y), (x \leftrightarrow y)$