NP-completeness proof - scheme

- The general scheme is:
  - Show that you problem is in NP. Given a potential solution proof that an algorithm verifying that solution is polynomial time.
  - Reduce an known NPC problem to your problem in polynomial time. In other words prove another NP-complete problem is *no harder* than it. That is, use your problem to solve an NP-complete problem with only a polynomial time speed up. Pretend you have an oracle for your problem that solves it in constant time, and make an algorithm to solve an NP-complete problem using the oracle that works in polynomial time.
- Oracle machine - an abstract machine used to study decision problems. It is a black box that when given any problem (even problems from NP, or undecidable problems) it solves it in a single operation.