- NP-Completeness

-- Difference between optimization problem input/output to algo and decision problem input/output to algo

-- Is P = NP or P a subset of NP? explain the importance of this question and common believe and why, draw picture of this and explain your picture

-- What is P classification

-- What is NP classification

-- What is NP-Complete classification

-- What is NP-Hard classification

-- What are the steps to prove a problem is in NP-Complete?

-- Be able to prove a decision problem is in NP-Complete. Focus on the ones we did in class.

-- Be able to give problem definitions.

-- Be able to pose a problem as a decision problem and a verification problem and an optimization problem, when appropriate.

-- Explain the difference between a decision and verification problem statement

- For each of the following below, be able to

-- give the definition

-- define the decision and verification problem

-- give an algorithm for the verification problem

(note, this is already included in the NP-Completeness

section above since this portion is needed to show a

problem is in P when proving a problem is in NP-Complete)

-- give an example

--- Hamiltonian Cycle (H.C.)

--- k-coloring of a graph

--- clique cover

--- Independent Set

--- 3CNF

--- 3Sat (problem, define terms needed for this problem)

--- clique

--- vertex cover

--- Subset Sum

- NP-Complete proofs done in class (if I did not list some that we did in class, you are still responsible. If you wish, let me know and I'll add it to the list)

-- Clique Cover by reducing 3 colorability to Clique cover

-- Independent Set by reducting 3-SAT to Independent Set

-- Clique by reducing Independent Set to Clique

-- Subset Sum by reducing Vertex Cover to Subset Sum