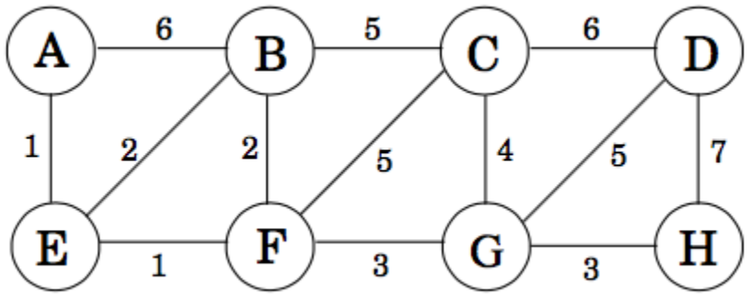
CSE 207
CT 1-SET D
Date: 07/12/2021
Time: 20 minutes

Name: _____ **ID:** _____

1. What is the cost of its minimum spanning tree?



2. The following statements may or may not be correct. In each case, either prove it (if it is correct) or give a counterexample (if it isn't correct). Always assume that the graph G = (V, E) is undirected. Do not assume that edge weights are distinct unless this is specifically stated.

   The shortest path between two nodes is necessarily part of some MST.

3. Suppose you have algorithms with the two running times listed below. (Assume these are the exact running times.) How much slower do each of these algorithms get when you (a) double the input size, or (b) increase the input size by one?
   (i) 2^n
   (ii) n^3