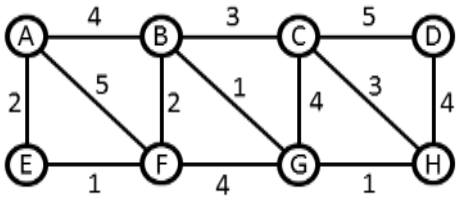
Name _____ Quiz 3

1) On the graph below, use Dijkstra's algorithm to find a shortest path between vertex A and vertex H.

Be sure to clearly illustrate how the algorithm works.



2) Assume we have an implementation of Dijkstra's algorithm that requires $\Theta(n^2)$ time to run through the entire graph. We will use this algorithm to solve the "all pairs shortest path" problem by iterating through each vertex and running Dijkstra's algorithm from that vertex. In doing so, we will find the shortest path between every pair of vertices.

How long will it take to solve the "all pairs shortest path" problem using this method?

3) In the previous question you found a runtime for a particular algorithm for solving the "all pairs shortest path". Find and justify a lower bound on the time required to solve this problem.
(For full credit your lower bound should be nontrivial)