Name: _____ score:_____ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

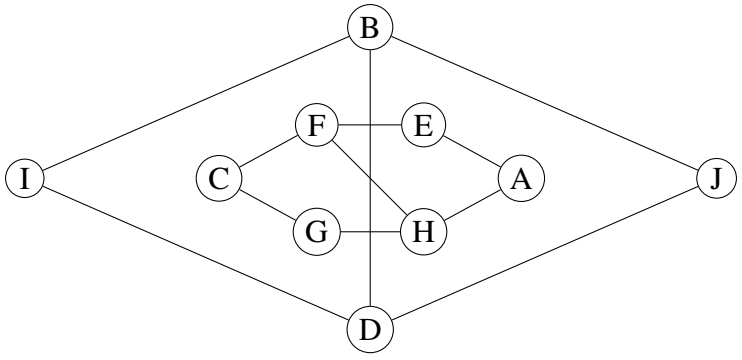
1. (2 points) Describe a situation that can be modeled with a **weighted** graph. What do the vertices represent? What do the edges represent? What do the weights represent?

   Vertices:

   Edges:

   Weights:

2. (3 points) Consider the following graph:



   (a) How many vertices does this graph have? _____

   (b) How many edges does this graph have? _____

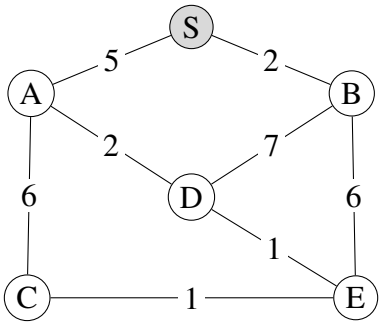
   (c) Explain why this graph is not connected.

3. (5 points) Recall Dijkstra's algorithm says the following:

   Dijkstra's Algorithm

   input: a graph with distances (weights) on the edges and a starting vertex, say s
   output: the shortest distance between s and every vertex in the graph
   rough strategy: All vertices get **tentative** distances to vertex s. One-by-one, vertices are explored and tentative distances are updated until minimum distances are obtained. Break ties alphabetically.

   Use Dijkstra's algorithm to determine the distances between vertex S and each other vertex. Clearly show the steps of the algorithm in the space provided.



Explored?	vertices	tentative distances
	S	
	A	
	B	
	C	
	D	
	E	

vertex	minimum distance to S
S	
A	
B	
C	
D	
E	