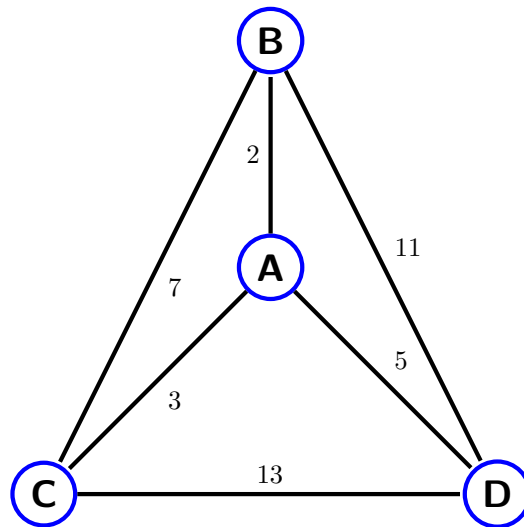


Side one of this worksheet covers material from yesterday's class (Hamiltonian circuits, Traveling Salesman Problem, and Algorithms) while the back side covers material from today's lecture (Heuristic algorithms and greedy algorithms)

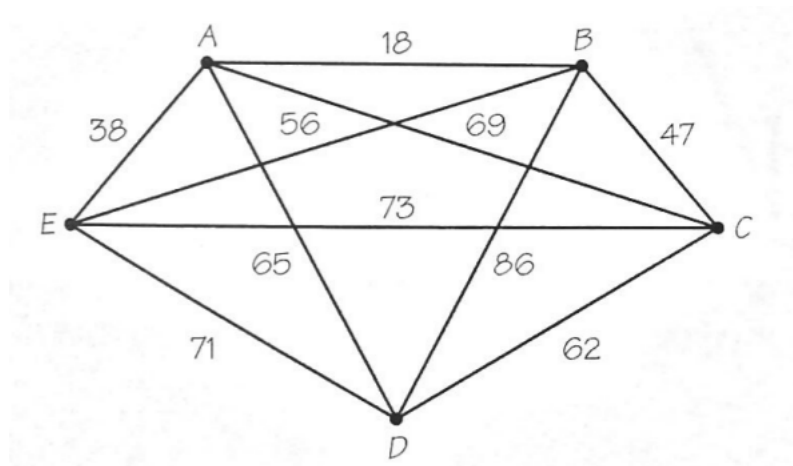
1. Solve the traveling salesman problem on the following graph by finding the total cost of all three distinct circuit.



2. (a) A lottery game requires players to select an upper case or lower case letter followed by two odd digits. How many possible entries are there?
- (b) There are 5,757 five-letter words in the English language. What percentage of five-letter strings (i.e., five letters in a row that are not necessarily a word) are words?
3. In the following scenarios decide whether finding an Euler circuit or Hamiltonian circuit would be most helpful. Give a brief reason why.
- (a) A fisherman has several traps to check each day.
- (b) A street sweeper needs to find a route.
- (c) FedEx is delivering packages to several locations in town.
- (d) USPS is delivering mail to houses on each street in town.

4. Choose something you do every day. Write an algorithm to accomplish this task. (4-6 lines)

5. Consider the following graph:



(a) Apply the nearest-neighbor algorithm starting at vertex A. What is the cost?

(b) Apply the nearest-neighbor algorithm starting at vertex B. What is the cost?

(c) Apply the sorted edges algorithm. What is the cost?

6. How many distinct Hamiltonian circuits are there in a K_6 ?