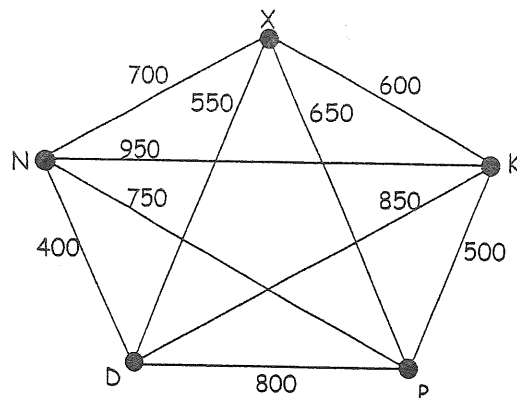
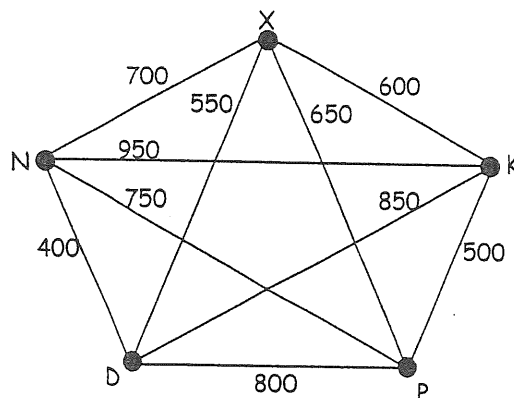


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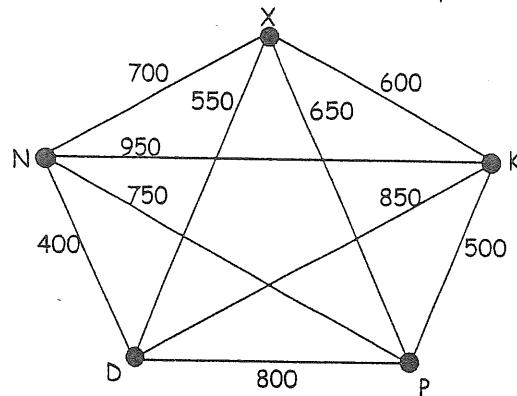
1. Suppose Marvin, who lives on Planet X, must visit the planets of Krypton, Pern, Dagobah, and Narn. The weights shown in the diagram represent the number of weeks required for him to travel between the planets.
- (a) Apply the Nearest Neighbor algorithm with starting vertex K to find a Hamiltonian circuit. Show your circuit on the graph at right. What is the total travel time for this circuit?



- (b) Apply the Nearest Neighbor algorithm with starting vertex D to find a Hamiltonian circuit. Show your circuit on the graph at right. What is the total travel time for this circuit?



- (c) Apply the Cheapest Link (Sorted Edges) algorithm to find a Hamiltonian circuit. Show all steps. Show your circuit on the graph at right. What is the travel time for this circuit?

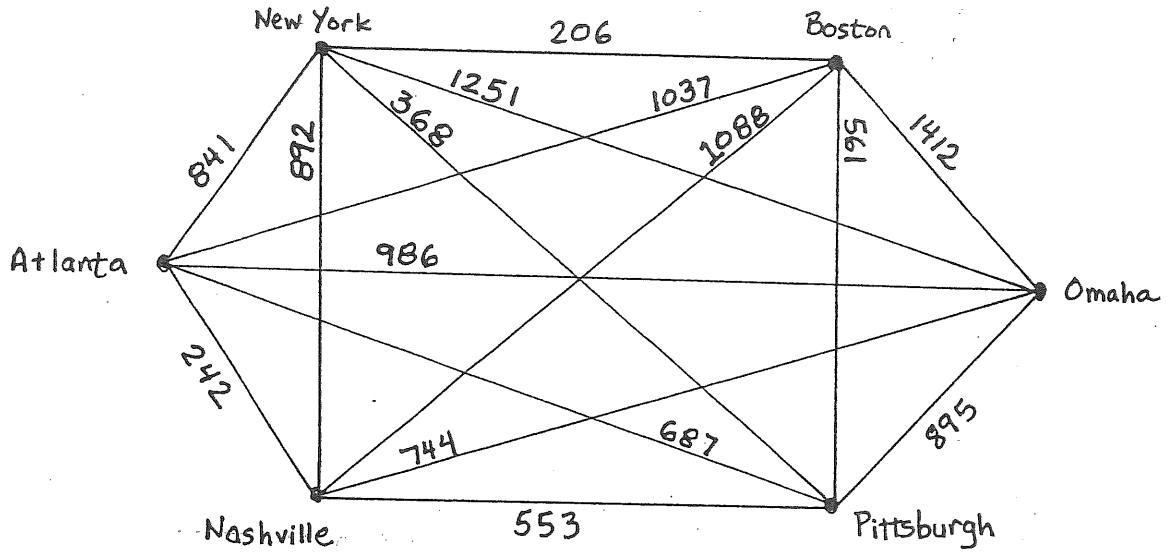


- (d) For the best of the circuits you found in parts (a)–(c), write the circuit as it would be traveled by Marvin, living on Planet X. (list vertices in order)

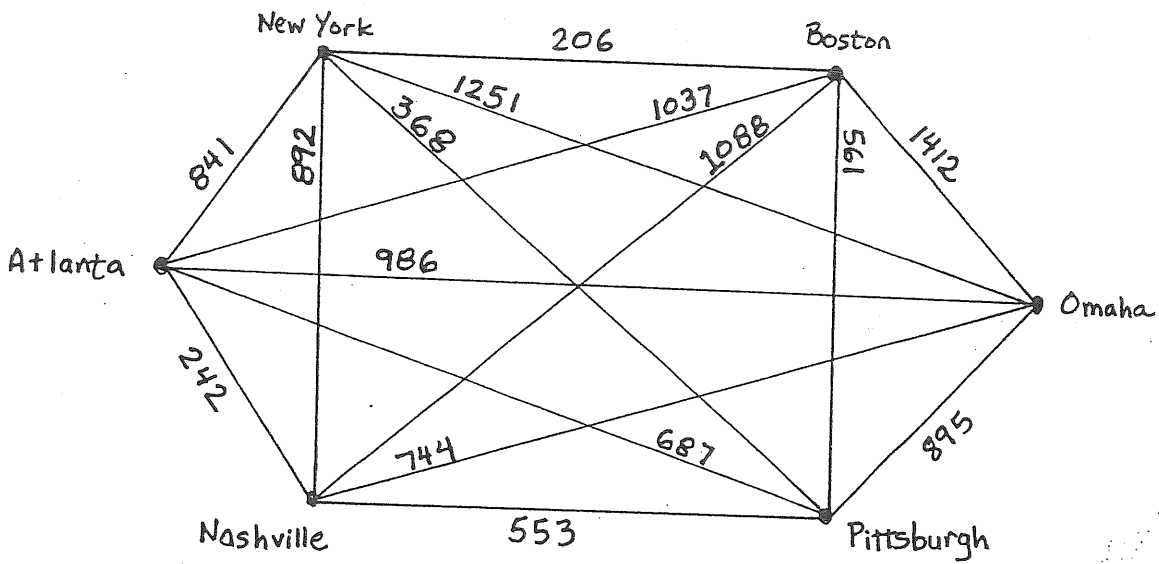
2. Now suppose that Marvin must travel from Planet X to 13 other planets.

- (a) How many edges will the complete graph between these 14 planets have? (show the formula, and the result.)
- (b) How many different Hamiltonian circuits are possible for this graph? (show the formula, and the result.)
- (c) If we used the Repetitive Nearest Neighbor Algorithm for this graph, how many circuits would we need to check?

3. Moe must visit all of his Aunts and Uncles, who live in the cities listed below. For each route you find, give the total cost of the Hamilton circuit.
 (a) Use the Nearest-Neighbor method to find a low-mileage route starting and ending at Omaha.



- (b) use sorted edges algorithm



4. How many Hamilton circuits would we need to check in order to find the BEST route for a traveling salesman who must visit 7 cities and then return to his home (in the 8th city)?