Problem 2

AB, DG, FG, GH, BC, CG, AE

Problem 3

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Problem 4

Consider the if there is another MST, T', such that it uses edge e_t where T does not. Since edge weights are distinct, then the edge chosen by T must have been the smallest weighted edge that connects two vertices. However, we claim that e_t is such edge. Hence it must be included in T, but it is not. Therefore a contradiction.

Similarly, if e_t is not used in T', then the edge used in its place would be strictly greater than e_t, meaning if we did use e_t our total weight would be reduced.

Problem 5

Yes this is the skills problem (set cover). We can view restaurants as the people in the skills problem, and the customers it covers as the skills each person has. The goal of that problem was to find the maximum number of skills using as few people as possible. In this problem we can just say we can use k restaurants, cover as many people as possible.

TL/DR:

- Use set cover
- People $\rightarrow$ Restaurants
- Skills $\rightarrow$ Customers
- Goal: Cover skills using as few people as possible $\rightarrow$ Goal: Cover as many customers using k restaurants