1a. Optimal substructure: Have the athletes run the same amount of test runs over the course of the same amount of m weeks. Have them all run at different speeds and see which fastest speed they could run without injuring themselves.

b.

c.

d.

e. $O(n^2)$

f. Start with the first week of running and the miles ran. Continue onto the final week and find the most efficient amount of miles ran with the least amount of weeks it took to get to that amount of miles.

2a. Optimal substructure: Between the cooks if some of the cooking steps are shared, the cooks that has the most amount of shared steps should do all the steps. Then switch to the cook that has steps remaining that other cooks don't have.

b. For one recipe the cook that has the biggest amount of steps shared with the other chefs should do all the steps and the remaining steps that isn't shared, the chefs who are responsible for those steps complete those.

c.

d.

e.

3a.