The Mr. Trek, Mr. Schwinn, and Mr. Huffy problem

Description
You are on the beginning of a wobbly bridge with Mr. Trek, Mr. Schwinn, and Mr. Huffy. It's dark, and the group has only one flashlight. Your task is to get everyone to the other side as quickly as possible, with the following restrictions: at most two people can be on the bridge at the same time and people need the flashlight to cross the bridge. You can cross the bridge in 1 minute; Mr. Trek needs 2 minutes, Mr. Schwinn needs 5 minutes, and Mr. Huffy needs 10 minutes. If two people cross the bridge together, they need as much time as the slowest of them.

Write a program to solve this problem using the A* algorithm. Allow for user-defined values for the times it takes your companions to cross the bridge, in addition to the ones mentioned in the previous paragraph. Also, experiment with different heuristic function and evaluate their relative efficiencies. Write a report using the guidelines described in the syllabus.