***Combined PNT, crashing and time-scaled network problem***

A company plans to open a new shop. In this project, it considers the following steps:

First (activity a), they plan the project (10 days), then the location for the new shop is selected rented (b, 14 days). After the rent is completed, furniture can be bought (c, 7 days). The starting stock for the shop is purchased right after the planning is finished (d, 10 days). Shelves in the shop are stocked after both the furniture and the goods are present (e, 3 days). The staffing process for the new shop is also started directly after the planning is complete (f, 22 days). When the new personnel is in employment, they are trained (g, 4 days). Renting/furnishing, buying goods and staffing processes are independent from each other. If both the stocks and the staff are in their place, the project ends.

1. ***Plot the standard AoA and Aon networks for the project.***
2. ***Calculate activity and event times, floats, TPT and find the critical and non-critical paths and activities.***

Additional information is available on how to decrease the TPT:

* Via employing agencies the rental activity can be crashed down to 10 days. The cost is 100 per days.
* Buying from more expensive suppliers furnishing can also be faster. The extra cost is 200 daily, and a maximum of 2 days could be saved this way.
* More rapid wholesalers are available as well. With them stock building is more rapid. The extra cost is 50 per crashed days, and the minimum duration of this activity is no less than 7 days.
* Employment agencies can save hiring time. Even this was staffing cannot be faster than 18 days. The cost is 150 per days saved.
* A 1 day shorter training duration costs 60 more (and only 1 day can be saved).
1. ***Perform the crashing process, if decreasing TPT saves 320 per day.***
2. ***Plot the after-crashing project on time scaled AoA and AoN networks.***