Aspen Hilton: An analogy for Electron configuration

You are the manager the Aspen Hotel. It is an old hotel that doesn't have an elevator. Your major task is to register guests, keeping the following rules in mind:

- Each room can hold 2 people
- People are lazy and therefore want to stay on the lowest floor possible.
- People prefer to room by themselves, unless it means they have to go to a higher floor.
- You use ↑ or ↓ to indicate where you have registered people.

Your hotel can hold 30 people and has floor plan like this.

7th floor ___ ___ ___ ___ ___
6th floor ___
5th floor ___ ___ ___
4th floor ___
3rd floor ___ ___ ___
2nd floor ___
1st floor ___

A full hotel would look like the diagram below:	7 registered people would look like the diagram below:
7th floor ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ 6th floor ↑↓ 5th floor ↑↓ ↑↓ ↑↓ 4th floor ↑↓ 3rd floor ↑↓ ↑↓ ↑↓ 2nd floor ↑↓ 1st floor ↑↓	7th floor ___ ___ ___ ___ ___ 6th floor ___ 5th floor ___ ___ ___ 4th floor ___ 3rd floor ↑ ↑ ↑ 2nd floor ↑↓ 1st floor ↑↓
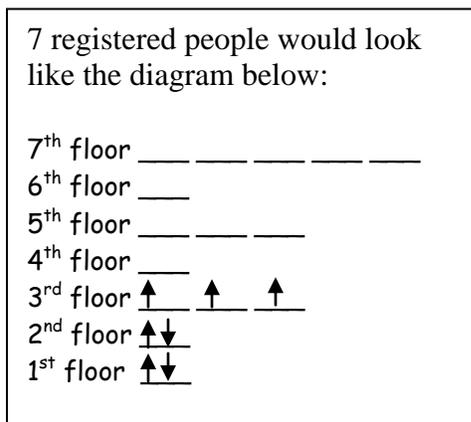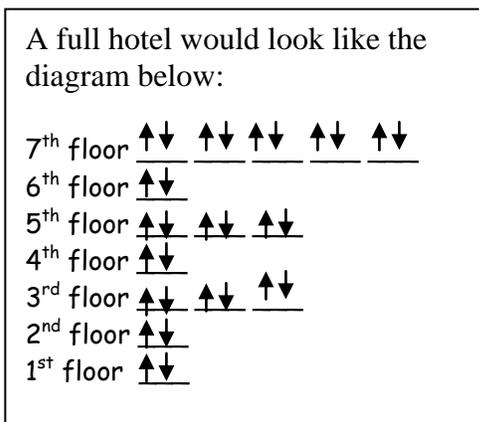
Practice: (on your own paper)
1. Draw what the hotel diagram would look like if you have 15 people registered
2. Draw what the hotel diagram would look like if you have 25 people registered

Electron Configuration: The hotel is an analogy which relates to electron orbitals. Electron orbitals are modeled by the picture below and have orbital names instead of floor levels, but generally follow the same rules as the people in the analogy.

3d ___ ___ ___ ___ ___
4s ___
3p ___ ___ ___
3s ___
2p ___ ___ ___
2s ___
1s ___

Practice: (on your own paper) Show how the electron orbitals would fill:
a. 3 electrons b. 10 electrons c. 8 electrons d. 24 electrons   e. 19 electrons