

## Home Work Problem Set IV

1. Lady Sofia, Squire John, Sir Frederic and Prince Albert are all inhabitants of the Island Kingdom of Samhop, where every one is either a knight or a knave.

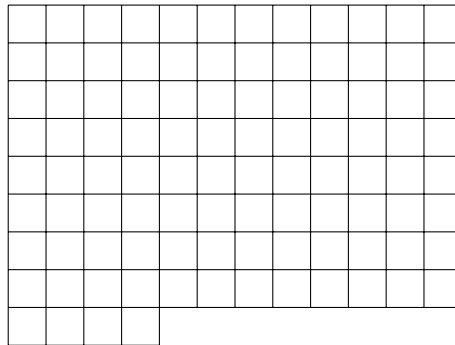
- Lady Sofia claims that Squire John is a knave.
- Sir Frederic states that Lady Sofia is a knave.
- Prince Albert declares that both Lady Sofia and Ben are knaves.
- Prince Albert also states that Sir Frederic is a knave as well.

Who is who?

2. The country of NearAndFar is composed from several states; it also has several political parties. Once, a group of NearAndFarian politicians got together for afternoon tea. The group contained people from at least two different states and from at least two different parties.

Prove that there were two politicians at the dinner that represented different states and belonged to different parties.

3. In Problem 1 of Problem Set IV, what if the carpet was originally  $9 \times 12$ , was restored to  $10 \times 10$ , and was burnt as in the figure below.



How did the princess cut the carpet into 3 rectangles?