

Name: Huize Shi

Pid: A92122910

1. Alice and Bob play the following game.

- Initially, there are 20 numbers: 10 numbers 1 and 10 numbers 2.
- On each step one of the players select two numbers; and if they were the same, replace them by 2; otherwise, replace them by 1.
- Alice make the first move and they do moves one after another.

Who is the winner?

Solution:

2. In the subtraction game where players may subtract 1, 2 or 5 chips on their turn, identify the N and P positions.

Solution:

3. Is the Nim position $(1, 3, 5)$ an N-position (explain your answer)?

Solution:

4. Consider the Misère subtraction game where players may subtract 1, 5 or 6 chips on their turn, identify the N and P positions.

Solution: