

### **Third Handout:**

Start Simple and look for what can go wrong:

- 1) What about even numbers, ie divisible by two, is there a certain number of numbers I need to be able to find a pair whose difference is divisible by two? Would two numbers work?
- 2) How many numbers do I need before I get two who have a difference that is divisible by 10?
- 3) Does this help our three's case? What could go wrong? How is it related to remainders after dividing by 2 and 10?
- 4) What are the possible remainders numbers could have when we divide by 3?
- 5) Could we pick four numbers that each have a different remainder?