Assignment one, MATC44, 2012

*Each problem is 10 points*

**Problem 1.** We flip a coin 10 times. What is the probability that we get the same thing ten times?

**Problem 2.** How many 5 letter words can be formed using the English alphabet (26 letters: 5 vowels, 21 consonants) such that there are no two consecutive letters that are both vowels or both consonants.

**Problem 3.** How many 4 digit decimal numbers are there such that they contain a repeated digit. (Repetition means: A digit occurs at least twice.) Note that leading 0 is not allowed in decimal integers. For example 0145 is not a four digit number.

**Problem 4.** In how many ways can we pick three people from a class with 15 girls and 12 boys such that exactly one of them is a boy.

**Problem 5.** We roll three dice. What is the probability that the sum of the values is divisible by 6?