

**Mathematics 1550H – Introduction to probability**

TRENT UNIVERSITY, Summer 2016

**Assignment #2**

**Coping with bias**

*Due Monday, 4 July, 2016.*

1. You are given a fair coin and asked to use it to randomly generate a yes or no answer, with the stipulation that the probability of a ‘yes’ should be  $\frac{4}{7}$  and the probability of a ‘no’ should be  $\frac{3}{7}$ . How can you do the job you’re given? [3]
2. You are given a coin, whether fair or not you do not know, and asked to use it to randomly generate a yes or no answer, with the stipulation that the probability of a ‘yes’ should be equal to the probability of a ‘no’. How can you do the job if you do not have the time or means to determine the possible bias of the given coin? [3]
3. You are given a coin, whether fair or not you do not know, and asked to use it to randomly generate a yes or no answer, with the stipulation that the probability of a ‘yes’ should be  $\frac{1}{\pi}$  and the probability of a ‘no’ should be  $1 - \frac{1}{\pi}$ . How can you do the job if you do not have the time or means to determine the possible bias of the given coin? [4]