Tutorial ...

Name:_____

ID:_____

Mathematics 1E2 2006–07

HW 14 Due 19/2/06

(1)(12 marks). The following sample comes from identically distributed items. Estimate the mean and variance of the distribution.

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0 7 6 2 0 7 0 9 8 2
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(2) (12 marks). Suppose you visit a city for the first time and someone tells you that the buses are numbered from 1 to N, but that person is unsure of what N is. The highest bus-number you see is 78. What is the maximum-likelihood estimator for N?

(3) (12 marks). Suppose that the postal service were slightly unreliable, and letters had a certain probability p of not being delivered. To estimate p, suppose someone mailed 100 letters to himself during a year, and suppose that 94 were delivered. Find the maximum-likelihood estimate of p.

(4) (14 marks). There are r people in a room, none of them with birthdays on February 29th. What is the probability that all r people have different birthdays? (Assume their birthdays are independently distributed).

Calculate the smallest r such that there is a better-than-evens chance that two or more people in the room have the same birthday.