

Mathematics 1550H – Introduction to probability

TRENT UNIVERSITY, Winter 2016

Assignment #1

Sheer drama or a comedy of errors?

Due on Friday, 22 January, 2016.

A theatre with entirely reserved seating is sold out for a performance of Christopher Fry's *The Lady's Not For Burning*,* and everyone who brought a ticket shows up. The theatre seats 128: the seats are duly numbered 1, 2, . . . , 128, and each ticket has the number of the seat the member of the audience is to sit in. The audience enters the theatre one at a time. Unfortunately, the first one to enter doesn't notice the number of the seat on the ticket and sits in a random seat. After that, each person sits in their assigned seat if it is unoccupied, and one of unoccupied seats at random otherwise.

1. What is the probability that the last member of the audience to enter gets to sit in their assigned seat? [10]

JENNET . . . Poor father. In the end he walked
In Science like the densest night. And yet
He was greatly gifted.
When he was born he gave an algebraic
Cry; at one glance measured the cubic content
Of that ivory cone his mother's breast
And multiplied his appetite by five.
So he matured by a progression, gained
Experience by correlation, expanded
Into a marriage by contraction, and by
Certain physical dynamics
Formulated me. And on he went
Still deeper into the calculating twilight
Under the twinkling of five-pointed figures
Till Truth became for him the sum of sums
And Death the long division. My poor father.
What years and powers he wasted.
He thought he could change the matter of the world
From the poles to the simultaneous equator
By strange experiment and by describing
Numerical parabolas.

From *The Lady's Not For Burning*, by Christopher Fry.
(Sadly, this is most of the math in the play . . . :-)

* This happens to be your instructor's favourite play!