

Mathematics 1550H – Introduction to probability

TRENT UNIVERSITY, Winter 2018

Assignment #1

Is it random?

Due on Friday, 19 January.

Consider the following two sequences of one hundred heads and tails:

Sequence #1:

TTHHHTHTHHHTTHHHTTTTHHHTHHHTHTTTHTHTTHTHHHTTHTTTTHTHHHHHTTTHHHTTHHHHHHTHTHHHTTTTTTHHHHTHHHTTHTTHTT

Sequence #2:

TTHHTTTHTHTTTTTTHHTHHHTTTHHHHTHHHTTHTHHHTHTHTTTHTTTTHHHTHTHTHTTTHTTTHHHTHHHTTTHHHTTTTTTHHHHTHHHTTHTTHTH

One of these sequences was generated by actually tossing a quarter one hundred times; the other was generated by your instructor sitting at his computer and hitting the “H” and “T” keys one hundred times between them and trying to make it seem random.

1. Try to figure out which sequence was generated by tossing a coin and which was not. Give your reasoning! [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 ... :-)