

BRIEF BIOGRAPHY

Sir Francis Galton (1822 – 1911)

- He was an English explorer, an anthropologist, and a eugenicist, but also a statistician, a sociologist, a psychologist, a geographer, an inventor, a meteorologist, ...
- Knighted in 1909.

Quincunx
[ˈkwɪŋkʌŋks]

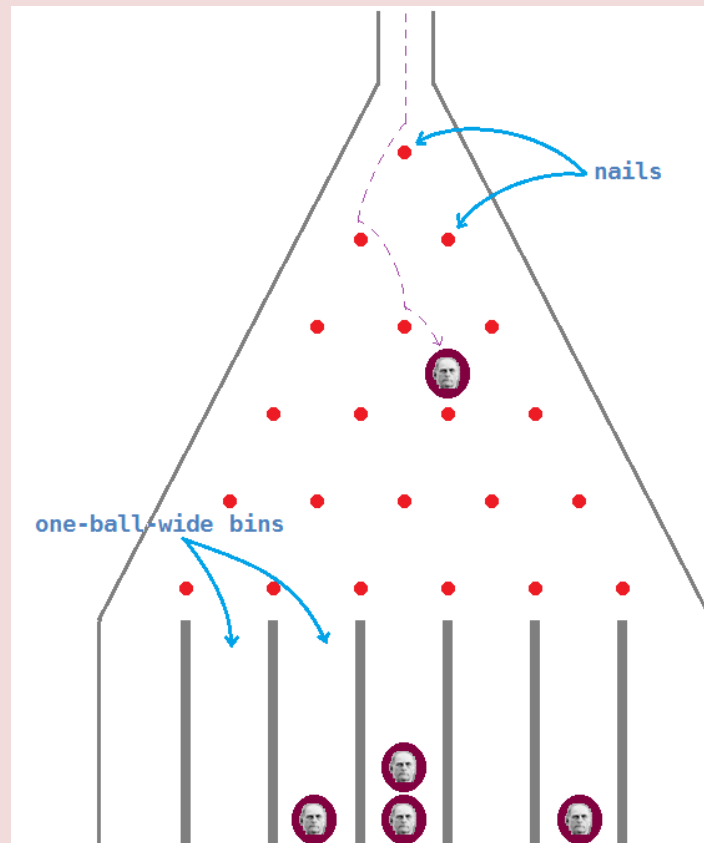
Galton board

Bean machine

The **Galton board** is a device named after Sir Francis Galton.

It consists of a vertical board with evenly spaced nails. Balls are dropped from the top, and bounce left and right as they hit the nails. Eventually, they are collected into one-ball-wide bins at the bottom.

Each time a ball hits one of the nails, it can bounce right or left with equal probability p (the nails are placed symmetrically).

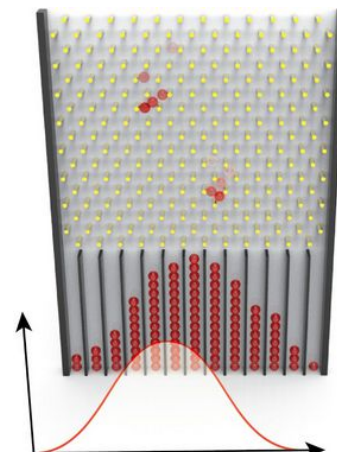


If the number of balls is sufficiently large the heights of ball columns in the bins will approximate a bell curve.

(In other words: according to the weak law of large numbers, the distribution of the heights of ball columns in the bins will approximate a normal distribution.)

see also -> the central limit theorem (CLT)

The bell-shaped distribution of balls in the bins at the bottom simulates the binomial distribution and illustrates the CLT.



See also -> **PROBABILITY Galton board EXCEL**