Variability of the No. of Trials to First "Success" :
The Geometric Probability Distribution

What it is

The probability...	that the first "positive" will occur at the ..
p_1	1st trial
p_2	2nd trial
..	..
p_y	y-th trial
…	…

if each trial is an independent binary trial with same probability of a "positive" from trail to trial

How it arises

"waiting times" where prob(positive) does not change with trial no.

e.g. how long plates and cups "survive" in cafeteria
(cause of "death" is external -- accidental)

e.g. Russian Roulette ??

"how long" until find a "positive" when sequentially sampling from a population with a binary trait

[if population is large, whether one "replaces" the sampled person does not materially alter the probability of a "positive" on the next trial]

"Close but not exactly geometric"

First ace; First birthday duplicate;
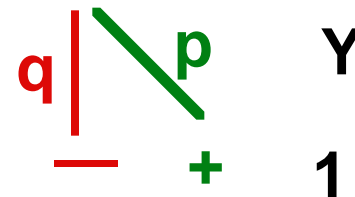no replacement-> prob("positive") change from trial to trial

Not even Close
age at which person dies
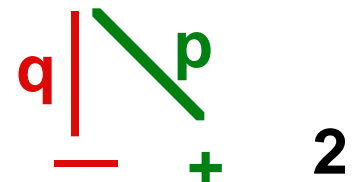prob(dying in **next** year) changes rapidly with age
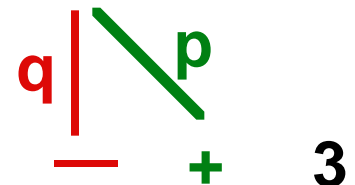
???
 Number of tries until pass course/exam

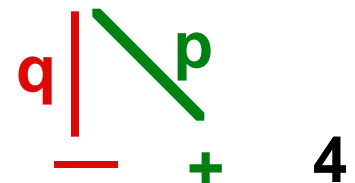**"TREE" for Geometric Probability Distribution**

$$q = 1 - p$$

$$E(Y) = 1 / p$$

$$V(Y) = q / p^2$$

$$\text{Prob}(Y = y) = q^{y-1}\, p$$