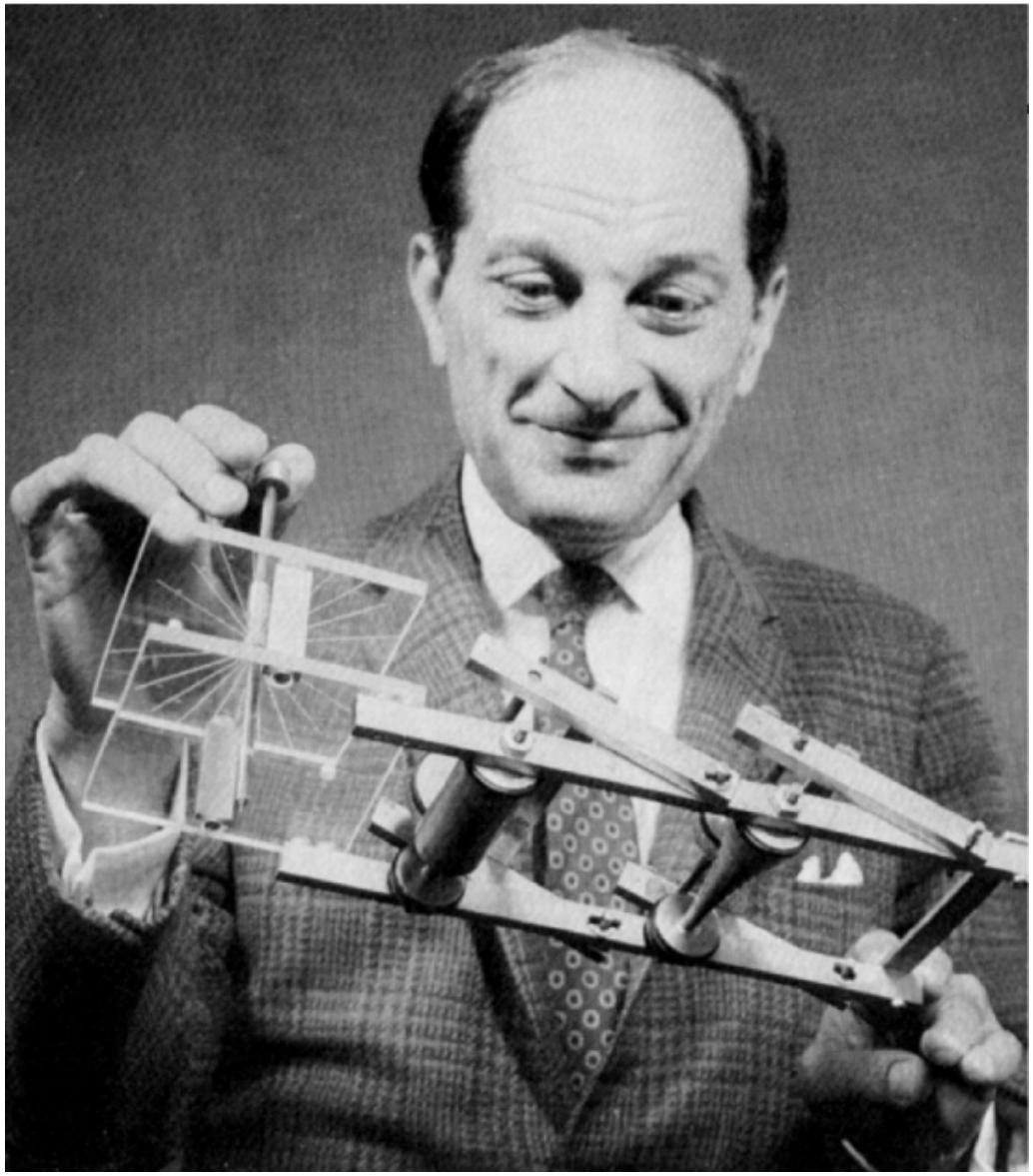
Monte Carlo Simulation

Photo by Sam Garza

Stanislaw Ulam



Finding Pi

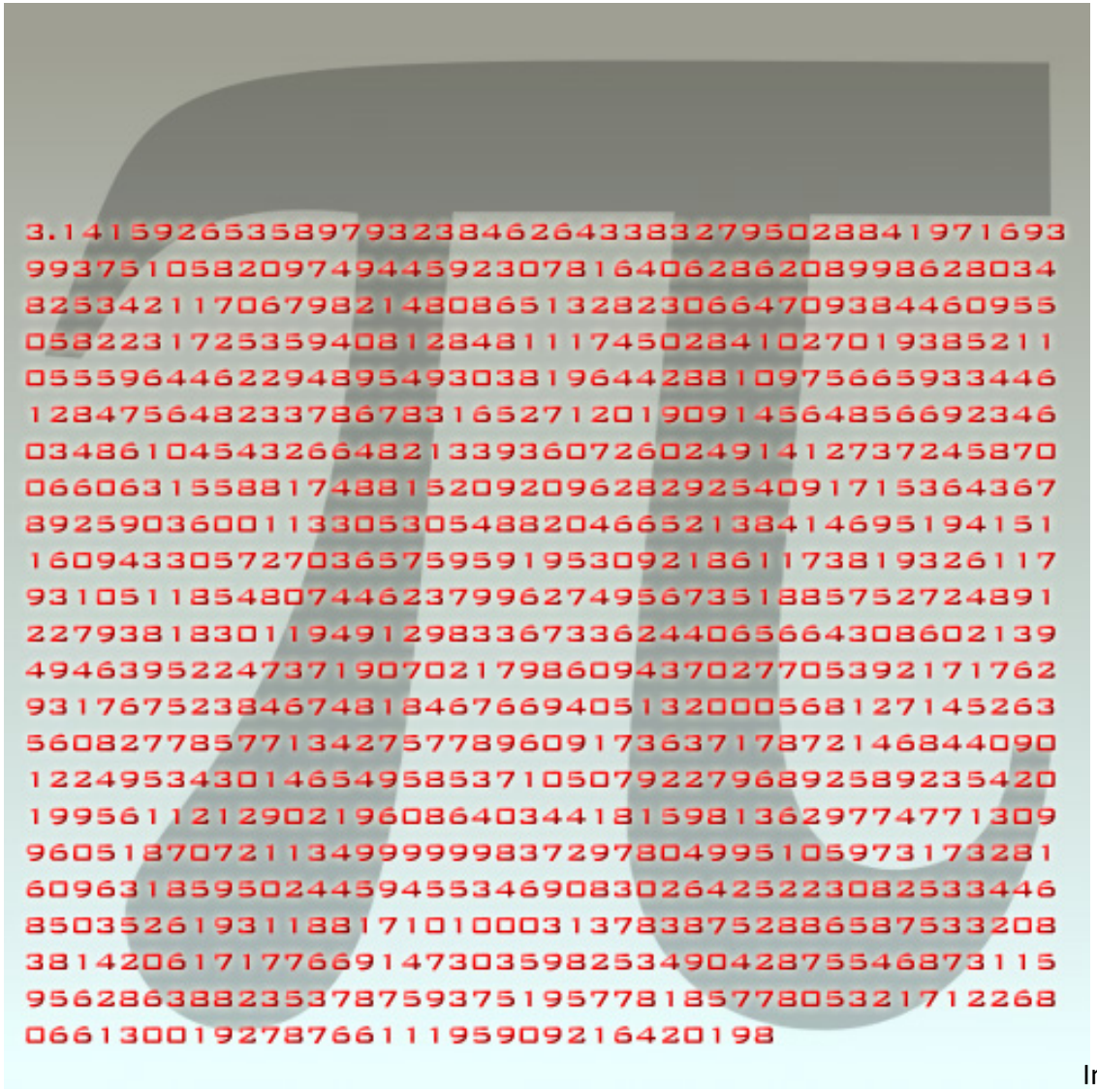
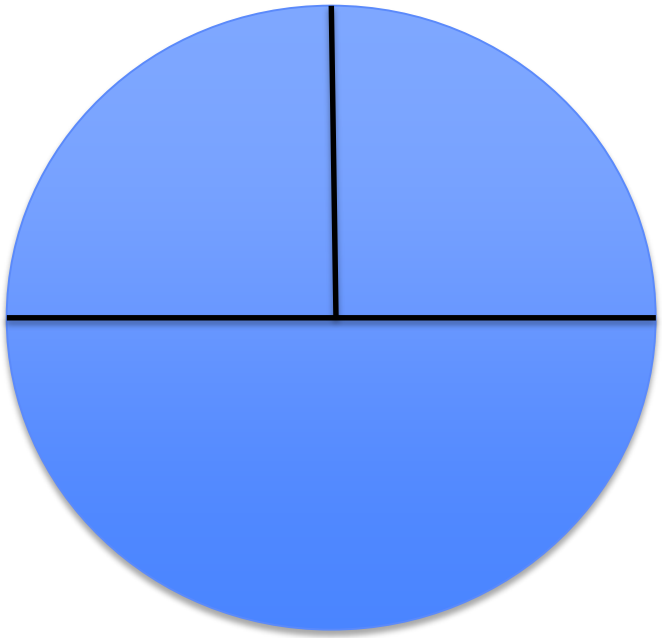


Image from Tom Murphy

Pi



$$\frac{circumference}{diameter} = \Pi \qquad area = \Pi * radius^2$$

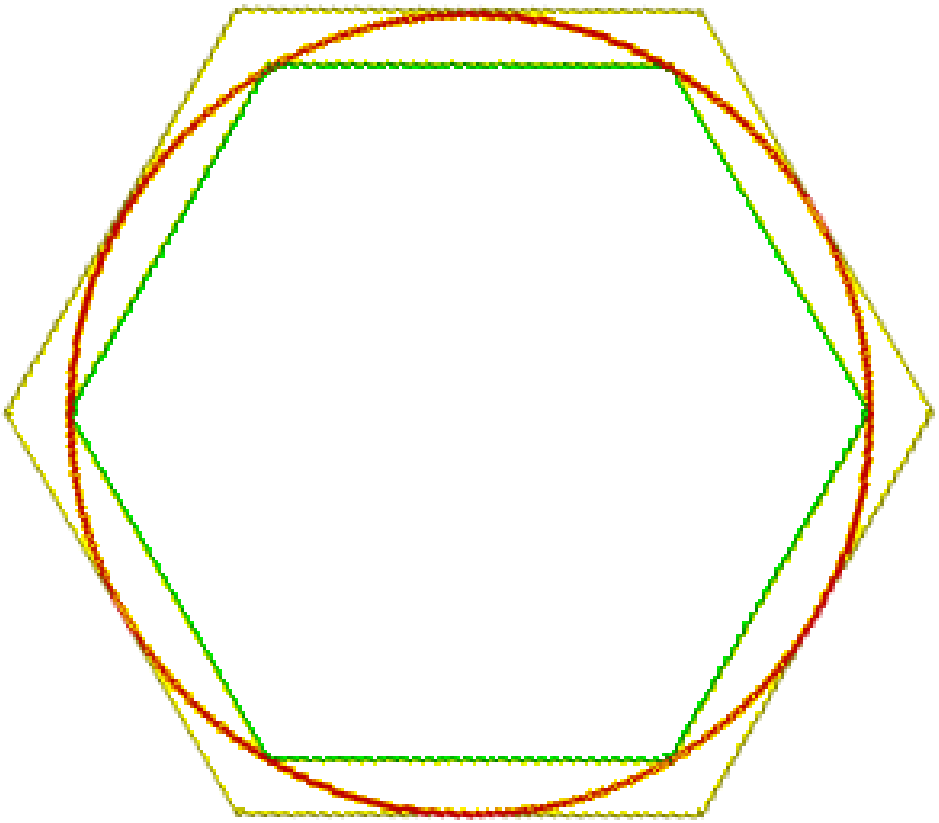
Rhind Papyrus

The Bible

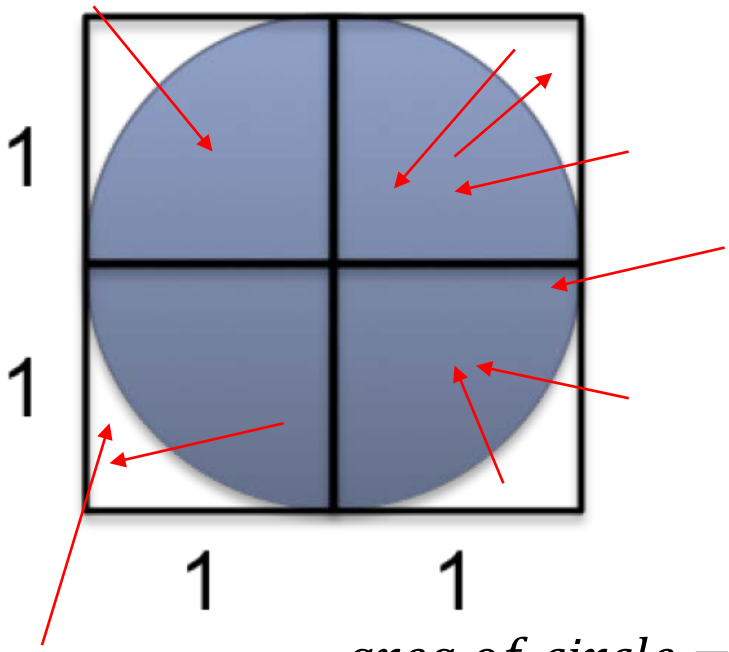
"And he made a molten sea, ten cubits from the one brim to the other: it was round all about, and his height was five cubits: and a line of thirty cubits did compass it round about."

—1 Kings 7.23

Archimedes



Buffon-Laplace



$A_s = 2*2 = 4$

$A_c = \pi r^2 = \pi$

$$\frac{needles\ in\ circle}{needles\ in\ square} = \frac{area\ of\ circle}{area\ of\ square}$$

$$area\ of\ circle = \frac{area\ of\ square * needles\ in\ circle}{needles\ in\ square}$$

$$area\ of\ circle = \frac{4 * needles\ in\ circle}{needles\ in\ square}$$

Arrows Are More Fun than Needles

Photo Dharma

Not a Practical Method

- In the next segment, we take Ana's advice and build a simulation