SIMULATED ANNEALING: The Big Picture

We want to minimize $f: \Omega \to \mathbb{R}$

Start at a random state $x \in \Omega$

Repeatedly: choose a nearby state y

- If y is a more optimal state, then move to y

- If y is a less optimal state, then move to y with some probability that decreases over time

IDEA: Random walk explores the domain Ω, and eventually settles down at some minimum value.

New Problem: Find ten numbers that add up to 100 and whose product is maximum.

We want to maximize $f: \Omega \to \mathbb{R}$ where

Ω consists of ten-tuples $(n_0, n_1, n_2, \ldots, n_9)$ of non-neg. integers whose sum is 100.

$$f(n_0, n_1, \ldots, n_9) = n_0 \cdot n_1 \cdots n_9$$

To move from one state to the next: choose two of the ten numbers, increment one and decrement the other.