Let MWEM(**A**): repeat until happy …

  1. Use the exp mech to pick a **q** in **Q** "maximizing"

$$\textbf{score}(\textbf{A}, \textbf{q}) = |\ \textbf{q}(\textbf{A}) - \textbf{q}(\textbf{D})\ |.$$

  2. Use the Laplace mech to measure **q**(**A**) + noise.
  3. Update guess about distribution **D**, using MW.

Multiplicative Weights update rule:
  1. let error = (q(A) - q(D)) / n; *// too high, low?*
  2. for each d in D:
      if q(d) = 1, scale weight of d by exp(error),
      if q(d) = 0, scale weight of d by exp(-error).

"Theorem": each step decreases KL(A || D) by | error |.

"Theorem": each step decreases KL(A ∥ D) by ∣ error ∣.