Randomized Play

- usually allow randomized play:
  - Mindy chooses distribution $\mathbf{P}$ over rows
  - Max chooses distribution $\mathbf{Q}$ over columns (simultaneously)
- Mindy's (expected) loss

$$= \sum_{i,j} \mathbf{P}(i)\mathbf{M}(i,j)\mathbf{Q}(j)$$

$$= \mathbf{P}^\top \mathbf{M}\mathbf{Q} \equiv \mathbf{M}(\mathbf{P},\mathbf{Q})$$

- i, j = "pure" strategies
- $\mathbf{P}$, $\mathbf{Q}$ = "mixed" strategies
- m = # rows of $\mathbf{M}$
- also write $\mathbf{M}(i,\mathbf{Q})$ and $\mathbf{M}(\mathbf{P},j)$ when one side plays pure and other plays mixed