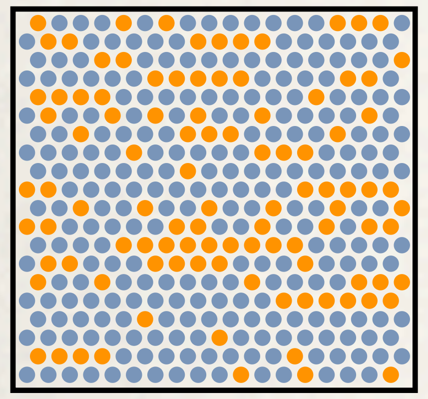
The subtle inequality of Pafnuty Chebyshev

$$\mathbf{P}\{|\tfrac{S_n}{n} - p| > \epsilon\} \leq \delta$$

A quick review of what we know



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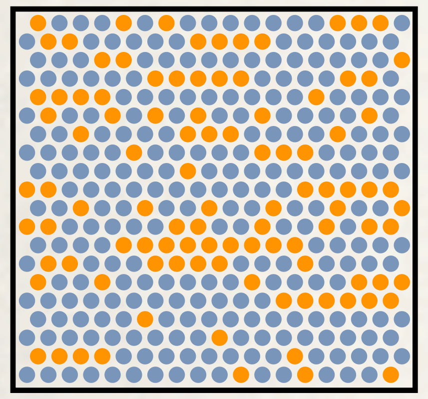

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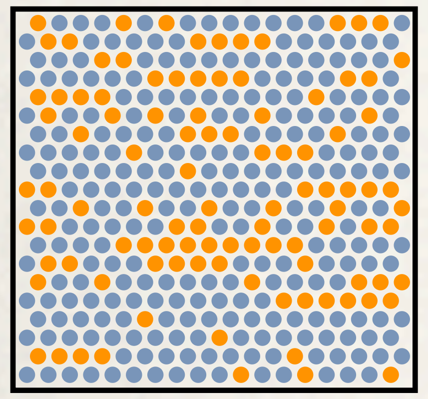

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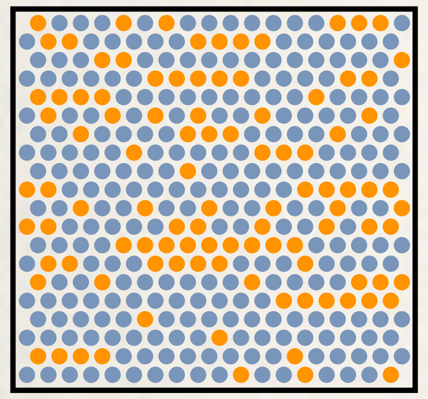

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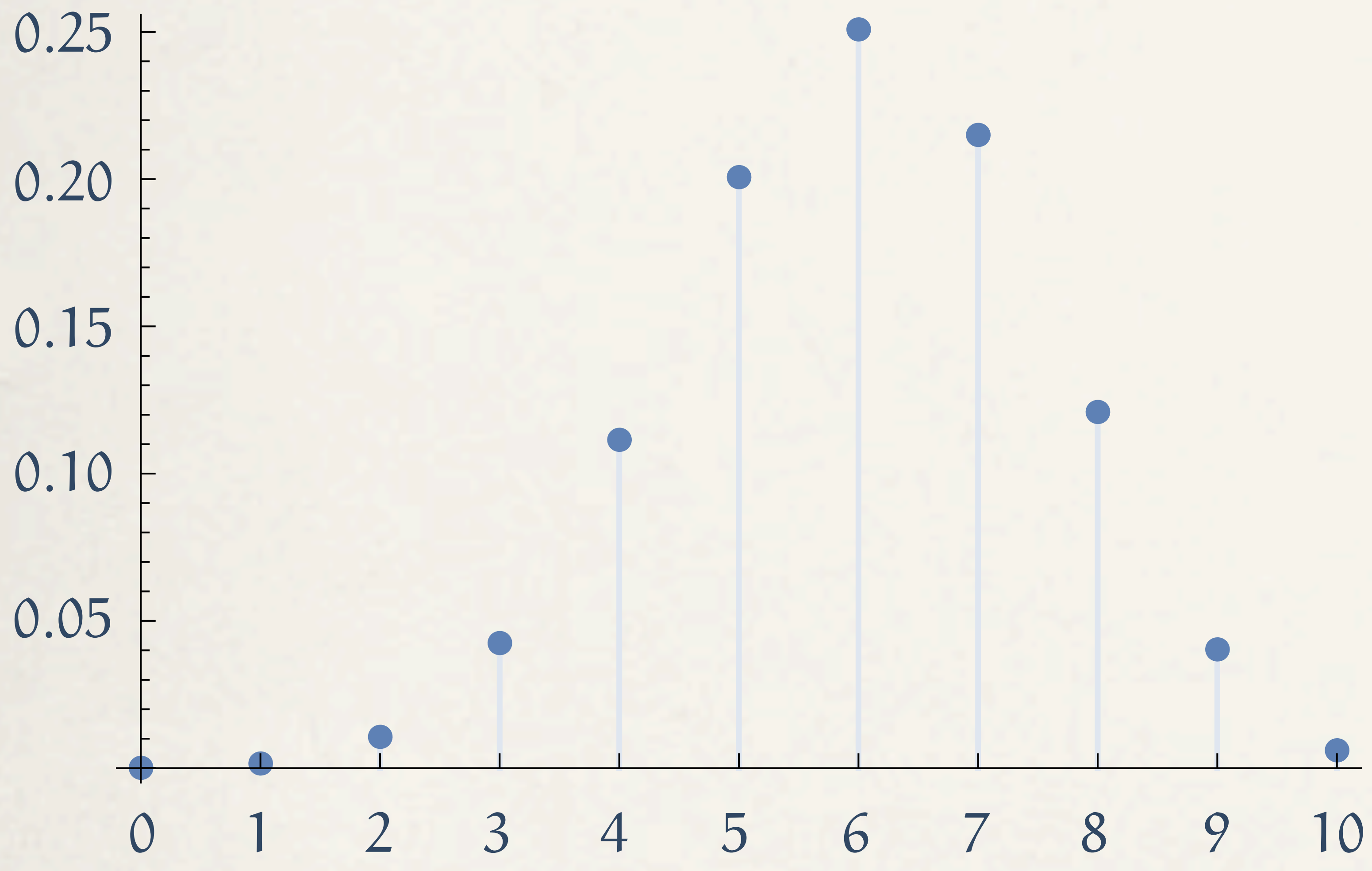

Mass function

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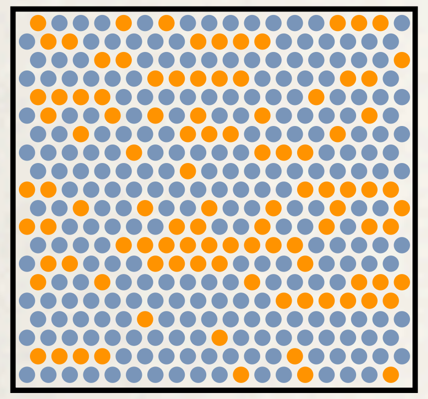

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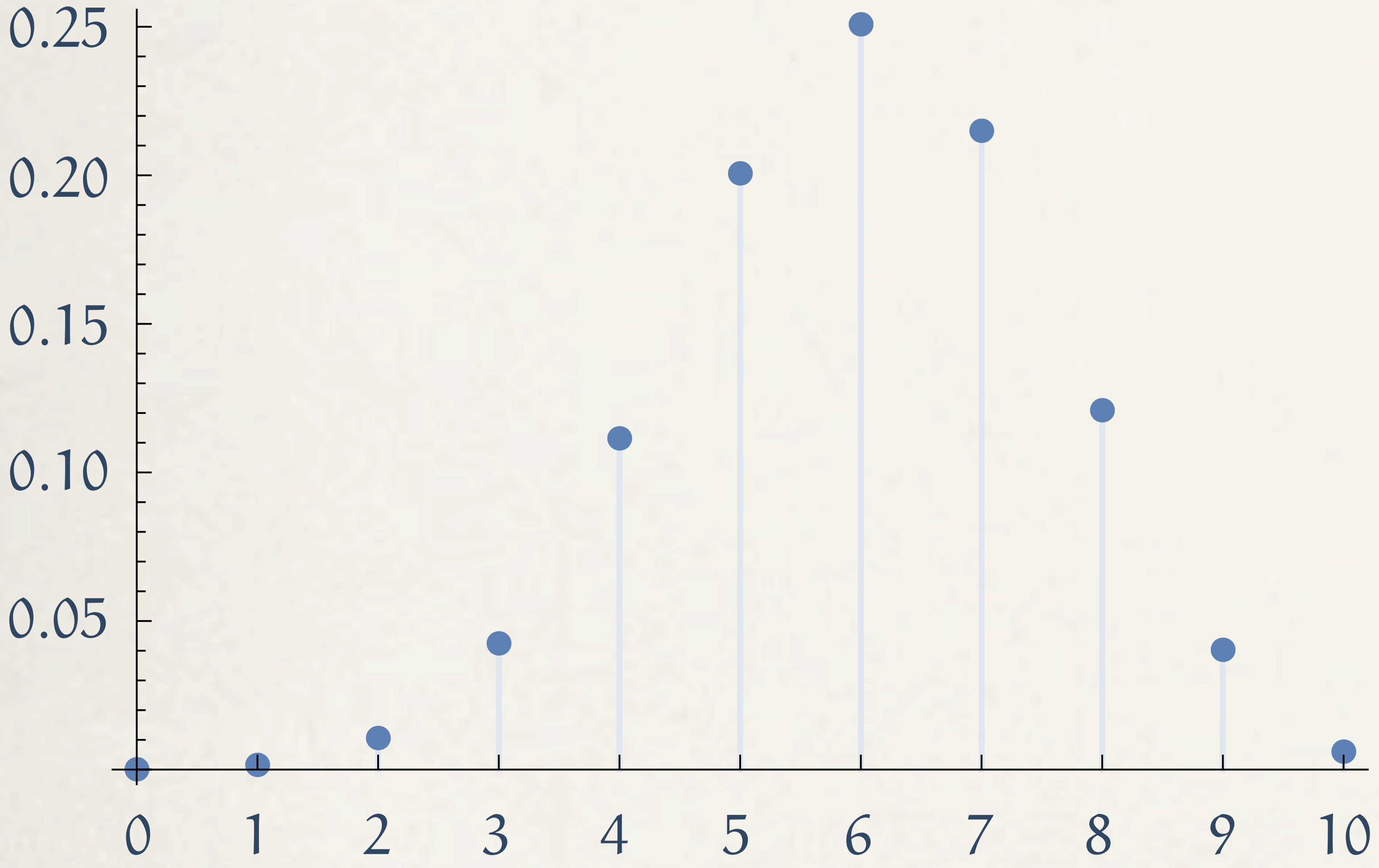

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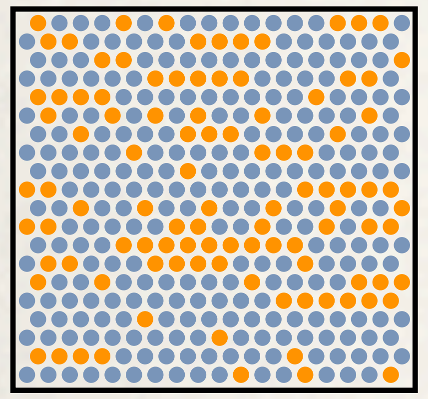

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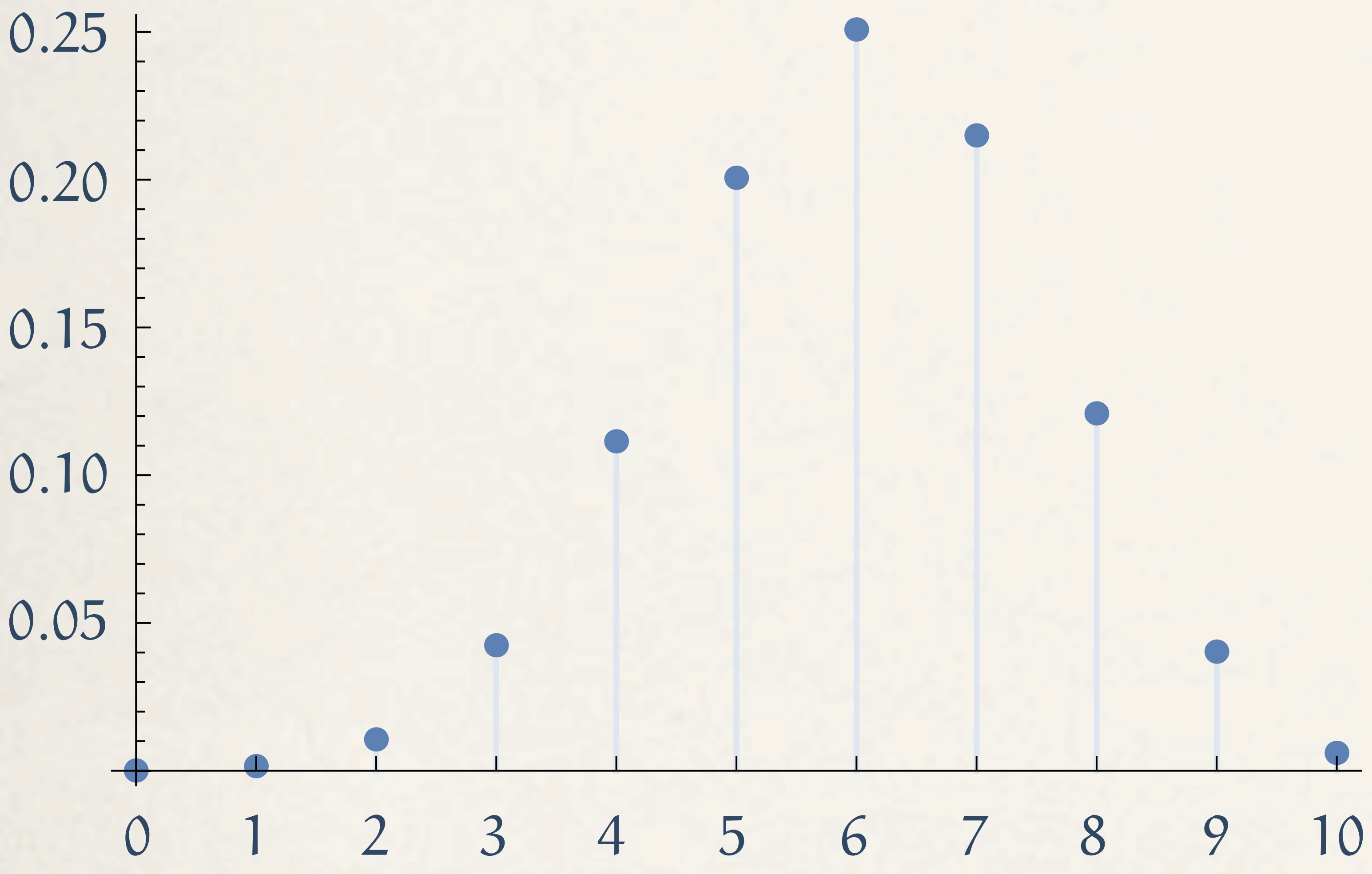

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Variance

$$\text{Var}(S_n) := \sum_{k=0}^{n} (k - np)^2 \cdot b_n(k; p) = npq$$