Binomial Distributions

(θ = Probability of "heads"; θ = .25 or θ = .75; with probabilities depicted by bar lengths)

\[ \text{n = 10 ; } \theta = .25 \quad \text{and} \quad \text{n = 10 ; } \theta = .75 \]

The maximum likelihood idea: Suppose we know that θ = .25 or θ = .75; but the value of θ is unknown, otherwise. If we observe exactly 4 "heads", and then we are required to choose a value of θ, which choice is reasonable?