

If we flip a balanced coin twice, what is the probability of getting at least one head?

The sample space is $\{HH, HT, TH, TT\}$

Since the coin is balanced, these outcomes are equally likely and we assign to each sample point probability $\frac{1}{4}$

A=event that we get at least one $H = \{HH, HT, TH\}$

$$\begin{aligned}\Pr\{A\} &= \Pr\{HH \cup HT \cup TH\} = \Pr\{HH\} + \Pr\{HT\} + \Pr\{TH\} \\ &= \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}\end{aligned}$$