Problem 1. You suspect that a particular coin is biased so as to come up tails more often than heads. You propose to test this suspicion by flipping the coin a (large) number of times, and counting the proportion of tails among the flips. What are the null and alternative hypotheses?

Solution. Let \( p \) be the true probability that a single flip of the coin comes up tails. Then:

\[
H_0: p = \frac{1}{2}.
\]

\[
H_a: p > \frac{1}{2}.
\]

That is:

\( H_0 \): The coin is fair.

\( H_a \): The coin is biased to come up tails more often than heads.

\( \square \)