Human-assisted Computation: Autograding

For a given MCQ with m possible choices, each choice has a prior probability of being true. Assuming we are limited to MCQs with only one correct answer each, the prior probability is $\frac{1}{m}$. For the choice A, the correct answer is represented by A_0, where

$$A_0 = \begin{cases} 1 & \text{if the choice A is true} \\ -1 & \text{otherwise.} \end{cases}$$

Note that we assume the system knows nothing about the value of A_0 yet, and its job is to calculate the possibility of A being true ($P(A_0 = 1)$) from student answers. Let the prior probability of A being true be p_0, i.e.

$$p_0 = P(A_0 = 1) = \frac{1}{m}.$$