1035-05-650          **Kelley Harris\*** (`kharris@fas.harvard.edu`). *A New Lower Bound on the Number of Oblivious Questions Required to Guess Two Secrets.* Preliminary report.

The Guessing Secrets game is a generalization of 20 Questions in which a secret-keeper covertly singles out $k$ of the $N$ objects in some universe $\Omega$ and a secret-guesser tries to obtain as much information as possible about the secrets by asking yes-or-no questions. Most work on this problem concerns the size of an optimal guessing strategy, a set of questions that is guaranteed to extract as much information about the secrets as possible regardless of the secret-keeper's tactics. An adaptive guessing strategy assumes that the secret-keeper answers each question as soon as the guesser asks it, while an oblivious strategy assumes that the guesser must ask all of the questions he or she plans to ask before the secret-keeper answers any of them. Previous work on the case of $k = 2$ secrets has revealed that the size of an optimal adaptive strategy is between $3 \log_2 N$ and $4 \log_2 N$, while the size of an optimal oblivious strategy is between $3 \log_2 N$ and $15.57 \log_2 N$. Here, we improve the lower bound on the size of an oblivious strategy to $5.19 \log_2 N$, proving that the two strategies differ for the case $k = 2$. (Received September 12, 2007)

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