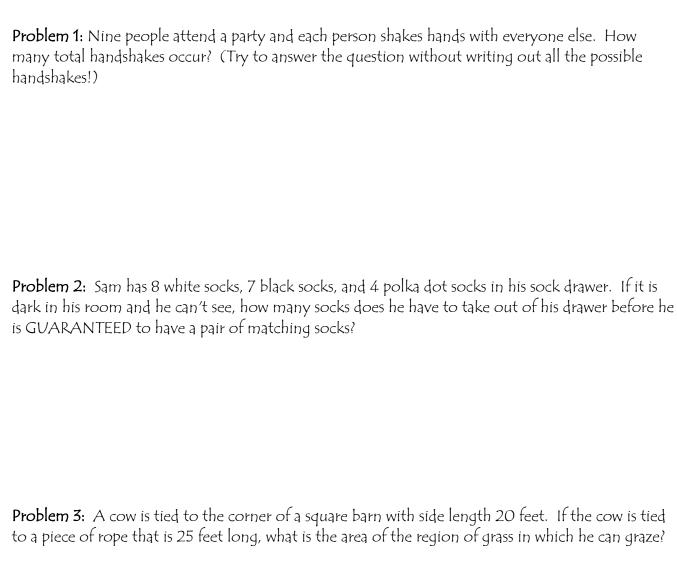
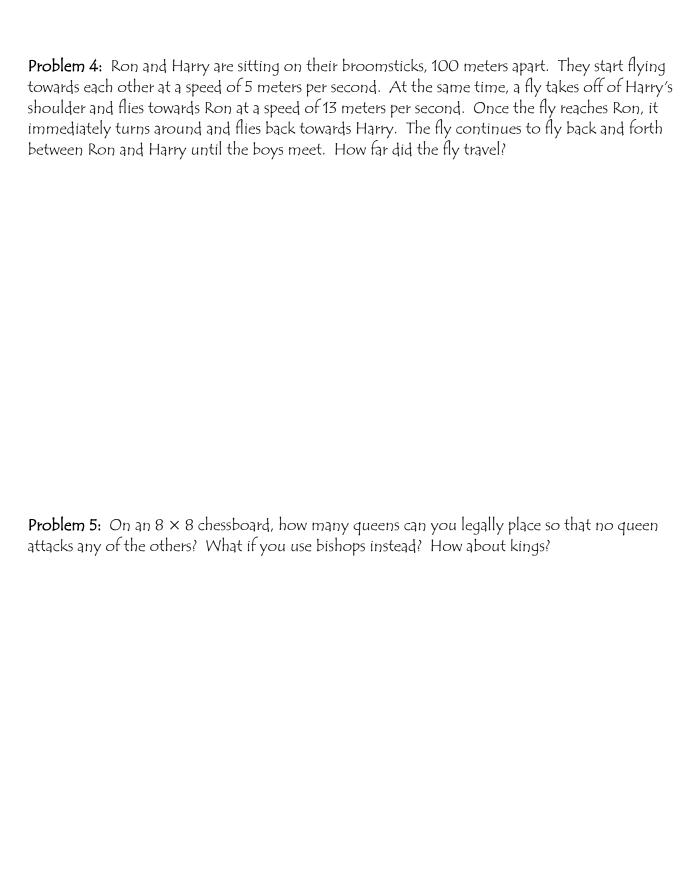
## Montlake Math Challenge

April 30, 2009

## Math is Cool!





<b>Problem 6:</b> Jeff has 100 marbles – 50 of them are white, and 50 are black. He also has two bags, Bag A and Bag B. Jeff is going to put some of the marbles in Bag A and some of the marbles in Bag B. Jeff will then flip a coin. If the coin shows heads, he will pick a marble out of Bag A. If it shows tails, he will pick a marble out of Bag B.
(a) If Jeff puts all the white marbles in Bag A and all the black marbles in Bag B, what is the probability that he will get a white marble?
(b) Instead, suppose Jeff puts 25 white marbles and 50 black marbles in Bag A. What is the probability that he will get a white marble?
(c) (CHALLENGE!) Jeff wants to maximize the probability that he will get a white marble. How can he do this?