

Answer the questions in the spaces provided on the question sheets. If you run out of room for an answer, continue on a separate sheet of paper.

Discrete probability

1. If you flip a coin nine times, what is the probability that you will flip six heads and three tails?

(a) What is the event, E , and what is $|E|$?

(b) What is the sample space, S , and what is $|S|$?

(c) What is the probability mentioned above, namely $p(E)$?

2. What is the probability that any pair of people, chosen at random, have the same birthday?

3. What is the probability that some pair of people *in our class* have the same birthday?
 - (a) Define the event \overline{E} to be the set of outcomes where everyone in the class has a different birthday, i.e., the complement of the event we would like to count. Compute $|\overline{E}|$.

 - (b) What is the size of the sample space S for this outcome?

 - (c) What is the probability that everyone in the class has a different birthday?

 - (d) What is the probability that some pair of people in the class have the same birthday?