Coins and Dice

1. A dice is rolled three times. What is the probability that each time the number obtained is larger than the previous number obtained? Is this higher the probability that the number obtained each time is smaller than the previous one?

2. Player A rolls two dice with the hope of getting at least one six. Player B rolls four dice with the hope of getting at least two sixes. Which player has a better probability of success?

3. Two players flip 9 coins. Player A wins if the number of Heads is Even, Player B wins if the number of Heads is Odd. Which one has a better chance? Does this change if there are 10 coins?

4. A bus starts with 12 passengers and makes 6 stops and there are no passengers left. What is the probability that (a) all passengers got off at the same stop (b) that the same number of passengers got off at each stop.

5. Four digits (0 to 9) are chosen at random in order to make a 4-digit number. What is the probability that the number is divisible by 5? What is the probability that the number is divisible by 3?