

MATH CIRCLES

Problems for Practice

1. You hand a friend a standard deck of 52 playing cards. You ask him to divide the deck into three stacks, and place them on the table facedown. What is the probability that the top card of one of the stacks is a face card (a Jack, Queen, or King)?
2. A bag of marbles contains some number of red marbles and some number of blue marbles. The number of each could be positive, or it could be zero. A marble is pulled blind from the bag, and it turns out to be red. If a second marble is pulled, what is the probability that it will also be red?
3. A ten-foot pole is dropped into a milling saw and randomly cut into three pieces? What is the probability that these three pieces form a triangle?
4. How many people do you need in a room in order to guarantee that it is probable (that is, probability greater than $1/2$) that two of them have their birthday on the same day of the year?