

# DTP-Math-Circle: Session 1—Counting

Sept 02 2022

## 4 How often do you get a six?

Samuel Pepys, a contemporary of the great Isaac Newton, wrote letters to Newton asking him these questions, which Newton answered using the methods of counting you have discovered.

You roll a dice six times and record the sequence of numbers you get. How many different sequences are possible? Of these, how many sequences will have at least one six in them? What fraction is that?

Now ask the same question for rolling a dice 12 times. How many different sequences? And how many of these will have at least two six in them? What fraction is that? Which one is a bigger fraction?

Finally same question for rolling 18 times. How many different sequences. And how many of these will have at least three six in them?