

We have seen in class that it doesn't make sense to say: *the chance that a random integer is even is $\frac{1}{2}$* , because there is no probability measure on \mathbb{N} that gives equal probability to every integer. However, we can make a natural definition such that this statement does make sense. Complete the sentence *The probability of a subset $S \subset \mathbb{N}$ is equal to p if ..* in a natural way so that the probability of the set of integers divisible by d is equal to $\frac{1}{d}$, and the probability of the set of prime numbers is equal to 0. Motivate whether your definition is the right one, and prove or disprove whether your definition is defined for all subsets of \mathbb{N} .

Also complete the exercises from chapter 4.