

We now should have a working definition of “theoretical probability”, as  $\frac{\# \text{ of desired outcomes}}{\# \text{ of possible outcomes}}$ , where each outcome is equally likely. With that mind, work on the following problems:

1. Suppose you roll a 6-sided die.
  - (a) Write out the sample space.
  - (b) What is the probability of rolling a 1?
  - (c) What is the probability of rolling an even number?
  - (d) What is the probability of rolling a 1 or a 2?
  
2. Suppose you roll two 6-sided dice.
  - (a) How many possible outcomes are there?
  - (b) Are your outcomes all equally likely?
  - (c) What is the probability of rolling snake eyes (two 1s)?
  - (d) What is the probability of rolling a 1 and a 2?
  - (e) Are these probabilities different? If so, why?
  
  - (f) What is the probability of getting an even number on one die and an odd number on the other die?
  
  - (g) Create a sample space **different** from writing out all the possibilities of rolling the die to explain the answer in the previous part.
  - (h) Explain why creating this new sample space works, but creating the sample space {get a 1 and a 2, don't get a 1 and a 2} doesn't work in answering part d).