Board Questions, Basic Probability
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1 Rolling Dice

1. Every member of your group rolls his/her 20-sided die.
2. Check if at least two of the die at your table show the same outcome.
3. Repeat the experiment a few time and estimate the probability of this event.
4. Define the sample space and probability function for this experiment.
5. Compute the probability of the event A that at least two of the outcomes coincide. **Hint:** It might be easier to compute the probability of the complement of A. What is this event?

2 Evil Squirrels

Setting:

- 1.000.000 squirrels
- 100 of them are evil, the rest is nice.
- The proposed alarm goes of when presented with an evil squirrel 99% of the time
- It also goes of 1% of the time when presented with a nice squirrel

Questions:

a) If a squirrel sets of the alarm, what's the probability that it is evil?

b) Based on this, should the evil squirrel detector be acquired?

3 Monty Hall

Setting:

- There are 3 doors with a car behind one door and a goat behind each of the other two
- After the candidate has chosen, one of the doors with a goat is opened
- The candidate is given the choice to switch doors or to stick with his original choice

Question Based on probabilistic calculations, should the candidate switch doors or stick with his initial choice after one of the goats has been revealed? **Hint:** Start off with drawing a tree and computing the probability of winning the car when always switching the doors.