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Week 5 Reading Questions

1. What is the size of the sample space?
    a. 6 -- (Bur, Bur), (Bur, Red), (Bur, White), (Red, Red), (Red, White), (White, White)
2. Given the scenario description, how many ways are to there to collect two acorns of the *same species*?
    a. 3 of the six
3. Given the scenario description, how many ways can you collect two acorns of *different species*?
    a. Also 3 of the six
4. What is the probability that the acorn in your *left pocket* is *Q. alba*?
    a. 33% or 1 in 3
5. What is the probability that the acorn in your *right pocket* is *Q. macrocarpa*?
    a. 33 % or 1 in 3
6. If you already know that the acorn in your left pocket is *Q. alba*, what is the probability that the acorn in your *right pocket* is also *Q. alba*?
    a. 33% or 1 in 3
7. What is the probability that both acorns are *Q rubra*?
    a. 11% or 1 in 9
8. What is the probability that you collected exactly one each of *Q. alba* and *Q. rubra*?
    a. 22% or 2 in 9
9. What is the probability that the acorn in your *left* pocket is *Q. alba* and you have an acorn of *Q. rubra* in your *right* pocket?
    a. 11 % or 1 in 9
10. Consider a Poisson distribution with $\lambda=6$. What is the size of the sample space of this distribution?
    a. ∞
11. Consider a Binomial distribution with $n=10$ and $p=0.6$. What is the size of the sample space of this distribution?
    a. 11 (n + 1)
12. Which common characteristics of the Binomial and Poisson distributions make them good models for counts?
    a. Both Binomial and Poisson distributions are discrete (they only use integers). Additionally, they both have sample spaces that are/can approach infinity.
13. Describe a scenario in which a Binomial distribution may be a better count model than a Poisson distribution.
    a. A binomial distribution may be a better count model than a Poisson distribution if you are collecting presence/absence data, or if there the sample space for the count only has two events for whatever reason. It may also be better if your sample space is small.