

Conservation Genetics Homework #6

Name: _____

- 1) Calculate the inbreeding coefficient at single diallelic locus in the great-great-grandchild of a pair of unrelated individuals if every subsequent mating event occurs between siblings. In other words, what is the probability the great-great-grandchild receives two copies of any allele that is identical by descent? It may be helpful to draw a pedigree, and revisit pp. 274-277 in the textbook.

- 2) Describe how inbreeding coefficients, heterozygosity, genetic drift, and effective population size are interrelated.

- 3) A population of 80 Black-footed Ferrets near Meeteetse, WY is genotyped at a diallelic locus, resulting in the following genotype counts: $n=35$ A_1A_1 ferrets, $n=15$ A_1A_2 ferrets, and $n=30$ A_2A_2 ferrets. A_1A_1 individuals have 6 kits a litter, A_1A_2 individuals have 5 kits a litter, and A_2A_2 individuals have 2 kits a litter. Remembering that $F = 1 - \frac{H_o}{H_e}$ and $\delta = 2pqdF$, calculate a) the inbreeding coefficient and b) how many fewer kits on average a Meeteetse ferret will have than a randomly mating population. (This won't be a whole number.)