

BIO 434 Assignment #7

1. A recent study reports that the heritability of violent behavior in humans is 80%. Many people think this means that people with the at-risk alleles (if they could be identified) are destined to become violent. What is the fallacy of this argument?
2. If the covariance between mother and offspring is 0.43, and the phenotypic variance is 3.5, what is the best estimate of heritability? What assumptions have been made to make this estimate?
3. How many generations of selection with a selection differential of 20 would be required to increase the average number of eggs per hen per year from 180 to 220, given a heritability of 20%?
4. In a population of the flour beetle *Tribolium* the mean weight of pupae is 200 mg. The phenotypic variance is 400 mg^2 and the additive genetic variance is 100 mg^2 . If individuals with a mean pupa weight two phenotypic standard deviations above the mean are selected, what is the expected average pupa weight among the progeny?