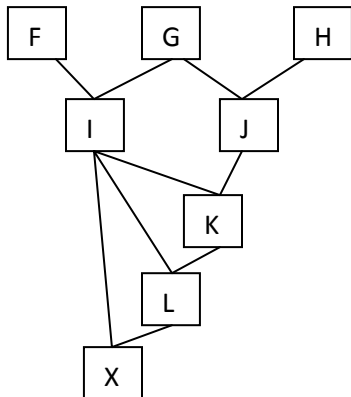


NAME _____

1. This pedigree comes from Giraffe X at the Paris zoo. It's wild caught ancestors were all captured in Nigeria.
 - (a) What is the inbreeding coefficient, F , for Giraffe X?
 - (b) Explain any assumption you made in calculating the inbreeding coefficient that would affect it's value.



2. The table below shows the genotypes observed at a single locus, for endangered mice in two locations that are close to one another but separated by a 2-lane highway. Each of the two locations contains plowed fields that are a potential barrier to movement within the location. We are interested in knowing if human activities are leading to a reduction in heterozygosity, compared to the heterozygosity that would be expected if mice move freely across plowed areas and roads to mate at random.

Frequency of Genotypes			
	AA	Aa	aa
Location X	0.25	0.5	0.25
Location Y	0.14	0.12	0.74

- (a) What is the observed heterozygosity for each location?
- (b) What is the expected heterozygosity for each location if mating is random within the location.
- (c) What is the expected heterozygosity if mating is random among the two locations combined?
- (d) Use the heterozygosities to calculate F_{IS} , F_{ST} and F_{IT} .
- (e) Interpret the data. Is heterozygosity lower than expected with random mating? Why? What appears to be the most effective single action to increase heterozygosity?