Biology 4605 / 7220 Name _____Key_____
Quiz 8b 17 November 2004

1. For the following, list the number of explanatory variables.

	Explanatory
Survival odds of polar bear cubs, in relation to ice cover.	1
Analysis of egg production in three species of fish, controlled for body size.	2

2. Zar (1996 p463) reported the number of seeds from a genetic cross in which the expected proportion for green wrinkled seeds to other seeds was 1:15.

If 250 seeds were obtained from the cross, calculate the expected number of green wrinkled seeds versus other types

green-wrinkled $\hat{f}$ = 250(1/16)=15.625 other $\hat{f}$ = 250(15/16)=234.375

The observed seed numbers were green wrinkled (6) and other (244).

Calculate the observed number, as a percentage of the expected number.

green-wrinkled % = 6/15.625 = 0.384 other % = 244/234.375 = 1.041

Calculate the lnL, the log likelihood ratio of each type $\ln L = f \ln\left(\frac{f}{\hat{f}}\right)$

green-wrinkled lnL = -5.743 other lnL = 9.820

Calculate the goodness of fit of observed to expected number of seeds.

G = 8.155

Is this difference statistically significant ? _____ $\chi^2_{[0.05,\,1]} = 3.84$

Yes, because G = 8.155 > 3.84