

1. In an experiment with fruit flies, a geneticist obtained the following results from a dihybrid cross for sepia eye mutant and yellow bristle colour mutant. Fill in the five blanks. $G = 2 \sum \ln L$

	Observed f	Theory	Expected fhat	f/fhat	lnL
WildS WildY	272	9			
WildS Yellow	64	3	82.875		<u>-16.54</u>
Sepia WildY	85	3	82.875	<u>1.026</u>	
Sepia Yellow	21	1	<u>27.625</u>		
Total	<u>442</u>	<u>16</u>			

2. For the following data situations, state whether regression or correlation is appropriate, and then state why. State whether the coefficient (β for regression, r for correlation) is expected to be positive, negative, or unknown.

a. A biochemist is interested in the relation of rate of reaction to temperature.

Corr/regr regr Why? +/-/unknown +
Reaction rate rises with rise in temperature

b. An entomologist is interested in leaf damage in relation to insecticide dose.

Corr/regr regr Why? +/-/unknown -
Damage depends on numbers, which drop with increasing dose

c. A botanist is interested in the association of 5 species of trees in 28 plots.

Corr/regr corr Why? +/-/unknown unknown
Some trees will be positively associated, some negatively associated

3. In a retrospective study an epidemiologist finds that the odds of Down's syndrome are 0.002:1 for a control group, and 0.03:1 for cases with a familial history of the syndrome.

Compute the case/control odds ratio (odds for cases / odds for control)

OR 15

Obtain the parameter β where $OR = e^\beta$ $\beta =$ 2.708