

In fruit flies, the phenotype for eye color is determined by a certain locus. E indicates the dominant allele and e indicates the recessive allele. The cross between a male wild type fruit fly and a female white eyed fruit fly produced the following offspring

	Wild-Type Male	Wild-Type Female	White-eyed Female	White-Eyed Male	Brown-Eyed Female
F-1	0	45	55	0	1

The wild-type and white-eyed individuals from the F-1 generation were then crossed to produce the following offspring.

	Wild-Type Male	Wild-Type Female	White-eyed Female	White-Eyed Male	Brown-Eyed Female
F-2	23	31	22	24	0

- Determine the genotypes of the original parents (P generation) and explain your reasoning. You may use Punnett squares to enhance your description, but the results from the Punnett squares must be discussed in your answer.
- Use a Chi-squared test on the F-2 generation data to analyze your prediction of the parental genotypes. **Show** all your work and **explain the importance** of your final answer.
- The brown-eyed female of the F-1 generation resulted from a mutational change. Explain what a mutation is, and discuss two types of mutations that might have produced the brown-eyed female in the F-1 generation.

Degrees of Freedom	.99	.95	.80	.50	.20	.05	.01
1	0.000157	.00393	.0642	0.455	1.642	3.841	6.635
2	0.020	1.03	0.446	1.386	3.219	5.991	9.210
3	0.115	0.352	1.005	2.366	4.642	7.815	11.345
4	0.297	0.711	1.649	3.357	5.989	9.488	13.277