

Name: _____ Period: _____ Date: _____

Open **peebedu.com** and navigate to **Chi-Square Test Practice**. Read the introduction, which explains what the chi-square test is for and sets out the four steps. Click **Start Practicing** to receive a scenario. **Show Solution** reveals the full worked answer whenever you need it.

Free Response Questions

Question 1 — Conceptual Analysis

Simulation Task: Click *Start Practicing* and read the Scenario together with the Observed Data table. Note the ratio the scenario says the cross should produce and the total number of offspring counted. Then click *Show Solution* and follow how the expected number for each phenotype class was obtained from that ratio.

(A) (1 pt) **Describe** how the expected number of offspring in each phenotype class is obtained from a predicted ratio and a total number of offspring.

(B) (1 pt) **Explain** why a cross between two heterozygous parents is predicted to give a 3:1 phenotypic ratio.

(C) (1 pt) **Predict** the phenotypic ratio expected among the offspring of a cross between a heterozygous individual and a homozygous recessive individual.

(D) (1 pt) **Justify** your prediction.

Question 2 — Analyze Model / Visual Representation

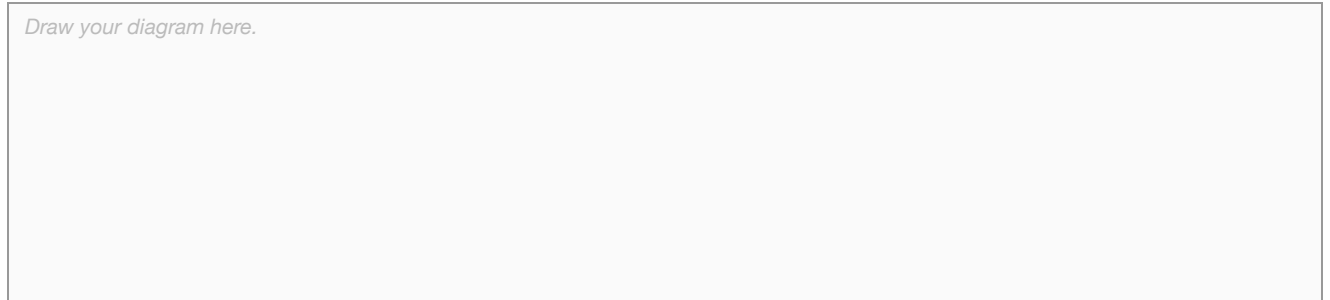
Simulation Task: Use New Dataset until you are given a dihybrid scenario. Read the chi-square value the activity reports, find the critical value for the stated degrees of freedom in the Chi-Square Critical Values table, and read the conclusion given in the Step-by-Step Solution.

(A) (1 pt) **Describe** the two values the activity compares in order to reach a conclusion about the null hypothesis.

(B) (1 pt) **Explain** why a chi-square value larger than the critical value leads to rejection of the null hypothesis.

(C) (1 pt) **Represent** the outcome of a cross whose data support the null hypothesis by drawing a labeled bar graph that shows the observed count and the expected count side by side for each phenotype class.

Draw your diagram here.



(D) (1 pt) **Explain** how the separation of homologous chromosomes during meiosis produces the gamete proportions that the expected values rest on.

5.4.A.1