

Learning Outcomes:

Nature of Science	Students should be able to organise and communicate their research and investigative findings in a variety of ways fit for purpose and audience, using relevant scientific terminology and representations
Biological World	Students should be able to describe asexual and sexual reproduction; explore patterns in the inheritance and variation of genetically controlled characteristics

Gummy Bear Genetics

Gummy Bear Genetics Imagine you are on a team of geneticists that is doing "cross-breeding experiments" with gummy bears. Unfortunately, the computer containing your data has crashed. All you have left are six gummy-bear litters that resulted from six sets of parents. But no one can remember which parents produced which litter. You know that gummy-bear traits have either Mendelian inheritance or incomplete dominance.

Can you determine which parents produced each set of offspring and how gummy bear traits are inherited?

1. Obtain a bag of gummy bears. Sort the bears by colour (phenotype). Do not eat the gummy bears.
2. Count the number (frequency) of bears for each phenotype. Calculate the ratio of phenotypes for each litter.
3. Combine data from your litter with those of your classmates using the data table below.
4. As a class, select a letter to represent the alleles for colour. Record the possible genotypes for your bears in the class data table.

Gummy Bear Cross Data for Lab Group					
Cross #	Phenotype Frequencies	Ratio	Possible Genotypes	Mode of Inheritance	Predicted Parental Genotypes
EXAMPLE	15 green/5 pink	3:1	GG or Gg/gg	Mendelian	Gg × Gg
1.					
2.					
3.					
4.					
5.					

Use the data to form a hypothesis about the probable genotypes and phenotypes of the parents of your litter and the probable type of inheritance.

Design and complete a Punnett square using the predicted parental genotypes in your hypothesis.

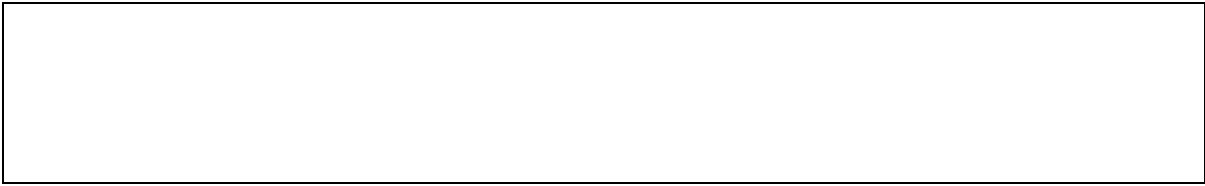
Compare your litter's phenotype ratio with the ratio predicted by the Punnett square. Do your data support your hypothesis? If not, revise your hypothesis and repeat.

Infer What were the genotypes of the parents? The phenotypes? How do you know?

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Determine the probable modes of inheritance for each phenotype. Explain your reasoning.



Graph Using the data you collected, draw a bar graph that compares the phenotype frequency for each gummy bear phenotype.

