

Dihybrid Crosses
Worksheet #1

1. If we represent fruit fly traits with the following letters:
L = long wings, l = short wings, G = grey body colour, g = black body colour
then an organism with the genotype LLGg will display what phenotypic characteristics?

2. The organism with the genotype LLGg will produce how many type(s) of gamete(s). Show how you came to this conclusion.

3. T = tall stems, t = short stems, G = green pods and g = yellow pods. A plant homozygous for tall stems and heterozygous for pod colour is crossed with a plant with short stems and yellow pods. Identify the genotypes and phenotypes of the F₁ generation.

4. In guinea pigs, black hair colour (B) is dominant and brown hair colour (b) is recessive. Long hair (L) is dominant over short hair (l) is recessive. Answer the following questions:
 - a) Draw a Punnett square for the cross: BbLl x BbLL
 - b) What are the phenotypes of the parent generation?
 - c) What are the genotypes and phenotypes of the F₁ generation?

5. About 70% of Canadians get a bitter taste from the chemical phenylthiocarbamide (PTC), while the other 30% do not. The ability to taste this chemical (T) is a dominant characteristic, while taste-blindness to it is recessive (t). Tongue-rolling ability is dominant (R), while the inability to roll the tongue is recessive (r).

A tongue-rolling woman who is taste-blind for PTC has a father who could not roll his tongue but could taste PTC. She marries a man who can taste PTC but cannot roll his tongue. Her husband's mother was taste-blind to the chemical. Use a Punnett square to show the possible children this couple could produce.