

Biology I Advanced Obj Chapter 9 Patterns of Inheritance

1. List and describe Mendel's laws of Dominance, Segregation, and Independent Assortment. Describe a type of inheritance that is an exception to each law.
2. Define each of these terms in a manner that differentiates them from each other:

genotype-	phenotype-	gamete	homologous	heterozygous
homozygous	hybrid	pure	test cross	carrier
3. Write a biological definition of a gene.
4. Write an equation for probability.
5. List and describe the six steps for solving a genetics problem.
6. Show all six steps for solving this problem:

In peas round seeds are dominant over wrinkled seeds. What would be the expected phenotype ratio if heterozygous round peas were crossed with pure wrinkled peas?
7. Show all six steps for solving this problem:

In peas round seeds are dominant over wrinkled seeds and yellow seeds are dominant over green. What would be the expected phenotype ratio if peas which were heterozygous for round seeds and pure yellow were crossed with pea plants which were pure wrinkled and heterozygous for yellow?
8. Draw each of the following in pedigree charts:
 - a. A male mating with a female who produce one male and one female offspring:
 - b. A female has a son with her first mate. Later she has two daughters with a second mate.
 - c. A male that has a particular trait, but neither of his parents or two sisters have it.
 - d. (P1) Both sets of grandparents are affected by a trait
(F1) Both parents have the trait
(F2) One daughter is unaffected, one son is unaffected, and one son is affected.
Show genotypes for all involved. Is the trait dominant or recessive?
9. Define these terms in a way that also differentiates them from each other:

Incomplete dominance	Codominance-	Polygenic-	Multiple alleles-
linked genes (linkage group)-	sex linked genes-	X-linked genes	Y-linked genes-
10. Describe the process of chromosomes mapping based on crossing over data.
11. Why are recessive X-linked traits more often expressed in males than in females?
12. In humans, ABO blood type is controlled by three alleles. Alleles I^A and I^B are codominant and both of these alleles are dominant to the allele i^O . What type of inheritance is this?

Show all six steps for a cross between an O type man and a woman who is heterozygous for A type blood.
13. In a population of plants, some have red flowers, some have orange flowers, and some have yellow flowers. When a red flowered plant is crossed with a yellow flowered plant, the offspring always have orange flowers. What type of inheritance is this? Show all six steps of a cross between two orange flowers.
14. Show all six steps. What are the chances that a normal man and a woman who is a carrier for hemophilia will produce a hemophiliac son? Hemophilia is X-linked recessive.
15. Give three examples of how external environment can influence expression of genes.