

Dominant-Recessive Inheritance Problems

1. Define: (a) gene (b) chromosome (c) genetics.
2. How many chromosomes are in: (a) human body cells such as skin and muscle (b) human reproductive cells such as sperm and ova?
3. What are the sex chromosomes of a human male, and of a human female?
4. What is meant by the term "pure-bred"?
5. Distinguish between a genotype and a phenotype.
6. If two organisms have the same phenotype, does this mean they have the same genotype?
7. In peas, yellow colour is dominant to green. What will the colours of the offspring of: (a) a homozygous yellow and a green pea plant (b) a heterozygous yellow and a green pea plant (c) a heterozygous yellow and a homozygous yellow pea plant (d) two plants that are hybrid for the yellow pea seed?
8. Could two brown-eyed parents have a blue-eyed child? Explain.
9. Could two blue-eyed parents have a brown-eyed child?
10. A blue-eyed man, both of whose parents were brown-eyed, marries a brown-eyed woman whose father was blue-eyed and whose mother was brown-eyed. This man and this woman have a blue-eyed child. What are the genotypes of all the individuals mentioned?
11. If two animals heterozygous for a single pair of genes are mated and have 200 offspring, about how many have the dominant phenotype?
12. Mrs. Smith and Mrs. Jones had babies at the same maternity hospital at the same time. Mrs. Smith took home a girl and named her Sue. Mrs. Jones took home a boy and named him Jim. However she was sure she had a girl and brought suit against the hospital. Blood tests showed that Mr. Jones had blood type O, Mrs. Jones was type AB, both Mr and Mrs Smith were type B, Sue was type A and Jim was type O. Had a swap occurred?