

Name _____

Genetics Study Guide

Humans have earlobes of two general shapes: attached or free. The gene for free ear lobes is symbolized as (E) and for attached ear lobes it is (e). Assume that two human parents have the following genotypes: female: Ee, and male: attached ear lobes.

1. _____ What is dominant?
3. _____ What is the man's genotype?
4. _____ What is his phenotype?
5. _____ Is he homozygous or heterozygous?
6. _____ What is the woman's phenotype?
7. _____ What is her genotype?
8. _____ Is she homozygous or heterozygous?

**MUST BE 100% DONE TO
TAKE THE TEST!!!! NO
EXCEPTIONS. YOU WILL
NOT RECEIVE FULL CREDIT
IF IT IS NOT COMPLETED BY
FRIDAY!!!!1**

1. What type of plant did Mendel Study?
2. Give a brief explanation of the relationship of the P, F1 and F2 generations.
3. State Mendel's Law of Independent Assortment.
4. Explain Mendel's Law of Segregation.
5. What is the difference between genotype and phenotype? A = Attached earlobes, a = unattached earlobes. What is the genotype of attached earlobes? What is the phenotype of Aa?
6. What is the difference between a heterozygous genotype and a homozygous genotype?
7. In complete dominance, what does the dominant allele do to the recessive allele?
8. What is the difference between complete dominance, incomplete dominance, and codominance?
9. What is a polygenic trait? Give an example.
10. What is a test cross. What genotype is the unknown ALWAYS crossed with in a test cross?
11. If a pea plant has a genotype of TTYy, what are all the possible allele combinations?

12. What is the difference between pure and hybrid?

13. Define the word Allele.

14. What is a Punnett Square?

15. In cacti, if you cross a plant that has red flowers to one that has yellow flowers, you produce a plant that has orange flowers. **Show the punnett square of an orange flowered plant to a red flowered plant.**

What type of inheritance is this?

- a. Monohybrid – Complete Dominance
- b. Dihybrid – Complete Dominance
- c. Monohybrid – Incomplete Dominance
- d. Codominance

16. In purple people eaters, one-horn is dominant and no horns is recessive. Draw a Punnett Square showing a cross of a purple people eater that is heterozygous for horns with a purple people eater that does not have horns. **What are the genotypes and phenotypes of the offspring? Show the punnett square.**

What type of inheritance is this?

- a. Monohybrid – Complete Dominance
- b. Dihybrid – Complete Dominance
- c. Monohybrid – Incomplete Dominance
- d. Codominance

17. In watermelons, the gene for green color (G) is dominant over striped (g) and short shape (S) is dominant over long shape (s). If a plant with long, striped fruit is crossed with a plant which is heterozygous green and homozygous short. **Show the Punnett Square and state the genotype and phenotype of the offspring.**

What type of inheritance is this?

- a. Monohybrid – Complete Dominance
- b. Dihybrid – Complete Dominance
- c. Monohybrid – Incomplete Dominance
- d. Codominance

18. In Snarly monsters, there are two alleles that can code for fur color. The monsters can either have blue fur, pink fur, or blue fur with pink stripes. Suppose a striped snarly monster was crossed with a monster with blue fur. **Show the Punnett Square and state the genotypes and phenotypes of the offspring.**

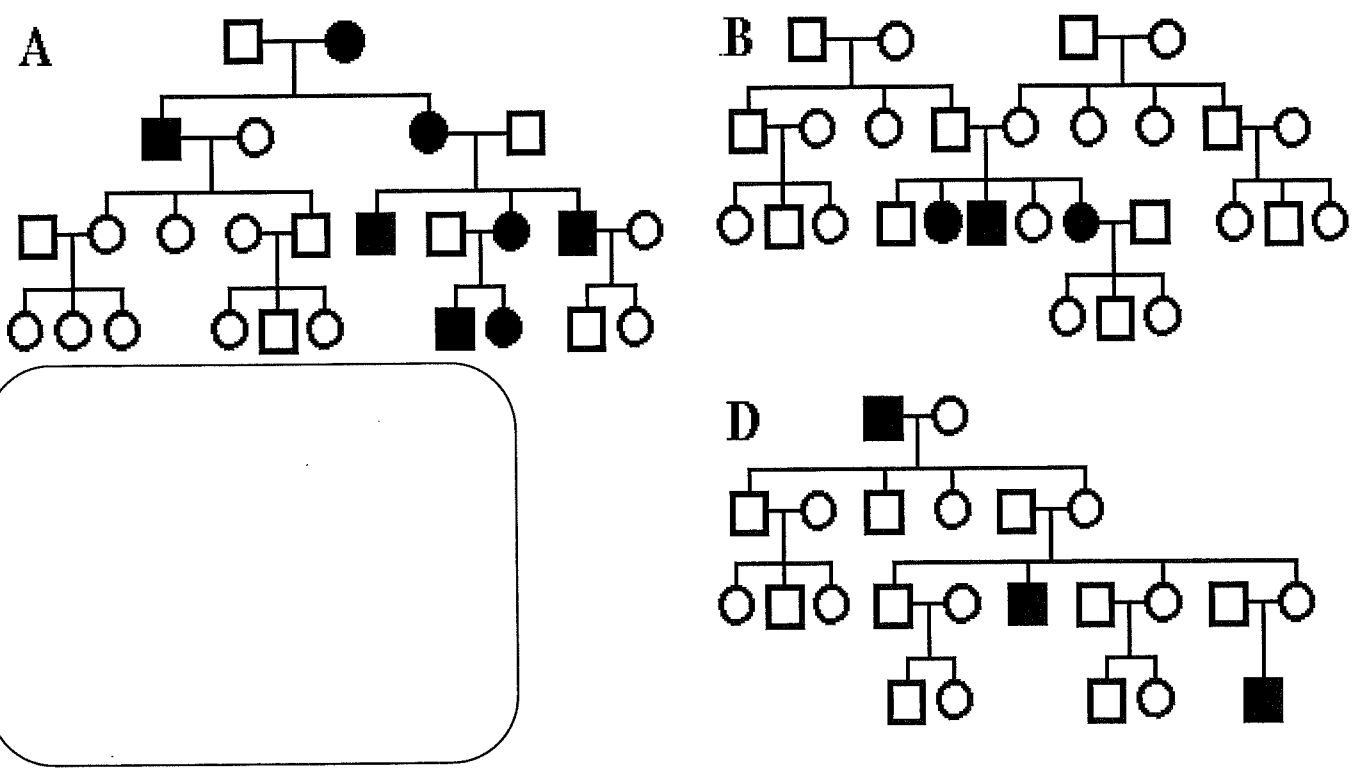
What type of inheritance is this?

- a. Monohybrid – Complete Dominance
- b. Dihybrid – Complete Dominance
- c. Monohybrid – Incomplete Dominance
- d. Codominance

PEDIGREES

1. Brown eyes are a dominant eye-color allele and blue eyes are recessive. A brown-eyed woman whose father had blue eyes and whose mother had brown eyes marries a brown-eyed man whose parents are also brown-eyed. They have a son who is blue-eyed. Please draw a pedigree showing all four grandparents, the two parents, and the son. Indicate which individuals you are certain of their genotype and where there are more than one possibilities.

2. What is the genotype of a carrier? Can males be carriers?



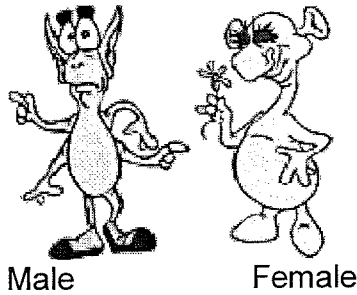
2. Which pedigree is autosomal dominant? _____

3. Which pedigree is autosomal recessive? _____

4. Which pedigree is sex-linked recessive? _____

5. Fill in the genotypes for each pedigree using A's. Don't forget to use X and Y for the sex-linked

SEX-LINKED CROSSES



The alien couple pictured above displays characteristics that have been linked to the sex chromosomes of this particular species. Below is a chart listing some of these traits. Use the information in the chart to solve the genetics problems that follow.

Trait

Body Color	Purple (P) is dominant to pink(p)
Ear shape	Pointed (H) is dominant to round (h)
Eye Color	Yellow (E) is dominant to red (e)
Nose	Small (N) is dominant to large (n)

1. A male with yellow eyes mates with a red-eyed female. What is the chance that this couple will have a baby boy with red eyes?
2. A female, heterozygous for the body color trait, mates with a pink male. What is the chance that these aliens will give birth to a purple-skinned girl?
3. A small-nosed male falls in love and marries a large-nosed female. The couple becomes pregnant with their first child. What is the chance that the baby will be a girl and have a large nose like the mother?