

Pedigree Practice

Name: _____

Date: ____

Background Information: Individuals who lack an enzyme needed to form the skin pigment melanin are called albinos. They appear very pale as a result of the disease. Normal skin pigmentation (D) is dominant to albinism (d). *Use what you know about heredity to determine if an individual is homozygous dominant (DD), homozygous recessive (dd), or heterozygous (Dd).*

Genotypes:

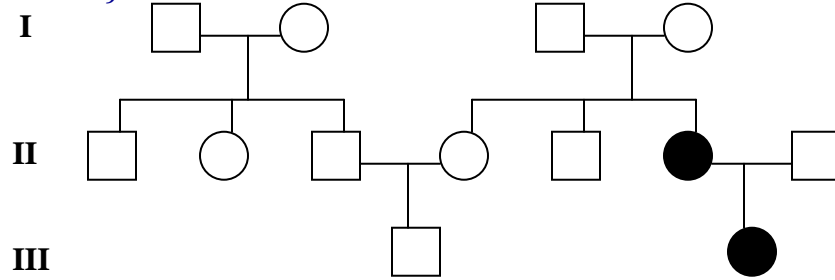
I 3. ____ (Hint: Look at the children!)

4. ____

II 6. ____

7. ____

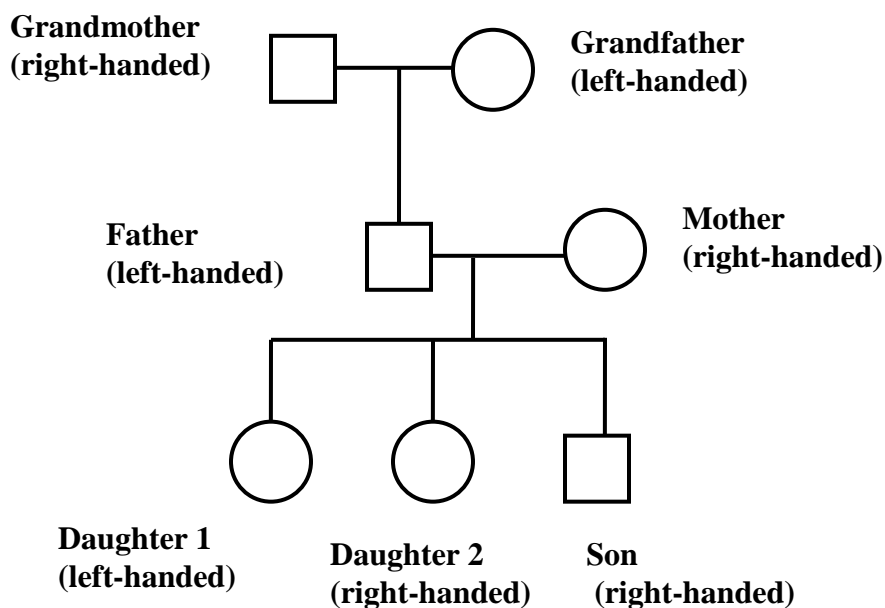
III 2. ____



1. Can you determine individual II.4's genotype? ____ Why or why not?

2. If individuals II.6 and II.7 have another child, what is the chance that it will be an albino? ____ Draw a Punnett Square to show this:

The pedigree below shows the inheritance of handedness in humans over three generations. The allele for right-handedness (R) is dominant over the allele for left-handedness (r).



3. Write the genotype of EACH individual above his/her shape. (Yes- you can figure out EVERYONE'S genotype!)

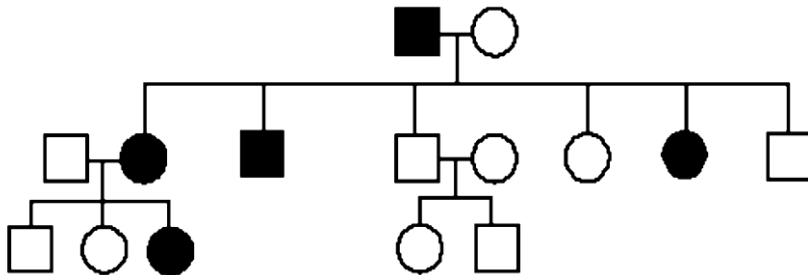
4. Is anyone in the family homozygous dominant? ____

5. Draw a Punnett Square for the grandparents.

6. What is the ratio of right-handed offspring to left-handed offspring? ____

Geneticists use pedigrees to determine if an allele is dominant or recessive. You now have enough knowledge in genetics to do this on your own! Analyze the following pedigrees and answer the corresponding questions to determine if these alleles are dominant or recessive!

The following pedigree shows a family afflicted by **Huntington's Disease**, a rare neurological disorder that causes uncontrolled movements.



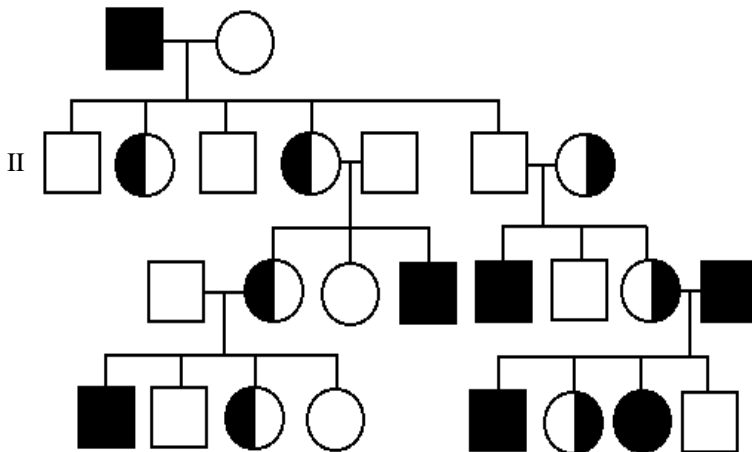
1) Notice there are no carriers for Huntington's Disease. Based on this, is the disease dominant or recessive? _____ How do you know?

2) Therefore, what is individual I.1's genotype? _____

3) How many of I.1 and I.2's children have Huntington's disease? _____ out of _____ = _____%

3) Complete a Punnett Square to verify this probability:

The following pedigree shows the inheritance of Duchenne Muscular Dystrophy (DMD), a recessive disorder that severely impacts the muscular system.



4) Are more, less, or equal males affected than females?

5) What does this tell you about the inheritance of DMD?

6) What is the genotype of all of the males in generation 2? _____

7) Based on this, what is the **most probable** genotype of individual I.2?

8) What must individual II.5's genotype be? _____

9) Create a Punnett Square between individual II.6 and II.7.

10) What is the probability that their son will have DMD? _____%

11) How many of their actual sons have DMD? _____ out of _____ = _____%

12) If individual II.6 had married a woman who was NOT a carrier for DMD, what would be the probability that his son would have DMD? _____%