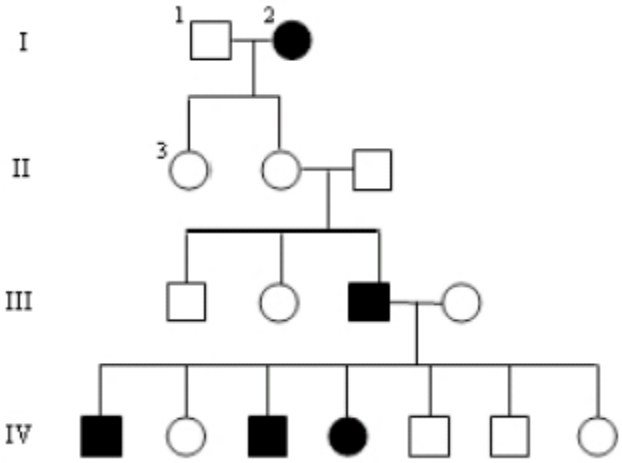
Pedigree Worksheet

Name _____
Period _____ **Date** _____

Interpreting a Human Pedigree
Use the pedigree below to answer 1-5

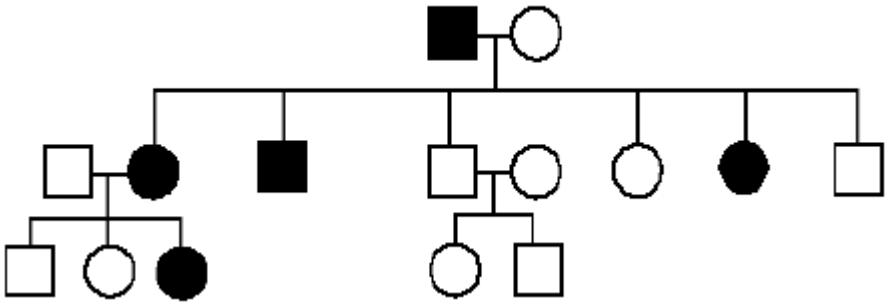


1. In a pedigree, a square represents a male. If it is *darkened* he has *hemophilia*; if clear, he had normal blood clotting.
    a. How many males are there? _____
    b. How many males have hemophilia? _____
2. A circle represents a female. If it is *darkened*, she has *hemophilia*; if open she is normal.
    a. How many female are there? _____
    b. How many females have hemophilia? _____
3. A marriage is indicated by a horizontal line connecting a circle to a square.
    a. How many marriages are there? _____
4. A line perpendicular to a marriage line indicates the offspring. If the line ends with either a circle or a square, the couple had only one child. However, if the line is connected to another horizontal line, then several children were produced, each indicated by a short vertical line connected to the horizontal line. The first child born appears to the left and the last born to the right.
    a. How many children did the first couple (couple in row I) have? _____
    b. How many children did the third couple (couple in row III) have? _____
5. Level I represent the first generation, level II represents the second generation.
    a. How many generations are there? _____
    b. How many members are there in the fourth generation? _____
6. Is this an autosomal or sex-linked pedigree? How do you know?

7. Write the genotypes of each individual in the above pedigree.

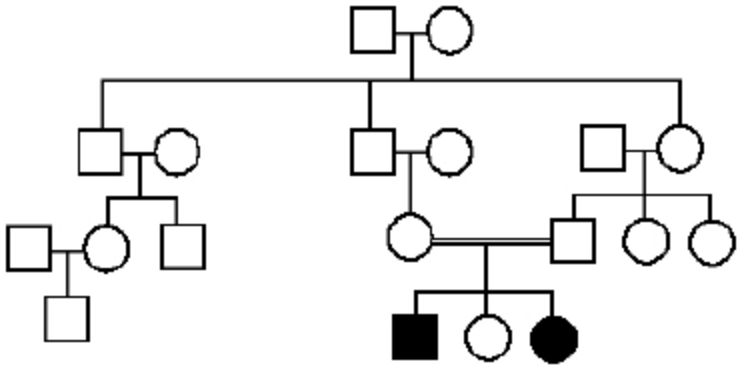
Use the pedigree below to answer 8-14

Shaded individuals have Huntington's Disease



8. Write the generation on the pedigree numbers (roman numerals).
9. Which members of the family above are afflicted with Huntington's Disease? (Specify based on the generation and position of each person, ex: first person of the first generation is 1-1) _____
10. There are no carriers for Huntington's Disease- you either have it or you don't.
    With this in mind, is Huntington's disease caused by a dominant or recessive trait? _____
11. How many children did individuals I-1 and I-2 have? _____
12. How many girls did II-1 and II-2 have? _____ How many have Huntington's Disease? _____
13. How is individual III-2 and II-4 related? _____ I-2 and III-5? _____
14. Write the genotypes of each individual on the pedigree.

Use the Pedigree below to answer 15-20

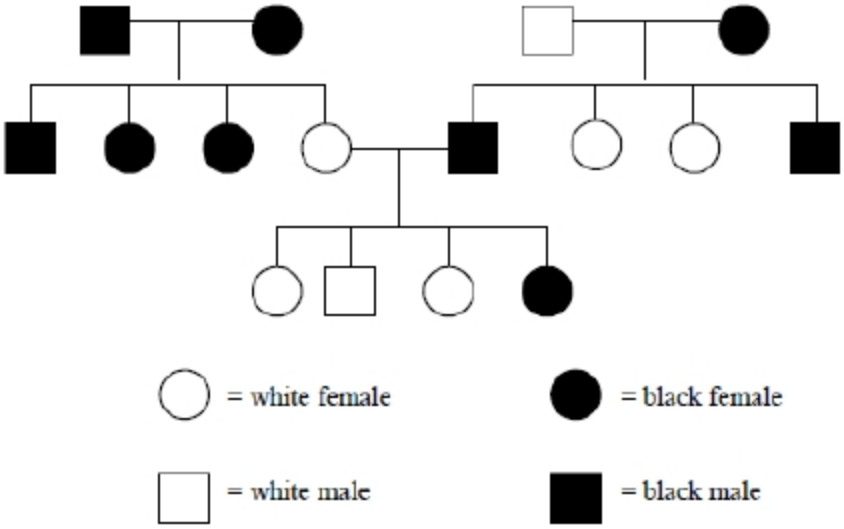


15. Write the generation on the pedigree numbers (roman numerals).
The pedigree to the above shows the passing on of Hitchhiker's Thumb in a family. Is this trait dominant or recessive? _____
16. How do you know? _____
17. How are individuals III-1 and III-2 related? _____
18. Name 2 individuals that have hitchhiker's thumb. _____
19. Name 2 individuals that were carriers of hitchhiker's thumb. _____
20. Write the genotypes for each individual on the pedigree.

Determining Inheritance Patterns

21. When working through a pedigree, the first thing you need to do is figure out which characteristic is dominant – the shaded one or the un-shaded one. Then you need to choose a letter (let's use A) and begin assigning genotypes. Remember that recessive individuals are **always** homozygous, so assign their genotypes first. Then go back and look at all of the dominant individuals. For some, you may find that you cannot be sure of the individual's genotype, in such cases you must write all of the possibilities.

Fur Color in Mice

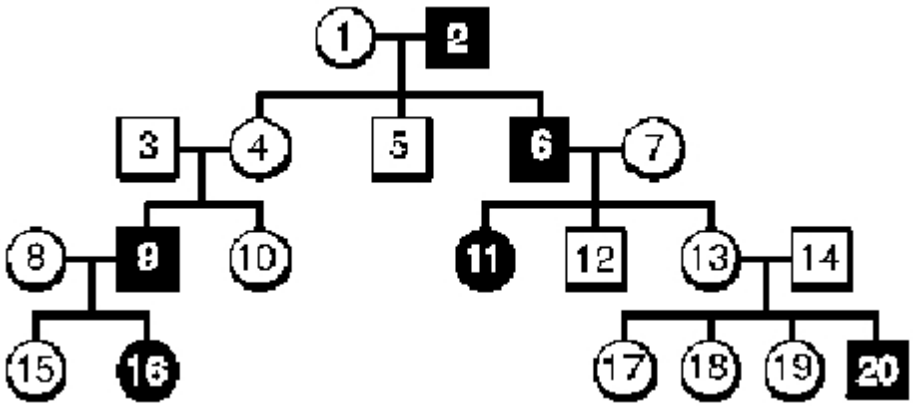


a. Which characteristic is dominant? _____
b. Which characteristic is recessive? _____
c. Determine the genotypes of all individuals. Write your Genotypes beneath each individual.

22. Look at the pedigree below.

Is the trait dominant or recessive? _____

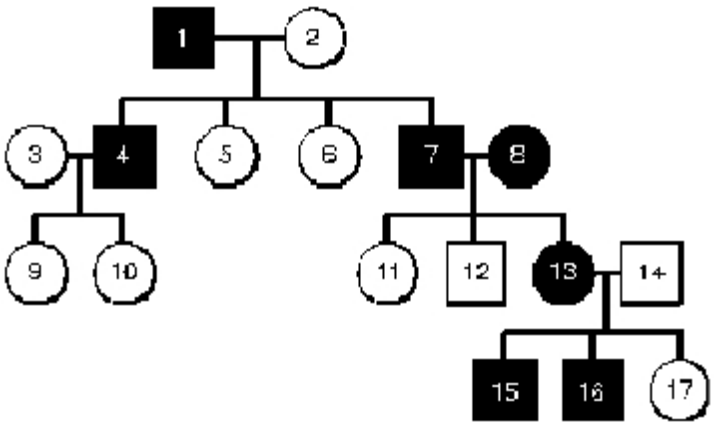
Write the genotype for each individual (use the letter A)



23. Look at the pedigree below.

Is the trait dominant or recessive? _____

Write the genotype for each individual (use the letter A)



Making Conclusions

24. If a child has an autosomal dominant trait, what can you say about the parents?

25. If two parents have an autosomal dominant trait, what can you say about their children?

26. If two parents have an autosomal recessive trait, what can you say about their children?

27. If two parents do not have an autosomal recessive trait, what can you say about their children?

27. Can autosomal recessive traits skip generations?