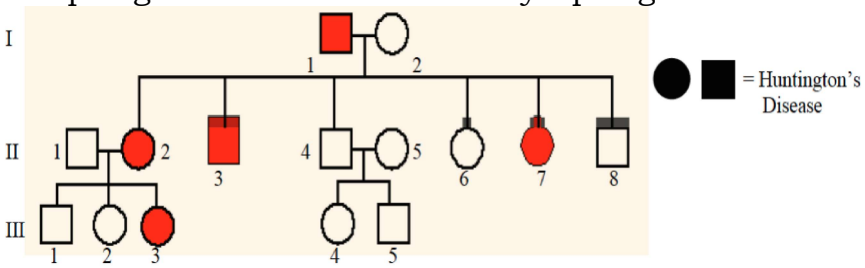
Name: _____ **Class:** _____

Warm-Up: Genetic Review 2

Multiple Choice: *DARKEN the letter that best completes the statement or answers the question.*

The pedigree below shows a family's pedigree for Huntington's disease.



1. Which family members are afflicted with Huntington's disease?
   Ⓐ I-1, II-2, II-3, II-7, III-3
   Ⓑ I-2, II-1, II-4, II-6, II-8
   Ⓒ II-2, II-3, III-1
   Ⓓ II-3, II-7, II-8, III-4

2. There are no carriers for Huntington's disease. You either have it or you don't. With this in mind, what type of inheritance does Huntington's disease follow?
   Ⓐ autosomal recessive
   Ⓑ autosomal dominant
   Ⓒ sex-linked
   Ⓓ codominant

3. How many children did individuals I-1 and I-2 have?
   Ⓐ 2
   Ⓑ 3
   Ⓒ 4
   Ⓓ 5
   Ⓔ 6

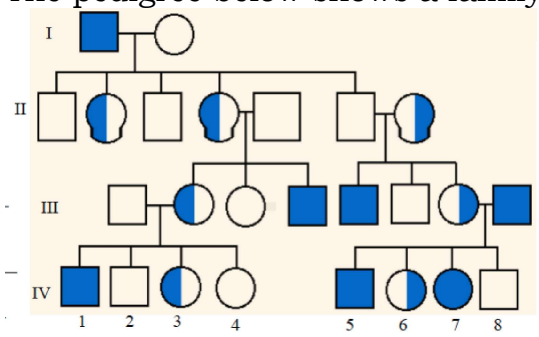
4. How many girls did II-1 and II-2 have? How many are affected?
   Ⓐ 2 girls, none with Huntington's disease
   Ⓑ 2 girls, one with Huntington's disease
   Ⓒ 3 girls, two with Huntington's disease
   Ⓓ 3 girls, one with Huntington's disease
   Ⓔ 3 girls, all with Huntington's disease

5. How are individuals III-2 and II-4 related?
   Ⓐ daughter and mother
   Ⓑ nephew and aunt
   Ⓒ grandson and grandfather
   Ⓓ niece and uncle
   Ⓔ granddaughter and grandfather

6. How are individuals I-2 and III-5 related?
   Ⓐ grandma and granddaughter
   Ⓑ grandma and grandson
   Ⓒ mother and son
   Ⓓ father and daughter
   Ⓔ mother and daughter

7. How many children did individuals I-1 and I-2 have?
   Ⓐ 3
   Ⓑ 4
   Ⓒ 5
   Ⓓ 6
   Ⓔ 7

The pedigree below shows a family's pedigree for colorblindness:



8. Which sex can be carriers of colorblindness and not have it?
   Ⓐ females
   Ⓑ males

9. What kind of trait is colorblindness?
   Ⓐ autosomal dominant
   Ⓑ autosomal recessive
   Ⓒ sex-linked dominant
   Ⓓ codominant
   Ⓔ sex-linked recessive

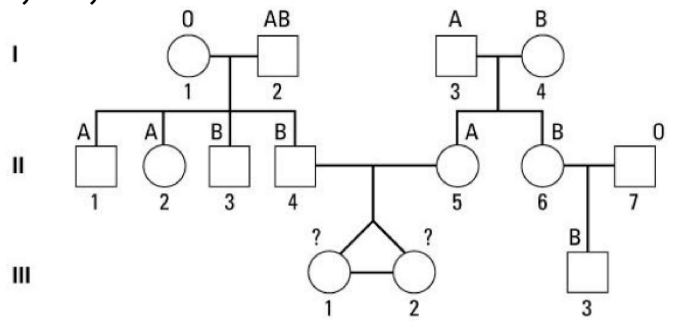
10. What is the genotype of individual IV-7?
    Ⓐ X^bX^b
    Ⓑ X^bY
    Ⓒ X^BY
    Ⓓ X^BX^b
    Ⓔ X^BX^B

11. All of the following statements about colorblindness are true, EXCEPT:
    Ⓐ Males are usually more severely affected than females. The trait may be lethal in males.
    Ⓑ Parents of affected children may be related. The rarer the trait in the general population, the more likely a consanguineous mating is involved.
    Ⓒ All sons of an affected male and a normal female are normal. All daughters of an affected male and a normal female are affected.
    Ⓓ The trait is never passed from father to son.
    Ⓔ Matings of affected females and normal males produce 1/2 the sons affected and 1/2 the daughters affected.

12. Why do all the daughters in generation II carry the colorblind gene?
    Ⓐ Their mother is a carrier with the X^b gene
    Ⓑ Their dad is affected with only X^b gene to give to them
    Ⓒ Their dad is homozygous dominant for the disorder
    Ⓓ Their mom is homozygous recessive for the disorder
    Ⓔ Their mom is heterozygous for the disorder

13. Name two fourth generation colorblind males.
    Ⓐ IV-1 and IV-7
    Ⓑ IV-5 and IV-7
    Ⓒ IV-1 and IV-3
    Ⓓ IV-3 and Iv-6
    Ⓔ IV-1 and IV-5

In the pedigree below, different blood types are identified by the letters A, B, AB, and O.



14. Individuals II-4 and II-5 have just had identical twin girls. List the possible blood types these infants may have based on the information provided in the pedigree
    Ⓐ Types A, B, AB and O
    Ⓑ Types A and B
    Ⓒ Types B and AB
    Ⓓ Types A and AB
    Ⓔ Type O

15. Individuals II-6 and II-7 have a *second* child with blood type O. What does this tell you about II-6's genotype?
    Ⓐ I^Bi
    Ⓑ I^BI^B
    Ⓒ I^Ai
    Ⓓ I^AI^A
    Ⓔ ii

16. Could I-1 and I-2 have a child with the AB blood type?
    Ⓐ yes
    Ⓑ no

17. Which member of the family can only get blood from a type O donor?
    Ⓐ I-2
    Ⓑ I-3, II-1, II-2, II-5
    Ⓒ I-1 and II-7
    Ⓓ I-4, II-3, II-4, II-6
    Ⓔ the twins

18. Which blood type can receive from type A, B, AB and O?
    Ⓐ type A
    Ⓑ type B
    Ⓒ type AB
    Ⓓ type O

Short Answer

Use the exhibit to answer the questions that follow.

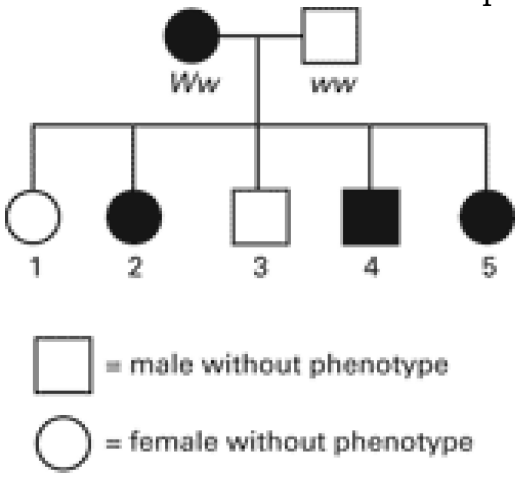


FIG. 7.4

19. What type of chart is shown in Figure 7.4?

20. What do the shaded shapes represent?

21. The phenotype is caused by a dominant allele. Write two statements to support this fact.

22. The phenotype is caused by an autosomal gene. Explain why.

23. Make a Punnett square using the parental genotypes. Find all the possible genotypes for the offspring in the F generation.