

Key

Pedigree Practice

Name: _____

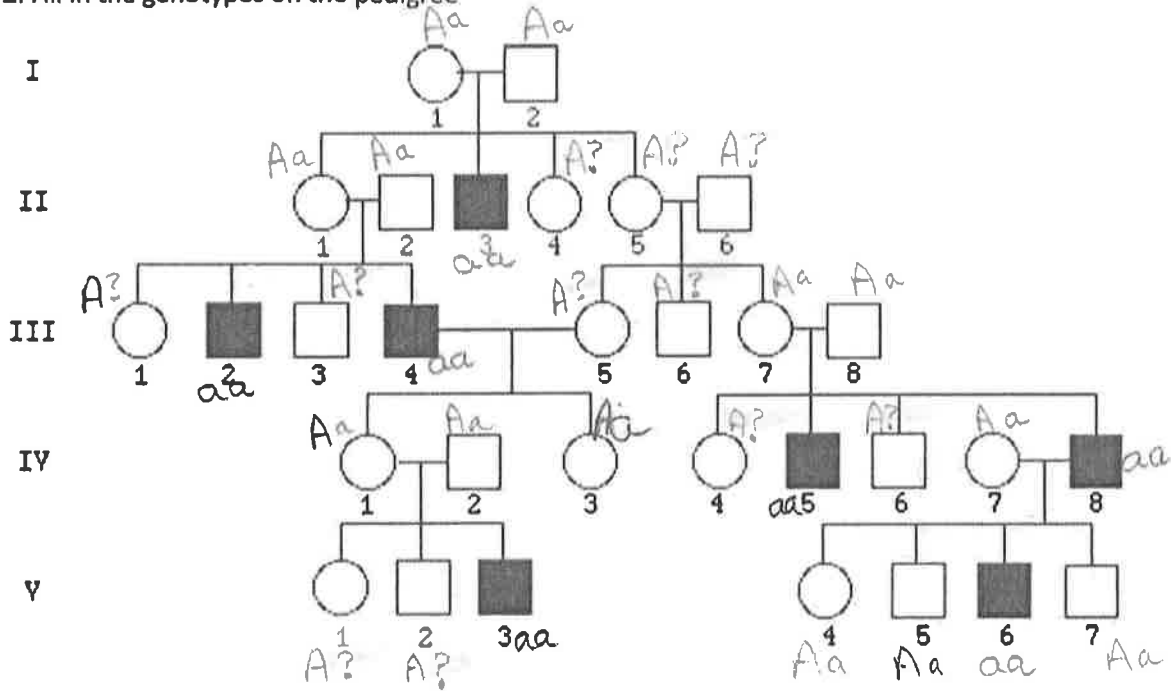
AP Biology

The following pedigree shows the inheritance of cystic fibrosis. Cystic fibrosis is a genetic disorder that results in breathing problems, lung infections, sinus infections, poor growth and diarrhea. On the pedigree, individuals with cystic fibrosis are colored in.

1. Is cystic fibrosis dominant or recessive?

Recessive

2. Fill in the genotypes on the pedigree



3. Is it possible for two people with cystic fibrosis to have a child how does not have the disease?

No

4. Individuals IV-7 and IV-8 decide to have another child. What is the probability that the baby will have cystic fibrosis?

50 %

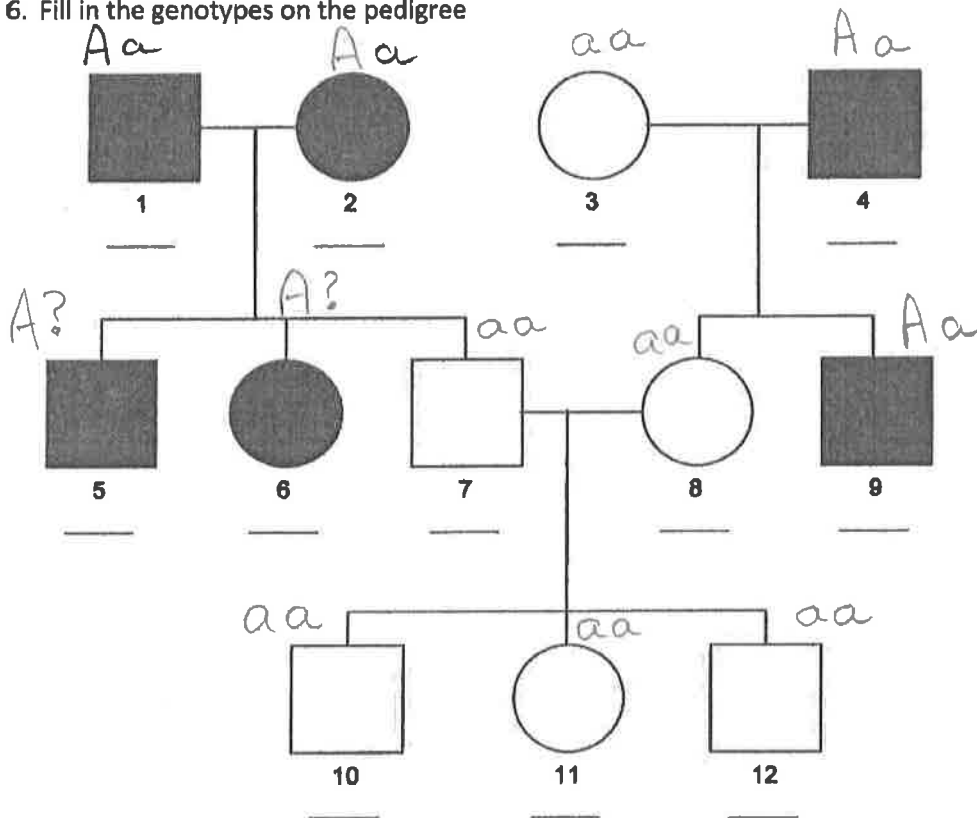
$$aa: \left(\frac{1}{2}\right)(1) = \frac{1}{2}$$

Below is a pedigree showing the inheritance of Huntington's disease, a dominant lethal disorder. Huntington's disease is a degenerative disease of the nervous system. The disease has no obvious phenotypic effects until the individual is about 35 to 45 years of age. Once the deterioration of the nervous system begins the condition is irreversible and fatal.

5. How is it possible to have a **dominant lethal** disease?

Huntington's is not lethal until after reproductive age.

6. Fill in the genotypes on the pedigree



7. Individual 12 marries a woman who does not have Huntington's disease. What is the probability that their progeny will have Huntington's?

0

8. Individual 9 gets remarried to a woman named Judy who has Huntington's disease. (Judy's dad also had Huntington's, but her mom was fine.) What is the probability that the offspring of Judy and individual 9 will have Huntington's?

9 Judy
 Aa Aa

75%

Key

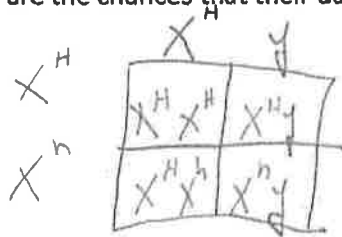
Sex-Linked Genetics

Name: _____

AP Biology

1. Hemophilia, a blood clotting disorder, is caused by an X-linked recessive allele (h). Answer the following questions about the children of a normal man and a heterozygous woman.

a. What are the chances that their daughter has hemophilia?

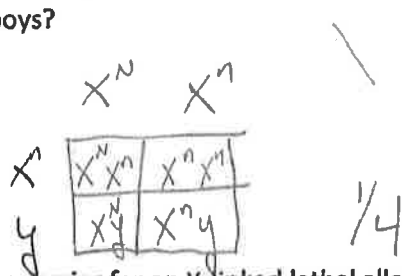


0%

b. What are the chances that their son has hemophilia?

50%

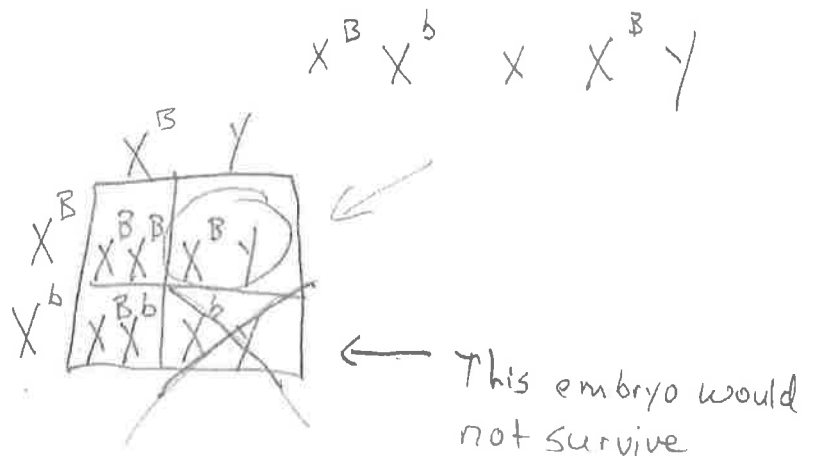
2. A recessive allele on the X chromosome causes colorblindness. A woman with normal vision (whose father is colorblind) marries a colorblind man. What fraction of their children are expected to be colorblind boys?



1/4

3. A woman is a carrier for an X-linked lethal allele that causes an embryo with the allele to spontaneously abort. What fraction of her children would you expect to be boys?

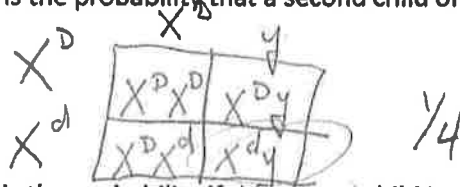
1/3



4. Neither Tim nor Rhoda as Duchenne muscular dystrophy, but their firstborn son does have it. (Duchenne muscular dystrophy is a sex-linked recessive disorder.)

Rhoda $X^D X^d$ x Tim $X^D y$

a. What is the probability that a second child of this couple will have the disease?



b. What is the probability if the second child is a boy?

$\frac{1}{2}$

c. What is the probability if the second child is a girl?

0