



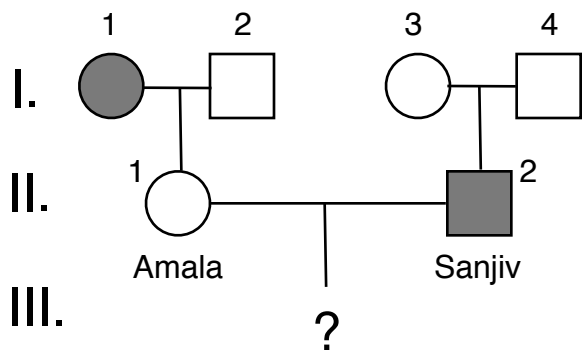
3. Tall, green, curly-stemmed plants (**TtGgCc**) are crossed with tall, yellow, smooth-stemmed plants (**Ttggcc**).
- Out of 704 offspring, how many should be **TTggCc**?
  - What number should be **ttGgcc**?
  - What are the odds for a tall, green, smooth-stemmed offspring?
  - What are the odds for a green plant?
4. A **Tt** male mates with a **Tt** female.
- What are the odds for a **tt** child?
  - What are the odds for a **Tt** female child?
  - What are the odds for the first born being a **TT** female and the second born being a **Tt** female?
  - The parents have many offspring. What are the odds for one being a **Tt** male or a **tt** female?
  - The couple has five children. What are the odds for two of them being **Tt** females?
  - What are the odds for two **TT** out of three children?

5. A tall (**Tt**), colorblind, type O blood, pink-eyed male mates with a short, colorblindness carrier, type AB blood, pink-eyed female. What is the probability of a tall, colorblindness carrier, type A blood, red-eyed child? [Hint: Eye color demonstrates incomplete dominance.]
6. You observe this family in a station wagon. Three out of the four children are short. When they all get out, you see that dad is tall and mom is short.
- Genotype of: Dad = \_\_\_\_\_ Mom = \_\_\_\_\_
  - Is this acceptable based on a  $X^2$  test?
7. A colorblind, type O male mates with a normal vision, type AB female.
- What are the odds for one child out of three being a carrier, type A female?
  - What are the odds for the first two children being normal vision, type A males?
  - What are the odds for a colorblind male?
  - What are the odds for a female?
8. Examine the following cross. **TtaaBbCC** with **tAabbCc**
- What are the odds for a **ttAabbCC** offspring?
  - What are the odds for a **TtaabbCc** female?
  - What are the odds for one **ttAabbCC** out of three offspring?

9. A coin is flipped three ten times.
- What are the odds it will turn up tails three times?
  - Is this acceptable according to the  $X^2$  method?
10. A colorblind, type O, brown-eyed (Bb) male mates with a colorblindness carrier, type A ( $I^A I^O$ ), blue-eyed female.
- What are the odds for a colorblind, type A, blue-eyed baby girl?
  - What are the odds for one out of four being colorblind, type A, and blue-eyed?
  - The couple has four children. One child is a colorblind, type A, blue-eyed girl. Is this acceptable by  $X^2$ ?
11. Examine the following cross.  $XYI^A I^A$  and  $XXI^A I^B$
- What are the odds for a type AB  $\sigma^7$ ?
  - What are the odds for one out of three being AB  $\sigma^7$ ?
  - What are the odds for the first child being an AB  $\sigma^7$ , the second child being an AA  $\text{♀}$ , and the third child being an AA  $\sigma^7$ ?

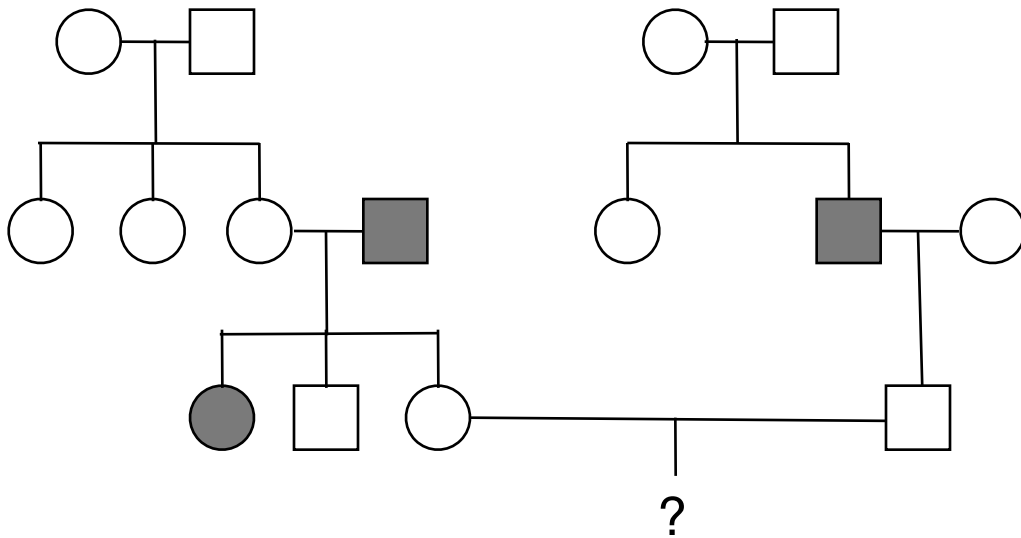
Pedigrees

12. The trait examined in this example is albinism, a homozygous recessive condition.



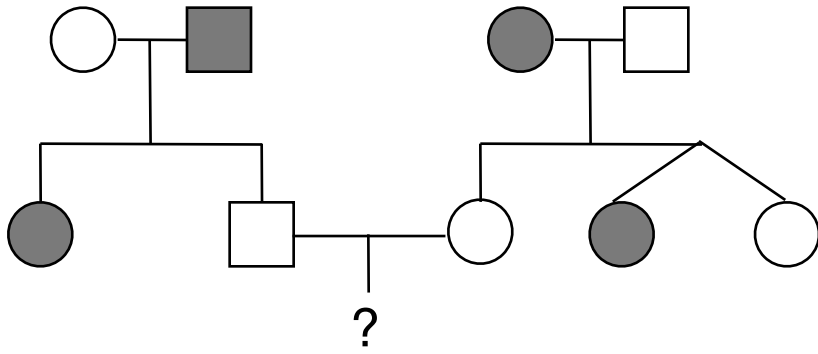
- What are the genotypes of Sanjiv's parents (I<sub>3</sub> and I<sub>4</sub>)?
- What is the genotype of Sanjiv?
- What are the odds that Amala has the albino allele? Provide a reason for your conclusion.
- What are the odds of Sanjiv and Amala's child being albino?
- What are the odds for their child being female?
- What are the odds for their child to be a normal male?

13. Examine the pedigree below.



- What are the chances for a recessive male?
- What are the chances for a normal child?

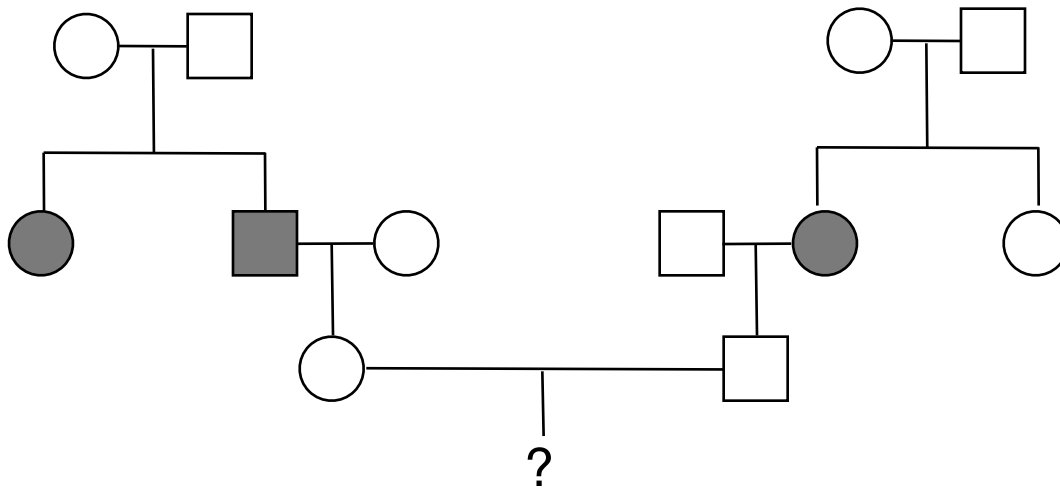
14. Examine the pedigree below.



a. What are the chances for a normal female?

b. What are the genotypes of the parental generation individuals?

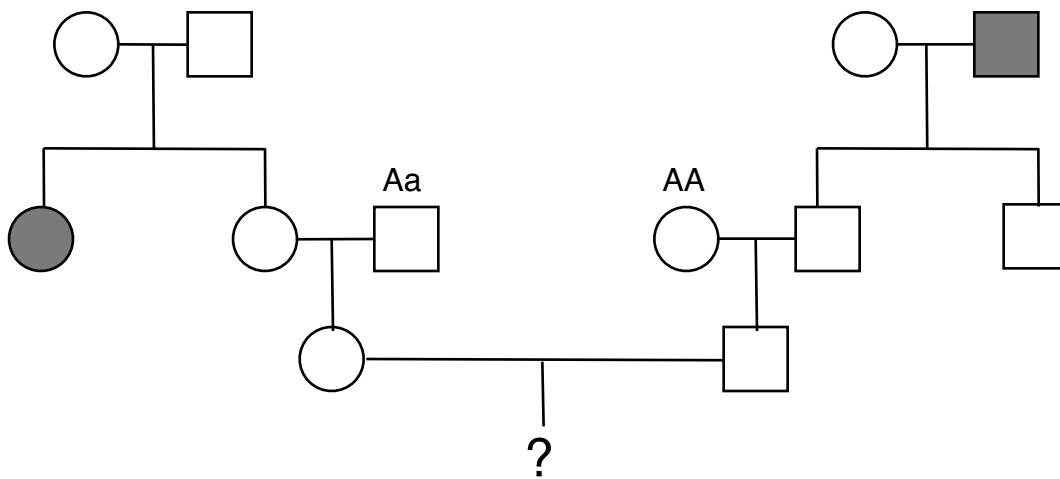
15. Examine the pedigree below.



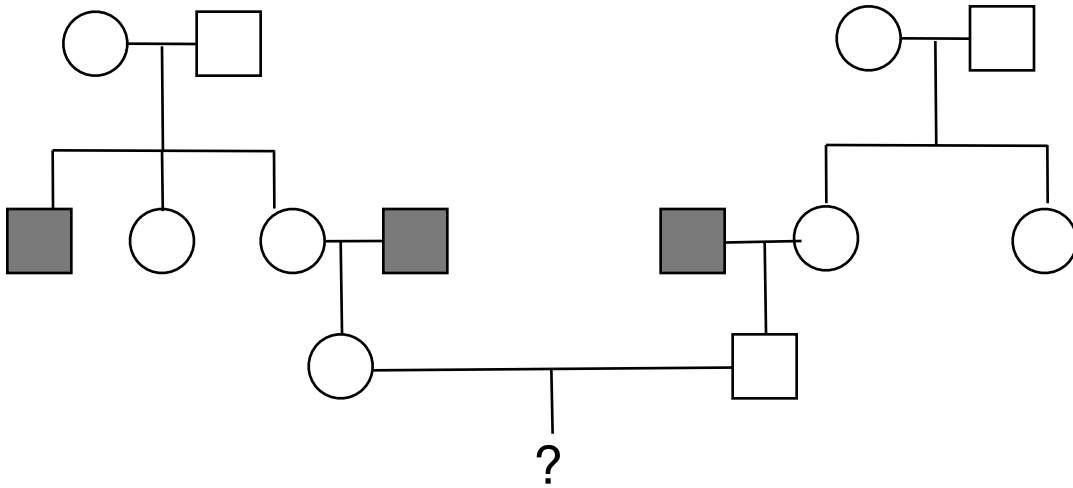
a. What are the odds of a recessive male?

b. What are the odds for one recessive female out of three?

16. Examine the pedigree below. What are the odds for an afflicted child?

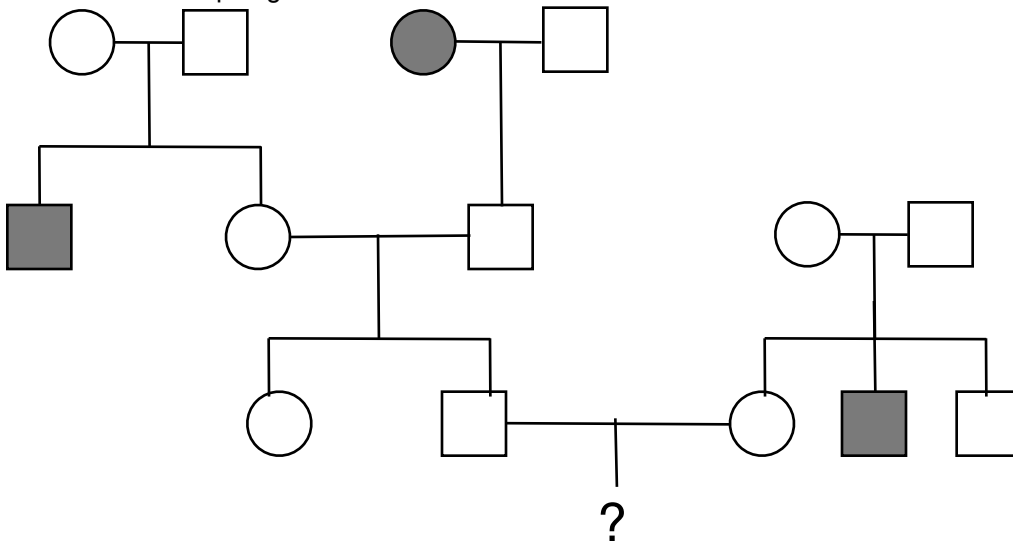


17. Examine the pedigree below.

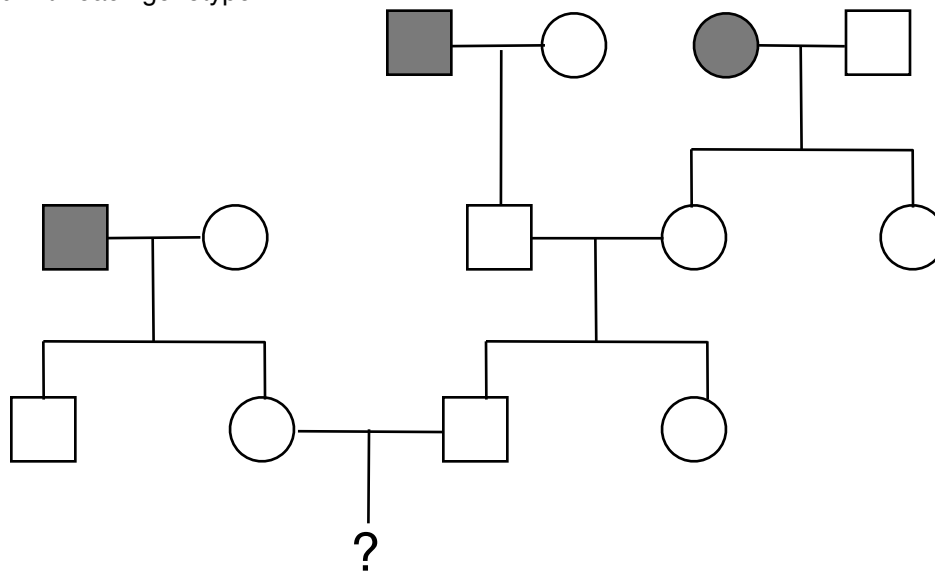


- What are the odds for the unknown child to be afflicted with the genetic disorder?
- What are the odds for an afflicted male?
- What are the odds for a normal female?
- What are the odds for three afflicted females out of five children?

18. Examine the pedigree below. What are the odds for the first two children to be albino?



19. Examine the pedigree below and give the possible proportions of each genotype for the new child. Also, give the phenotype associated with each genotype.



20. Create your own pedigree and provide three questions about it.