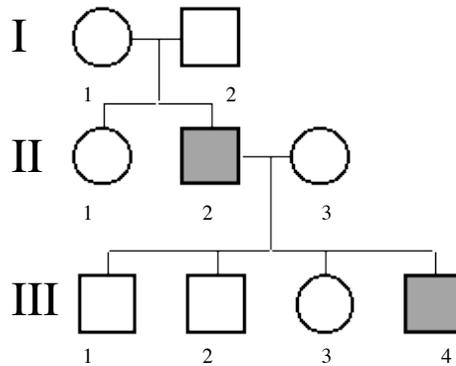


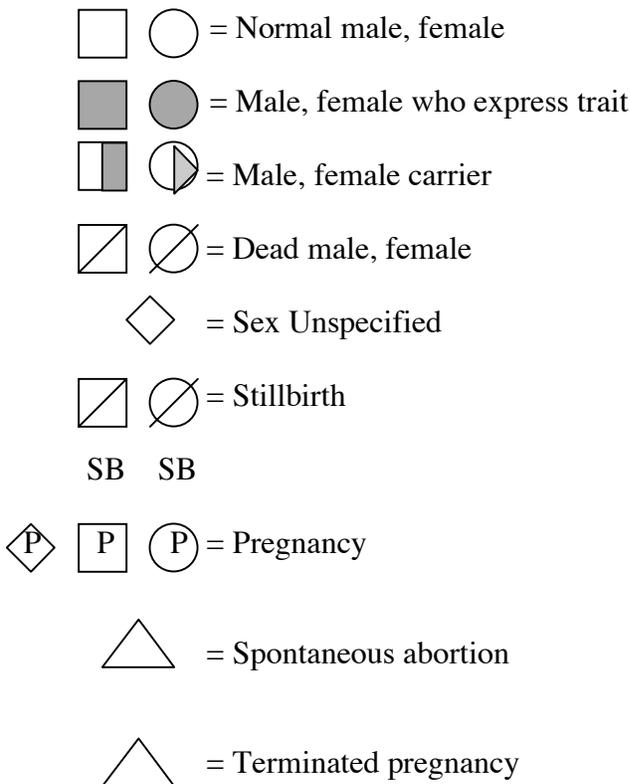
Practice Pedigree Problems

Background:

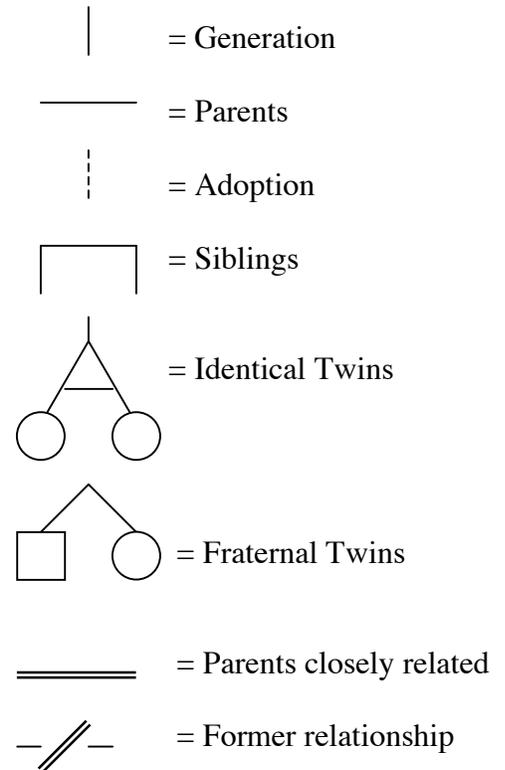
A pedigree is a diagram of family relationships that uses symbols to represent people and lines to represent genetic relationships. These diagrams make it easier to visualize relationships within families. A sample pedigree is below.



Symbols



Lines



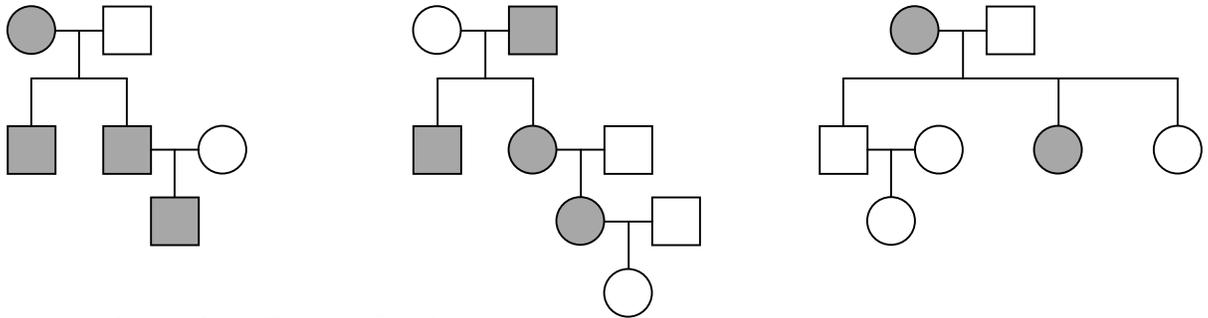
Questions

1. On the soap opera “The Young and the Restless”, several individuals suffer from a rapid aging syndrome in which a young child is sent off to boarding school and returns three months later an angry teenager. Victims have been known to age up to two decades in variations of the disorder. In the Newman family, siblings Nicholas and Victoria aged from ages six and eight to sixteen and eighteen within a few months. Their parents, Victor and Nikki, are not affected; in fact, they never seem to age at all.

- What is the mode of inheritance of the rapid aging disorder affecting Nicholas and Victoria?
- How do you know what the mode of inheritance is?
- Draw a pedigree to depict this portion of the Newman family.

2. Achondroplasia is a common form of hereditary dwarfism that causes very short limbs, stubby hands, and an enlarged forehead. Below are three pedigrees depicting families with this specific type of dwarfism.

- Identify the individuals using Roman numerals for the generation and Arabic numerals to identify the individuals.
- What is the most likely mode of inheritance?
- Explain your reasoning.

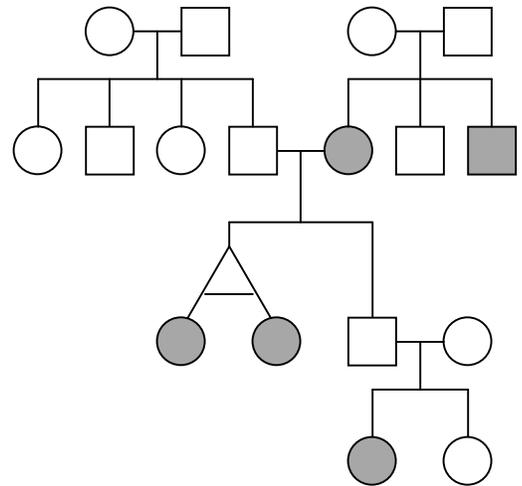


3. Draw a pedigree to depict the following family:

One couple has a son and a daughter with normal pigmentation. Another couple has one son and two daughters with normal pigmentation. The daughter from the first couple has three children with the son of the second couple. Their son and one daughter have albinism; their other daughter has normal pigmentation.

4. Chands syndrome is an autosomal recessive condition characterized by very curly hair, underdeveloped nails, and abnormally shaped eyelids. In the pedigree below:

- Identify the individuals using Roman and Arabic numerals.
- Which individuals must be carriers?



5. Caleb has a double row of eyelashes, which he inherited from his mother as a dominant trait. His maternal grandfather is the only other relative to have the trait. Veronica, a woman with normal eyelashes, falls madly in love with Caleb, and they marry. Their first child, Polly, has normal eyelashes. Now Veronica is pregnant again and hopes they will have a child who has double eyelashes.

- What chance does a child of Veronica and Caleb have of inheriting double eyelashes?
- Draw a pedigree of this family.

6. Sclerosteosis causes overgrowth of the skull and jaws that produces a characteristic face, gigantism, facial paralysis, and hearing loss. The overgrowth of skull bones can cause severe headaches and even sudden death. In the pedigree below:

- Which individuals in the pedigree must be carriers?

