Pedigree A – Deaf Mutism: One form of deafness in humans is a type in which the individual inherits not only deafness but also the inability to talk.

Pedigree Analysis: Use your Pedigree Analysis Tips Page and the pedigree above to answer the following questions.

1. Is the trait in every generation or does it skip generations? Yes / No  
   Trait is likely: Dominant / Recessive
2. Does a father have the trait and pass it on to his son(s)? Yes / No  
   Trait is likely: Autosomal / X-Linked
3. Are females and males affected equally or unequally? Equally / Unequally  
   Trait is likely: Autosomal / X-Linked
4. If dominant, does a father with trait pass it on to all daughters but no sons? Yes / No  
   Trait is likely: Autosomal / X-Linked
5. What pattern of inheritance does this pedigree demonstrate? ____________________________

Fill in the genotypes for each of the following individuals in the pedigree below. Use the symbols D for dominant normal and d for recessive deaf mustim. IF the trait is X-linked, include the XX for females and the XY for males.

1. What is a picture of the inheritance of a trait over many generations called? ____________________________
2. What is the sex of IV-5? ________  
   II-4? ________
3. How many individuals in the pedigree above are affected with the trait? Write the number of the persons who are affected.
   ______________________________________________
4. How did II-1 and II-2 have a child, III-2, who is a deaf mute? What are the genotypes of II-1 and II-2? Use the Punnett square to prove your answer.
   a. genotype of II-1 ______
   b. genotype of II-2 ______
5. What is the chance of having a child with deaf mutism in the Punnett Square above? ____________________________
Pedigree B – Hemophilia: Hemophilia is a disease of the circulatory system. It is sometimes called bleeder’s disease because persons with the disease have a very slow clotting time when injured. An affected person can bleed to death from minor wounds or internal injuries. Use the symbols H for normal and h for hemophilia. IF the trait is X-linked, include the XX for females and the XY for males. After finishing your pedigree analysis (questions 1-5), fill in the genotypes in the pedigree below.

Pedigree Analysis: Use your Pedigree Analysis Tips Page and the pedigree above to answer the following questions.

1. Is the trait in every generation or does it skip generations? Yes / No Trait is likely: Dominant / Recessive
2. Does a father have the trait and pass it on to his son(s)? Yes / No Trait is likely: Autosomal / X-Linked
3. Are females and males affected equally or unequally? Equally / Unequally Trait is likely: Autosomal / X-Linked
4. If dominant, does a father with trait pass it on to all daughters but no sons? Trait is likely: Autosomal / X-Linked
5. What pattern of inheritance does this pedigree demonstrate? ____________________________________

1. Is hemophilia more common in males or females? ______________________________________________
2. Is hemophilia carried on the X or Y chromosome? _____________________________________________
3. Who in the family is a hemophiliac? _______________________________________________________
4. What is a carrier? ______________________________________________________________________
5. Who in the family is a carrier? ___________________________________________________________
Pedigree C – Brachydactyly: Brachydactyly is a condition in which the fingers are abnormally short. The last two joints of the middle finger are shortened and the other four fingers, the last two joints are fused into one and shortened. Use the pedigree below and the pedigree analysis questions to determine the mode of inheritance for Brachydactyly and answer the questions that follow.

Pedigree Analysis: Use your Pedigree Analysis Tips Page and the pedigree above to answer the following questions.

1. Is the trait in every generation or does it skip generations? Yes / No
   Trait is likely: Dominant / Recessive

2. Does a father have the trait and pass it on to his son(s)? Yes / No
   Trait is likely: Autosomal / X-Linked

3. Are females and males affected equally or unequally? Equally / Unequally
   Trait is likely: Autosomal / X-Linked

4. If dominant, does a father with trait pass it on to all daughters but no sons? Yes / No
   Trait is likely: Autosomal / X-Linked

5. What pattern of inheritance does this pedigree demonstrate? ________________________________

Use the symbols B/b the trait. Hint: First determine if normal or Brachydactyly is dominant or recessive using the above questions. IF the trait is X-linked, include the XX for females and the XY for males. After finishing your pedigree analysis (questions 1-5), fill in the genotypes in the pedigree below.

1. Is Brachydactyly dominant or recessive? ________________________________________________

2. Who has short fingers? __________________________________________________________________

3. What is the genotype of those that do not have short fingers? ________________________________

4. Is there any person whom you cannot determine a genotype for? ____________________________

5. Explain your answer to #4. ____________________________________________________________________________

6. Is there any person whom you cannot determine a phenotype for? ____________________________

7. Explain your answer to #6. ____________________________________________________________________________
Draw and analyze your own pedigree.

A. Julie and Steven are married and have two girls, Hannah and Avery. Julie’s parents are Glenn and Pearl, and Julie’s sister is Deborah. Deborah is not married. Steven’s brother, Jason, is married to Betsy, and they have three sons, Bryan, Christopher, and Craig. Steven, Bryan, and Avery all have twelve fingers. Shade the circle or square of any person with twelve fingers.

Pedigree Analysis: Use your Pedigree Analysis Tips Page and the pedigree above to answer the following questions.

1. Is the trait in every generation or does it skip generations? Yes / No  Trait is likely: Dominant / Recessive
2. Does a father have the trait and pass it on to his son(s)? Yes / No  Trait is likely: Autosomal / X-Linked
3. Are females and males affected equally or unequally? Equally / Unequally  Trait is likely: Autosomal / X-Linked
4. If dominant, does a father with trait pass it on to all daughters but no sons? Yes / No  Trait is likely: Autosomal / X-Linked
5. What pattern of inheritance does this pedigree demonstrate? ________________________________

B. Billy and Carolyn are the parents of Jeff, Eric, Kevin, Jamie (female), and Kyle. Jeff married Kim and had three sons: Brad, Tyler, and Alex. Eric did not marry. Kevin married Marlesa and had two daughters: Lauren and Kayla. Jamie married Brian and had sons Dalton and Cameron. Kyle and Melanie are married and have no children. Billy, Jeff, Eric, Kevin, Jamie, Brad, Tyler, Alex, Lauren, Kayla, Dalton, and Cameron have brown eyes. Carolyn, Kim, Marlesa, Brian, Kyle, and Melanie are blue-eyed. Shade the circle or square of any brown-eyed person and label each of those circles with the letters “B?” (Because we don’t know if they are homozygous or heterozygous). Label the blue-eyed people with the letters bb.

Pedigree Analysis: Use your Pedigree Analysis Tips Page and the pedigree above to answer the following questions.

1. Is the trait in every generation or does it skip generations? Yes / No  Trait is likely: Dominant / Recessive
2. Does a father have the trait and pass it on to his son(s)? Yes / No  Trait is likely: Autosomal / X-Linked
3. Are females and males affected equally or unequally? Equally / Unequally  Trait is likely: Autosomal / X-Linked
4. If dominant, does a father with trait pass it on to all daughters but no sons? Yes / No  Trait is likely: Autosomal / X-Linked
5. What pattern of inheritance does this pedigree demonstrate? ________________________________