1. Two parents, both homozygous dominant for unattached earlobes, are curious about the earlobe form of their future offspring. Unattached earlobes are dominant, attached earlobes are recessive. Use the letters E and e to complete the following:

• E codes for _________________  
• e codes for _________________

• Mother's genotype is ________ and she will produce the following gametes: _______ and _______

• Father's genotype is ________ and he will produce the following gametes: _______ and _______

**Potential Offspring:**

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• Ratio and Genotype(s) of offspring:

____________________________

• Ratio and Phenotype(s) of offspring:

____________________________

2. A woman who is homozygous dominant for Marfan syndrome marries a man who is homozygous recessive for Marfan syndrome. (Affected individuals tend to be tall and thin, and have long arms and legs, and long, thin fingers. It is also a connective tissue defect that can lead to death by aortic rupture.) Marfan syndrome is inherited as a dominant, and the recessive condition is normal (non-Marfan Syndrome). Use the letters M and m to complete the following:

• M codes for ____________________  
• m codes for ____________________

• Mother's genotype is ________ and she will produce the following gametes: _______ and _______

• Father's genotype is ________ and he will produce the following gametes: _______ and _______

**Potential Offspring:**

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• Ratio and Genotype(s) of offspring:

____________________________

• Ratio and Phenotype(s) of offspring:

____________________________
3. The sister of the woman in the previous problem (#2) is heterozygous for Marfan syndrome. She marries a man who is homozygous recessive for Marfan syndrome. What will be the out come in their offspring? Use the letters M and m to complete the following:

• M codes for __________________________

• m codes for __________________________

• Mother’s genotype is _______ and she will produce the following gametes: _______ and _______

• Father’s genotype is _______ and he will produce the following gametes: _______ and _______

Potential Offspring:

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• Ratio and Genotype(s) of offspring:

• Ratio and Phenotype(s) of offspring:

4. Two normal appearing individuals are both heterozygous for albinism (absence of pigment in skin, eyes, and hair). Albinism is a recessive trait. What will be the out come in their offspring? Use the letters A and a to complete the following:

• A codes for __________________________

• a codes for __________________________

• Mother’s genotype is _______ and she will produce the following gametes: _______ and _______

• Father’s genotype is _______ and he will produce the following gametes: _______ and _______

Potential Offspring:

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• Ratio and Genotype(s) of offspring:

• Ratio and Phenotype(s) of offspring:
5. A woman who is homozygous dominant for Cystic Fibrosis marries a man who is heterozygous for Cystic Fibrosis. (Cystic Fibrosis results in mucous production that blocks ducts of certain glands and the lung passages. It is often fatal by early adulthood.) Cystic Fibrosis is inherited as a recessive condition, the dominant condition is normal (non-Cystic Fibrosis). What will be the outcome in their offspring? Use the letters C and c to complete the following:

- C codes for ____________________________  
  - c codes for ____________________________

- Mother’s genotype is ______ and she will produce the following gametes: ______ and ______
- Father’s genotype is ______ and he will produce the following gametes: ______ and ______

**Potential Offspring:**

- Ratio and Genotype(s) of offspring: _______________________________________
- Ratio and Phenotype(s) of offspring: _______________________________________

6. Two people, both of whom are of normal height, but who come from families with achondroplastic dwarfism, wonder if any of their children will exhibit the defects in growth regions of the long bones that is typical of individuals with achondroplasia. Achondroplasia is a dominant trait. Figure out if they will have achondroplastic offspring. Use the letters D and d to complete the following:

- D codes for ____________________________  
  - d codes for ____________________________

- Mother’s genotype is ______ and she will produce the following gametes: ______ and ______
- Father’s genotype is ______ and he will produce the following gametes: ______ and ______

**Potential Offspring:**

- Ratio and Genotype(s) of offspring: _______________________________________
- Ratio and Phenotype(s) of offspring: _______________________________________