Additional Punnet Square Problems—due at the deadline for Module 3

1) Michael and Kia are expecting their first child. Kia is a carrier of sickle cell but Michael is not. They see a genetic counselor who tells them that the probability that their child will be a carrier of sickle cell is ______%. The probability that the child will have sickle cell is ______%.

FATHER

MOTHER

2) Joe and his wife Betsy are both heterozygous for Huntington’s. Their children have a ______% chance of having Huntington’s and a ______% chance of being normal. The probability that their child will be a carrier of Huntington's is ______%. (Recall what the definition of a carrier is.)

FATHER

MOTHER

3) Janet and Les are both heterozygous for Tay Sachs disease. What are the odds that their first child will be a carrier of Tay Sachs? ______% What are the chances the child will have Tay Sachs? ______% What are the odd that their child will be normal? ______%
4) Jim’s father is color blind and his mother has the gene for color-blindness but has normal color vision. What are the odds that Jim is color blind? ______ % How about his sister, Sarah: What are her chances of being color blind? ______ % Of being a carrier of color blindness? ______ %

5) Jane has PKU. Her husband, Darryl, neither has the gene nor is a carrier. What are the chances that their children will have PKU? ______ % Not have PKU? ______ % Be a carrier of PKU? ______ %

6) Try working problem 5 backward. Jane has PKU. What possible genotypes could her parents have had?
7) Alec’s father died in his 40s of Huntington’s. Alec’s mother is in her 80s and in good health. Alec has begun to experience some problems with his memory and language and suspects that he may have Huntington’s. If so, what are the possible genotypes of Alec’s parents?