Blood Type Codominance Practice Problems

Human blood types are determined by genes that follow the CODOMINANCE pattern of inheritance. There are two equally dominant alleles (A and B) and one recessive allele (O).

1. Fill in the following chart with the missing information.

Blood Type (Phenotype)	Possible Genotype(s)	Can donate blood to:	Can receive blood from:
O		("universal donor")	O
AB		AB	("universal recipient")
A			O , A
B		AB , B	

2. Write the ***genotype*** for each person, based on the given description.

   Homozygous for Type B Blood _____ Heterozygous for Type A Blood _____

   Type O Blood _____ Type A Blood and had a parent with Type O Blood _____

   Type AB Blood _____ Blood can be given to any individual _____

   Heterozygous for Type B Blood _____ Homozygous for Type A Blood _____

   Can only receive blood from a Type O donor _____

3. A father is heterozygous for his type B blood (BO) and the mother has type O blood.
   a. What are the **possible blood types** of the babies born from this couple?

4. A father has type AB blood and the mother has type O blood.
   a. What percentage of their offspring would you expect to have…

Type A Blood _____%

Type B Blood _____%

Type AB Blood _____%

Type O Blood _____%

5. A father is heterozygous for his type A blood and a mother is heterozygous for her type B blood.
    a. What percentage of their offspring would you expect to have…

Type A Blood _____%

Type B Blood _____%

Type AB Blood _____%

Type O Blood _____%

6. Mrs. Weasley has Type A blood but she is not sure if she is homozygous or heterozygous. Mr. Weasley is completely unsure of his blood type. Their children have the following blood types: Ron has Type O blood, Fred & George have type A blood, Ginny has type B blood and Percy has type AB blood. Show the cross to answer the following questions.

    a. **What is Mrs. Weasley's genotype? _____**

    b. **What is Mr. Weasley's genotype? _____**

7. In 1968, a couple accused a hospital of switching their baby with another. DNA fingerprinting did not exist at this time so the hospital traced the blood types of the family in order to determine if a mistake was made. The mother had type A blood, the father had type AB blood, and the baby had type O blood. Use the punnett square to defend your answer to the following question.

    a. **Did the hospital make a mistake and switch the baby? _____**

8. On a recent episode of CSI, multiple people came forward claiming to be the parents of the victim. For the first set of parents, the man has type AB blood, the woman has type O blood and yet the victim has type B blood. Use the punnett square in order to determine if these people could possibly be the parents of the victim.

    a. **Could these be the parents of the victim? _____**

    b. In the chart below, ***circle the other possible options*** for the parents of the victim.

Couple	Blood Types
Bob and Gina	Type O and Type O
Ted and Susan	Type AB and Type AB
Rob and Kelly	Type A and Type A
Tricia and James	Type A and Type B