

# Codominance Worksheet (Blood types)

Name \_\_\_\_\_

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

| Blood Type (Phenotype) | Genotype | Can donate blood to: | Can receive blood from: |
|------------------------|----------|----------------------|-------------------------|
| O                      |          |                      |                         |
| AB                     |          |                      |                         |
| A                      |          |                      |                         |
| B                      |          |                      |                         |

1. Write the genotype for each person based on the description:

- a. Homozygous for the "B" allele \_\_\_\_\_
- b. Heterozygous for the "A" allele \_\_\_\_\_
- c. Type O \_\_\_\_\_
- d. Type "A" and had a type "O" parent \_\_\_\_\_
- e. Type "AB" \_\_\_\_\_
- f. Blood can be donated to anybody \_\_\_\_\_
- g. Can only get blood from a type "O" donor \_\_\_\_\_

2. Pretend that Brad Pitt is homozygous for the type B allele, and Angelina Jolie is type "O." What are all the possible blood types of their baby?

3. Draw a Punnett square showing all the possible blood types for the offspring produced by a type "O" mother and an a Type "AB" father.

4. **Mrs. Clink is type “A” and Mr. Clink is type “O.” They have three children named Matthew, Mark, and Luke. Mark is type “O,” Matthew is type “A,” and Luke is type “AB.” Based on this information:**
- Mr. Clink must have the genotype \_\_\_\_\_
  - Mrs. Clink must have the genotype \_\_\_\_\_ because \_\_\_\_\_ has blood type \_\_\_\_\_
  - Luke cannot be the child of these parents because neither parent has the allele \_\_\_\_\_.
5. **Two parents think their baby was switched at the hospital. Its 1968, so DNA fingerprinting technology does not exist yet. The mother has blood type “O,” the father has blood type “AB,” and the baby has blood type “B.”**
- Mother’s genotype: \_\_\_\_\_
  - Father’s genotype: \_\_\_\_\_
  - Baby’s genotype: \_\_\_\_\_ or \_\_\_\_\_
  - Punnett square showing all possible genotypes for children produced by this couple
- e. Was the baby switched? \_\_\_\_\_
6. **Two other parents think their baby was switched at the hospital. The mother has blood type “A,” the father has blood type “B,” and the baby has blood type “AB.”**
- Mother’s genotype: \_\_\_\_\_ or \_\_\_\_\_
  - Father’s genotype: \_\_\_\_\_ or \_\_\_\_\_
  - Baby’s genotype: \_\_\_\_\_
  - Punnett square that shows the baby’s genotype as a possibility:
- e. Was the baby switched? \_\_\_\_\_

7. Based on the information in this table, which man could not be the father of the baby? Justify your answer with a Punnett square.

| Name              | Blood Type |
|-------------------|------------|
| Mother            | Type A     |
| Baby              | Type B     |
| Sammy the player  | Type O     |
| George the sleeze | Type AB    |
| The waiter        | Type A     |
| The cable guy     | Type B     |

8. Based on the information in this table, which man could not be the father of the baby? Justify your answer with a Punnett square.

| Name             | Blood Type |
|------------------|------------|
| Mother           | Type O     |
| Baby             | Type A     |
| Bartender        | Type O     |
| Guy at the club  | Type AB    |
| Cabdriver        | Type A     |
| Flight attendant | Type B     |

9. Explain why blood type data cannot prove who the father of a baby is, and can only prove who the father is not.