

Name _____ Date _____ Per _____

MYSTERY AT THE TREMOND ESTATE – A Pedigree Analysis!

Count Ralph and his wife Marie were the wealthy owners of Tremond Estate. Ralph died suddenly when he was struck by lightning in his metal rowboat while fishing on Tremond Lake. His body was never recovered. All of their children and grandchildren awaited the reading of Count Ralph's will, since they all knew that the will would provide each blood relative \$10,000.



When the lawyer arrived, he noticed that \$10,000 had been stolen from Count Ralph's safe. In addition, a small amount of blood was found on the inside of the safe door. As this news was being announced by the lawyer, the maid rushed into the room and revealed that she had walked into Count Ralph's study and observed the thief quickly leaving through the patio doors. She had not seen the face or been able to identify the thief since he or she wore a mask and a bulky coat. She did, however, notice that the **thief had attached ear lobes**.



Police Detective Morse was called to the Tremond Estate. Upon his arrival, he immediately ordered blood typing tests for all relatives, and for the blood smeared on the safe (found to be **Type A-**). He also noted the ear lobe type for everyone. After analyzing the data, Morse called all of the relatives together and announced that he had discovered the identity of the thief. One of the children or grandchildren was not a true blood relative, and the theft of the money was to ensure their share of inheritance!

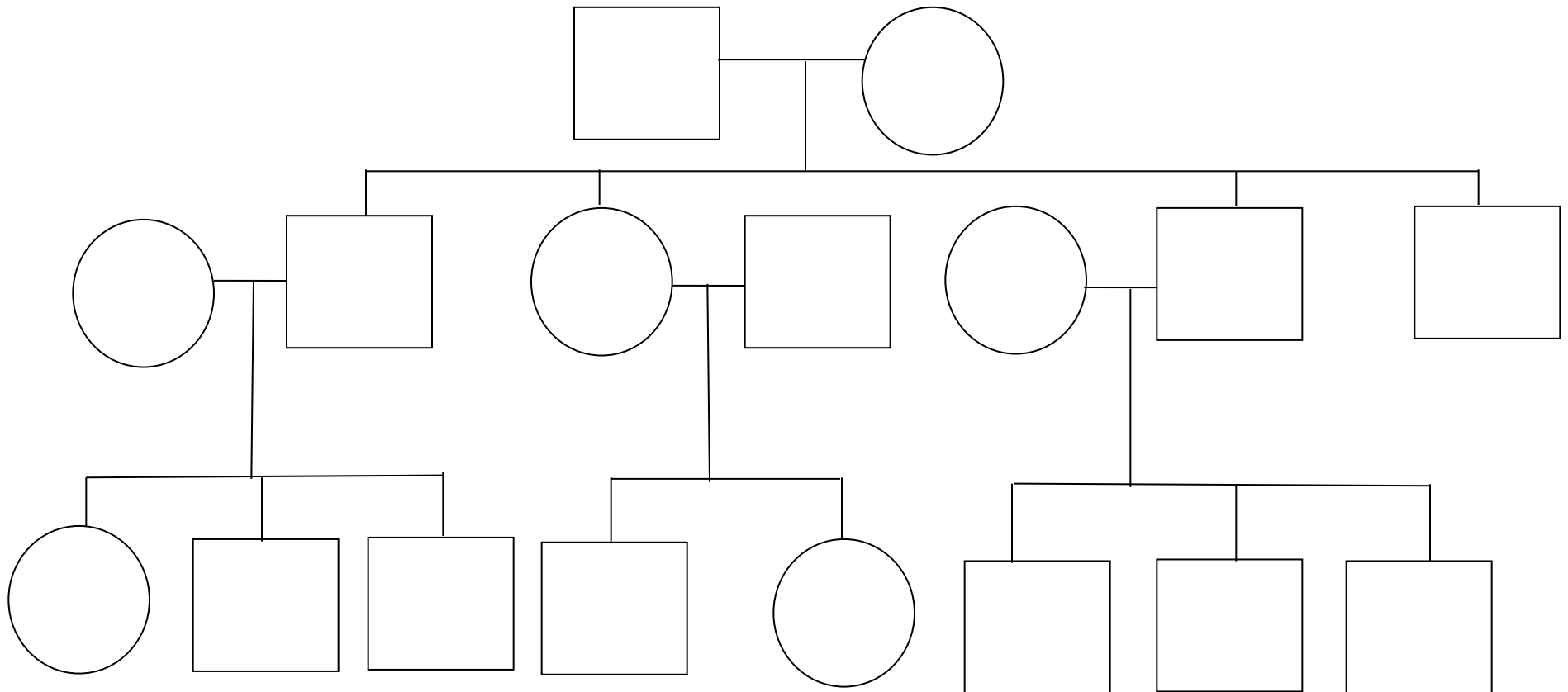
Use Morse's data table below and your knowledge of ABO and Rh blood typing (A and B alleles are dominant over O, Rh+ is dominant over Rh-), as well as your knowledge of inheritance of ear lobe shape to solve this mystery. Construct a pedigree using the data table, and use it to answer the questions that follow.

DETECTIVE MORSE'S DATA:

Name	Blood Type	Ear Shape	Parents/Relationship
Ralph	?	Unattached	N/A
Marie	AB-	Unattached	N/A
Marcia	O-	Unattached	Married to Peter
Peter	AB-	Attached	Ralph & Marie
Margaret	A+	Unattached	Ralph & Marie
David	B+	Unattached	Married to Margaret
Richard	AB-	Unattached	Ralph & Marie
Olivia	A-	Attached	Married to Richard
Steven	B+	Unattached	Ralph & Marie
Janette	B-	Unattached	Marcia & Peter
Brian	B-	Attached	Marcia & Peter
Ted	B-	Unattached	Marcia & Peter
Mark	AB-	Unattached	Margaret & David
Ellen	A-	Attached	Margaret & David
Mike	AB-	Unattached	Richard & Olivia
Alan	A+	Attached	Richard & Olivia
Lorne	B-	Unattached	Richard & Olivia

Directions:

- 1) Label the pedigree table on the back of this page using the Parents/Relationship information.
- 2) Write in the blood types for each person under their symbol (circle or square).
- 3) Color / shade in the pedigree tracing the ear shape trait of the thief (**attached ear lobes are recessive to unattached ear lobes**). Don't forget to include the carriers if necessary
- 4) Answer the questions under the pedigree once it is completed



Questions:

1) Who is NOT the blood relative? (and most likely the thief?) HOW DO YOU KNOW???

2) There are 2 people whose **ear shape genotype** cannot be determined for sure. Who are they? _____

3) Determine ALL of the possible genotypes (for blood type and ear shape) for Ralph, Margaret, and Lorne.

Ralph: _____

Margaret: _____

Lorne: _____