Name: _____ Date: _____ Period: _____

Blood Genetics Case Study

Directions: *You will work in a pair to analyze the blood type data given for the case study described below and write a paragraph in which you summarize the data and draw logical conclusions.*

Case Study:

On December 4th a robbery was committed at the home of a very wealthy basketball player. While trying to steal a fancy chandelier, it was dropped and the thief cut herself on the broken glass. The police did an analysis of the blood and determined it to be **type B** blood. Unfortunately, the police have three different suspects who will not agree to a blood test. However, the police do have records of the blood types for the suspects' parents. This information is listed below.

Original Evidence: *(Note: A space is given to the right of the evidence for you to draw Punnett squares if necessary!)*

Suspect #1: Linda
Parents:

	Blood Type:
Mrs. Williams	A
Mr. Williams	B

Suspect #2: Becky
Parents:

	Blood Type:
Mrs. Plum	O
Mr. Plum	A

Suspect #3: Carmen
Parents:

	Blood Type:
Mrs. Paul	AB
Mr. Paul	AB

Punnett Squares

Original Analysis:

Which of the suspects could have committed the crime? Explain your answers. (Hint: Two of the suspects could have committed the crime)

Do not fill in the information here – there is a spot on the next page for you to record your explainations!**

Explanation Example #1: *"Suspect _____ could have committed the crime because in a cross between Suspect _____'s parents, 3/4 of their offspring have blood type B like the criminal."*

Explanation Example #2: *"Suspect _____'s Mom could have had the genotype _____ or _____ and Suspect _____'s Dad could have had the genotype _____ or _____. Therefore, the suspect COULD have any of the following blood types: _____, _____, or _____. Because of this, it is possible she has blood type _____ like the criminal.*

Suspect	Could this suspect have committed the crime? (Yes or No)	Explanation
Linda		
Becky		
Carmen		

New Evidence: The police did more testing and determined that the genotype of the thief. See Mr. Marr for the results.

New Analysis:

Now that you know this new piece of information, which suspect must have committed the crime? How do you know?

Your Paragraph: In 8-10 sentences, write a summary that includes the following requirements

1. You correctly state your original analysis. In other words, based on the original evidence, which two suspects could have committed the crime?

2. You provide an accurate and thorough explanation for your original analysis. You explain clearly why each of the three suspects could / could not have committed the crime. You can include Punnett squares, but you must fully explain them. A Punnett square without an accompanying explanation will not receive any points.

3. You correctly state your new analysis. In other words, based on the new evidence, which suspect must have committed the crime.

4. You provide an accurate and thorough explanation for your new analysis. You explain clearly how the new evidence allows you identify the suspect that committed the crime. You can include Punnett squares, but you must fully explain them. A Punnett square without an accompanying explanation will not receive any points.

Rubric: Your paragraph will be evaluated using the following rubric.

Requirement	You got it!	You are almost there!	You need to make a few changes!	Score	Comments
1 (Original Analysis)	You correctly identified the two suspects that could have committed the crime based on the original evidence. **(2 points)**	You correctly identified only one of the suspects. **(1 point)**	You did not correctly identify any of the suspects. **(0 points)**	**/2**	
2 (Original Analysis)	All three of your explanations for your original analysis are thorough and accurate. **(3 points)**	Only some of your explanations are both thorough and accurate, or some explanations are missing. **(1-2 points)**	All of your explanations are missing, inaccurate, or they are not thorough enough to fully support your original analysis. **(0 points)**	**/3**	
3 (New Analysis)	You correctly identified the suspect that committed the crime based on the new evidence. **(1 point)**	**N/A** (you either got the point or you didn't)	You did not correctly identify the suspect. **(0 points)**	**/1**	
4 (New Analysis)	Your explanation for your new analysis is thorough and accurate. **(2 points)**	Your explanation is not thorough enough to fully support your new analysis. (In other words, parts of your explanation are missing). **(1 points)**	Your explanation is completely missing or is inaccurate. **(0 points)**	**/2**	

Total: _____ / _____ = _____