Title: CSI name_____

Introduction: You may have heard that DNA is now commonly used to help solve crimes. It is extremely useful in crime solving because no two people have the same DNA (with the possible exception of identical twins) Finding a sample of a person's DNA at a crime doesn't prove everything, but it does show that the person was at the scene. Before DNA can be used, it has to be amplified (duplicated until enough is present to test) and then treated with a restriction enzyme to cut it into pieces. The pieces are dyed and placed on a "gel" similar to jello and an electric current is drawn through them. Because DNA is polar, it moves in response to the current. The small pieces move faster and farther than the large ones, creating a banding pattern that is distinctive for every person. In this activity you will create some "DNA" on butcher paper and see if you can match it to a suspect.

Materials: 5 ft of adding machine tape, overhead transparency, metric ruler, scissors

Procedure:
1. On your tape, randomly select from the 4 DNA bases and write them down, one above the other, 2 bases per centimeter. This is "your" DNA. You do not need to write the complimentary base down.
2. Cut your DNA with a "restriction enzyme". This enzyme cuts the DNA whenever it finds the sequence AT. Use scissors and cut across the paper below any AT pair.
3. After you cut your DNA, measure the strips and tally them by length on the chart. Remember, the shorter the strip, the farther it can travel through the gel.
4. Fill in your graph on the back of this paper and on the overhead . Each square on the graph represents 5 strips. This is your "fingerprint".
5. Match the class results to find the "suspect".

Prediction: Will there be two people that could have committed the "crime"?

Data:

Length of pieces in centimeters	**Number of pieces**
0-2	
2-4	
4-6	
6-10	
10-13	
13-18	
over 18	

Analysis:

1. What are the chances two people wrote down the same sequence of bases on their tapes?

2. Would this be true of a person's DNA also?

3. Who was the best "suspect"?

4. Does this prove the suspect did it? Why?

5. If you were defending the suspect what would you emphasis to the jury about these tests?

6. If you were the prosecutor what would you stress to the jury?

7. If you were a juror, what limit of probability would you accept? (1 in 100? 1000? 10,000 100,000? 1,000,000)

Conclusion: 2 things you learned.