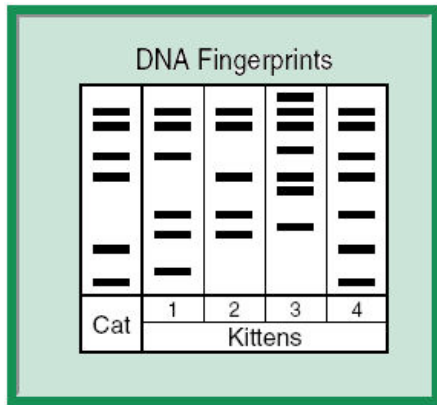
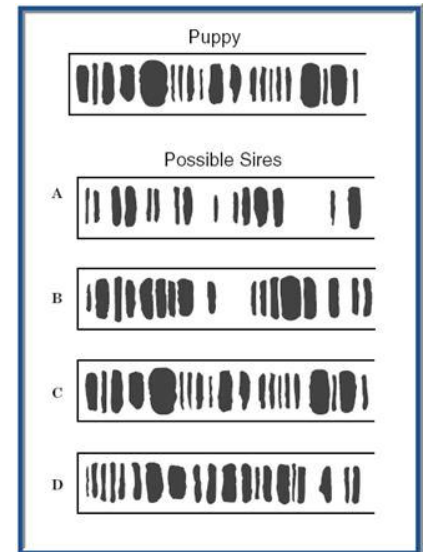


DNA Fingerprinting & Paternity Worksheet

Name: _____

1. The DNA fingerprints were made from blood samples taken from a puppy and four possible sires of this puppy in an effort to determine the puppy's pedigree. According to this information, which sire was probably the father of this puppy? Remember, a child must share at least 50% of its DNA with each of its parents. So, you are looking for the father with the closest match to the puppy.

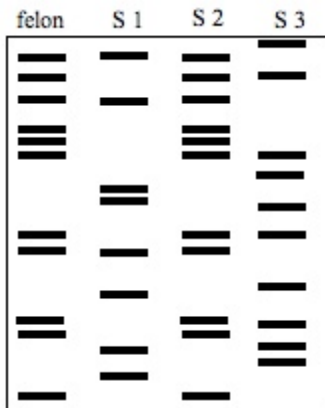
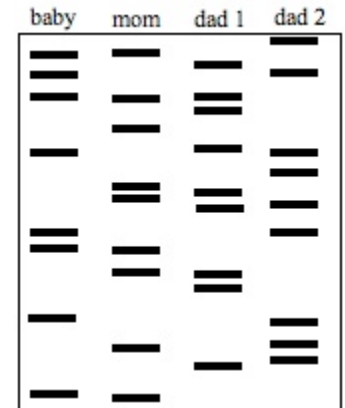
ANSWER: _____



2. The picture shows a segment of DNA from a cat and 4 possible offspring from that cat. Which of these is most likely the kitten from that cat's litter?

ANSWER: _____

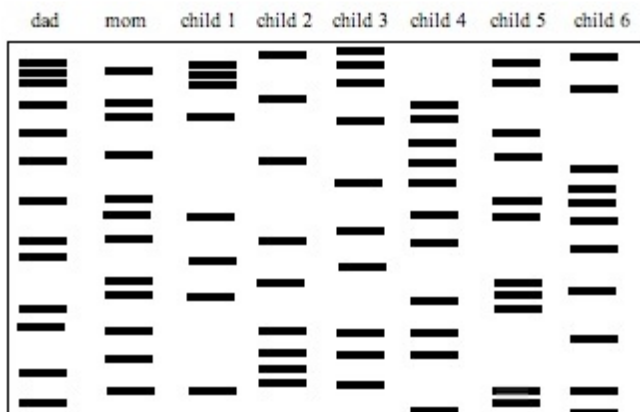
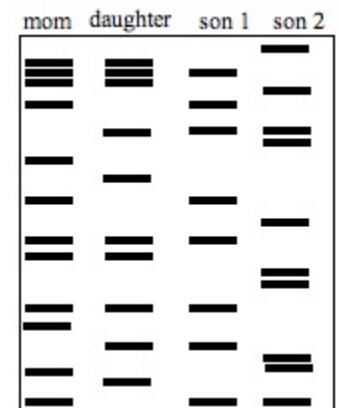
3. Mrs. Smith has a baby named Tyra. She believes one of two men can be the father of her child. A paternity test is done and the results are shown here. Which of the 2 men is baby Tyra's father? _____



4. Lt. Russ is investigating a murder scene. The felon was scratched by his victim & some of his skin cells were found under the victim's fingernails. A DNA test was performed. To which of the suspects do the skin cells collected from under the fingernails of the victim belong? _____

5. The millionaire, Mr. Big, has just died. He has left behind a wife, daughter and a large inheritance. The

news of his death has brought forth 2 men who claim to be the long lost son of Mr. & Mrs. Big. Before Mr. & Mrs. Big were married they had an illegitimate child and had placed him up for adoption. They had tried to find him after they became wealthy but had no luck in locating him. A DNA sample was taken from Mrs. Big, the Big daughter and the two men who claim to be the long lost son. Which, if any, of the men are telling the truth? _____

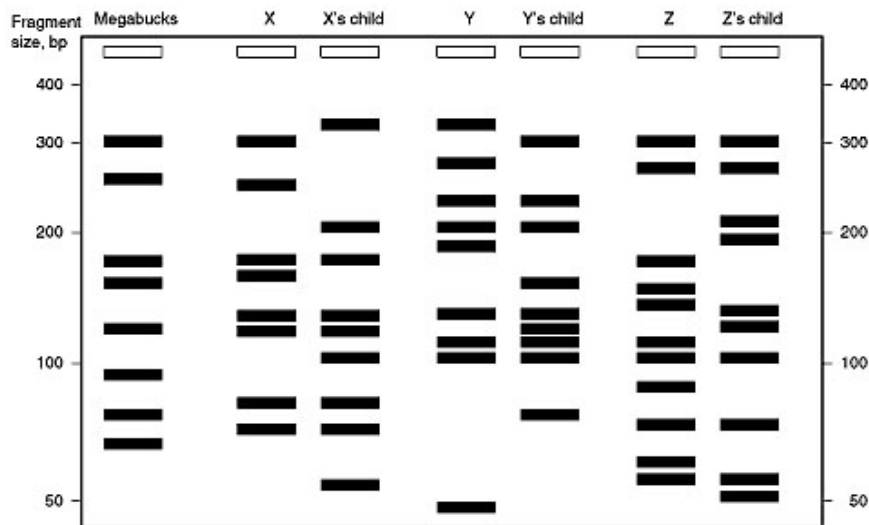


6. Mr. & Mrs. Jones just gave birth to fraternal twins- Bob and Jane. Unfortunately, the nurse has confused the Jones twins with 4 other babies. The doctors took samples of DNA from each of the babies and Mr. & Mrs. Jones. Which of the 6 children are Mr. & Mrs. Jones twins?

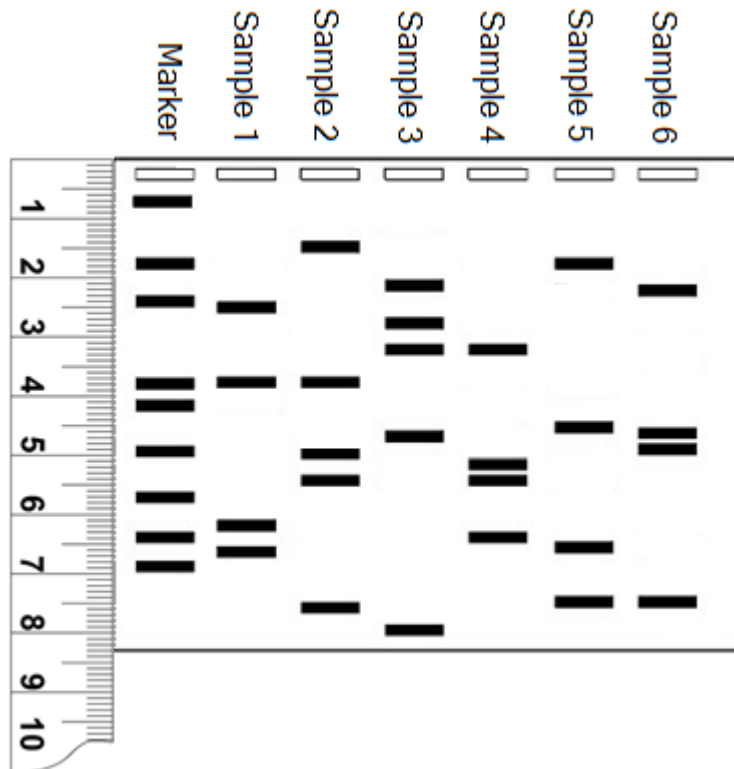
7. Mr. I. M. Megabucks, the wealthiest man in the world, recently died. Since his death, three women have come forward. Each woman claims to have a child by Megabucks and demands a substantial share of his estate for her child. Lawyers for the estate have insisted on DNA typing of each of the alleged heirs. Fortunately, Megabucks anticipated trouble like this before he died, and he arranged to have a sample of his blood frozen for DNA typing. The results of the typing are shown in the figure. Your job is to analyze the data and determine whether any of the children could be Megabucks' heir.

Remember that every person has two of each chromosome, one inherited from his mother and one inherited from his father. Half of every person's DNA comes from his mother, and half comes from his father, so some of the DNA bands showing in the children will come from their mothers, and the rest will come from their fathers. The question is, could that father be Megabucks?

1. For the first child, identify the bands in the DNA profile that came from the mother. (Remember that not all of the mother's DNA is transmitted to the child; just one of each pair of chromosomes is transmitted.) Mark the bands that came from the mother with an M. Circle the remaining bands.
2. Compare the remaining bands with the DNA profile from Megabucks. If he is the father, then all of the circled bands in the child's profile should have a corresponding band in his profile. Use a straightedge to help you line up the bands accurately. (Remember that only half of the father's chromosomes are transmitted to a child, so not every band from the father would match the child's profile.)
3. Repeat the analysis for the other alleged heirs.
4. Could any of them be Megabucks' children?



8. The following seven samples of DNA have been digested with the same restriction enzyme and run under the same electrophoresis conditions on the same gel. Your job is to analyze the gel and determine the size of each of the fragments in the gel using the graphing method we used in class in both of the labs we have done. The number of base pairs in the marker DNA have been provided as has a data table and a piece of Semi-log graph paper.



	Marker		Sample 1		Sample 2		Sample 3		Sample 4		Sample 5		Sample 6	
	mm	bp												
Band 1		80,233												
Band 2		31,175												
Band 3		4,577												
Band 4		3,855												
Band 5		2,143												
Band 6		1,670												
Band 7		945												
Band 8		410												
Band 9		320												

Semilog Graph Paper

