Name _____ Date _____ Period _____

HONORS BIOLOGY – PROBLEM SET

CHAPTER 8: CHROMOSOMES

1. Explain why the father ALWAYS determines the sex of a baby. [1 point]

2. Assuming that the mother and father have the normal types of sex chromosomes, is it possible for a father to be a carrier of a sex-linked recessive trait? Then define the term HEMIZYGOUS. (Hemizygous isn't in your textbook – G☺☺GLE IT!!!) [2 points]

3. A male calico cat is born. Approximately 99% of calico cats are female. It is extremely unusual for a calico cat to be a male. Explain what could have caused this calico cat to exhibit this trait. Be specific in your explanation. HINT: It has something to do with nondisjunction. [2 points]

4. A mule is the hybrid offspring of a male donkey and a female horse. The diploid body cells of a donkey contain 62 chromosomes. The diploid body cells of a horse contain 64 chromosomes. Answer the following questions: [3 points]

   a. How many chromosomes would be found in each donkey sperm cell?
   b. How many chromosomes would be found in each horse egg cell?
   c. How many chromosomes would be found in each diploid mule cell?
   d. Would the mule cells be able to successfully reproduce by MITOSIS?
   e. Would the mule be able to create sperm and egg cells using MEIOSIS?
   f. FULLY EXPAIN your answers to questions D and E.

5. Study the following picture of onion root tip cells undergoing mitosis. Label each of the arrows as INTERPHASE, PROPHASE, METAPHASE, ANAPHASE, or TELOPHASE. [2 points]