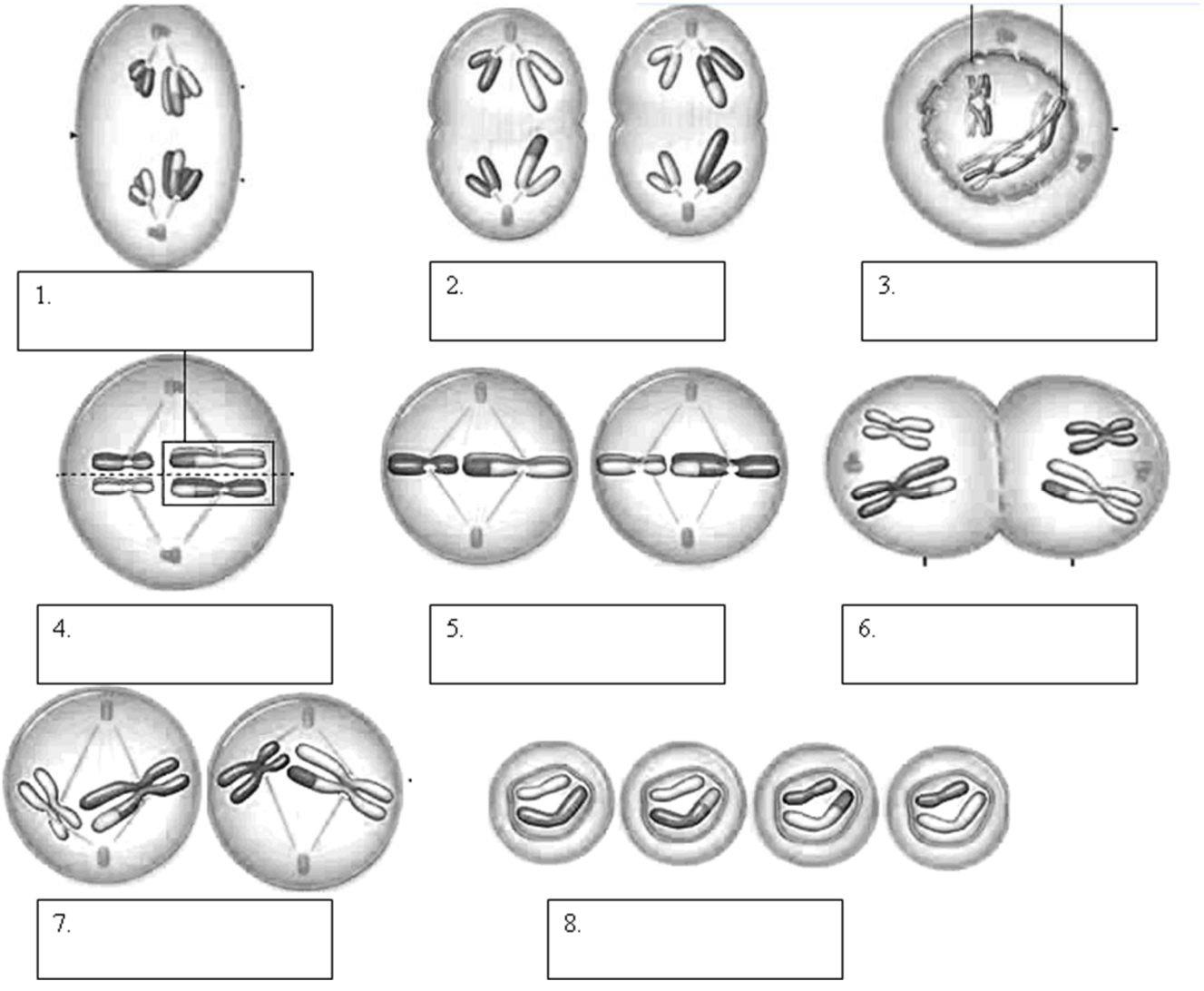
Unit 5: Meiosis and Genetics Review **Name _____**
Biology **Date _____ Block ___**

Phases of Meiosis. Match the phase of meiosis correctly with the description (each will only be used once): *Prophase I, Metaphase I, Anaphase I, Telophase I, Metaphase II, Anaphase II, Telophase II*

1. _____ Homologous chromosomes pair up and form a tetrad; crossing over occurs
2. _____ Spindle fibers move **homologous chromosomes** to opposite sides of the cell
3. _____ Nuclear membrane reforms, cytoplasm divides; 4 haploid daughter cells are formed
4. _____ Single chromosomes line up along the equator (middle) of the cell
5. _____ **Sister chromatids** separate to opposite sides of the cell
6. _____ Homologous chromosomes line up along the equator.
7. _____ Cytoplasm divides; 2 haploid daughter cells are formed.

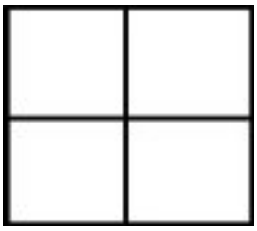
Label each cell drawing with the phase of meiosis that is being depicted.



Punnett Squares: Monohybrid and Dihybrid Crosses

1. The Allegheny Woodrat (Neotoma magister) is a threatened species found in Virginia. You may know of them as packrats. In addition to storing quantities of food, they also will collect and store small strange objects such as bottle caps, bones, coins, shotgun shells, or rings. Suppose the trait for bringing home shiny objects (H) is controlled by a single gene and is dominant to the trait of only carrying home dull objects (h)

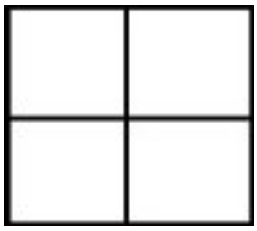
   a. Suppose two heterozygous individuals are crossed. What percentage of expected offspring would only bring home dull objects?



   b. What cross or crosses would allow for all rats to bring home shiny objects?

2. In pea plants, yellow seeds (Y) are dominant and green seeds (y) are recessive. A pea plant with yellow seeds is crossed with a pea plant with green seeds. The resulting offspring have about equal numbers of yellow and green seeded plants. What are the genotypes of the parents?

3. In humans, acondroplasia “dwarfism” (D) is dominant over normal (d). A homozygous dominant (DD) person dies before the age of one. A heterozygous (Dd) person is dwarfed. A homozygous recessive individual is normal. A heterozygous dwarf man marries a dwarf heterozygous woman



a. What is the probability of having a normal child? _____

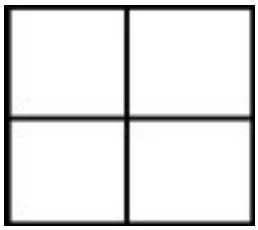
b. What is the probability that the next child will **also** be normal? _____

c. What is the probability of having a child that is a dwarf? _____

d. What is the probability of having a child that dies at one from this disorder? _____

Multiple Alleles and Codominance

4. A woman with type A blood whose mother was type O marries a man with type O blood. What are the possible blood types of their children?
   a. Genotype of Parents: _____ x _____

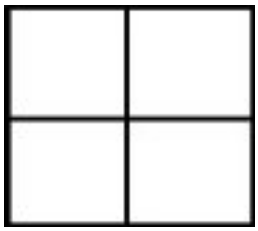


   b. Phenotypic Ratio of Offspring?

Incomplete Dominance

5. The Andalusian breed has one allele for black feathers (F^B) and one for white feathers (F^W). Since neither allele is dominant, the heterozygous condition (F^BF^W) causes the chickens to appear "blue" or "blue-gray". Suppose a Blue Chicken was mated with a white rooster. What would be the expected phenotypes of the offpring?

   a. Genotype of Parents: _____ x _____

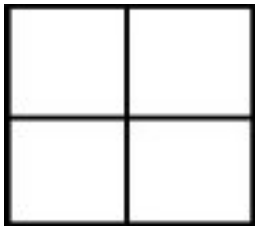


   b. Phenotypic Ratio of offspring?

Sex-Linked Inheritance

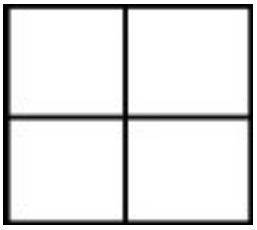
6. A man is diagnosed to have a genetic disease that is X-linked and dominant(X^D). He marries a woman who does not have the disease

   a. Genotype of Parents: _____ x _____



   b. What is the chance for any of his children to inherit the disease? _____

7. Red-green color blindness is an X-linked recessive trait in humans. A color-blind woman and a man with normal vision have a son.
   a. Genotype of Parents: _____ x _____



   b. What is the probability that the son is color blind? _____