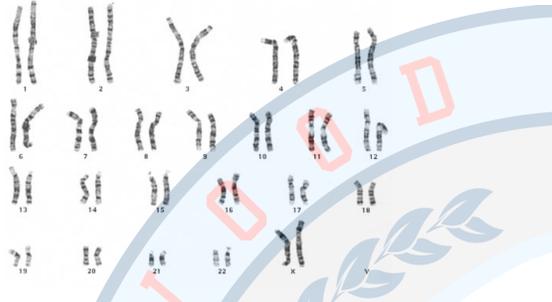


Name: _____ Date: _____ Period: _____

Analyzing Karyotypes

Directions: Analyze the four karyotypes by completing the second column of the chart.

Occasionally chromosomal material is lost or rearranged during the formation of gametes. Some of the abnormalities associated with chromosome structure and number can be detected in a **karyotype**. To create a karyotype, chromosomes from a cell are stained and photographed. The photograph is enlarged and cut up into individual chromosomes. The **homologous pairs**, one from each parent, are identified and arranged in order by size (with the exception of the sex chromosomes; these appear last).

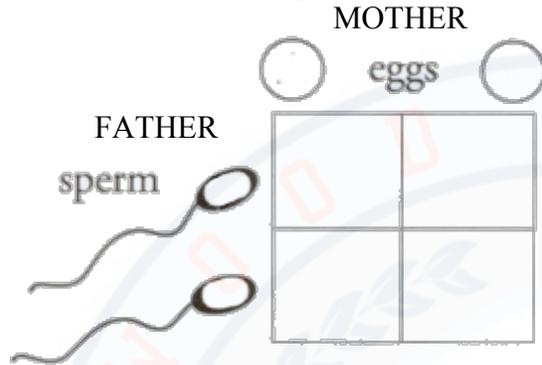
	<p>Gender: _____</p> <p>Total # of Chromosomes: _____</p> <p>Explain the role of meiosis in the formation of these chromosomes. _____</p> <p>_____</p> <p>_____</p>
	<p>Gender: _____</p> <p>Total # of Chromosomes: _____</p> <p>Explain the role of meiosis in the formation of these chromosomes. _____</p> <p>_____</p> <p>_____</p>
	<p>Gender: _____</p> <p>Total # of Chromosomes: _____</p> <p>Explain the role of meiosis in the formation of these chromosomes. _____</p> <p>_____</p> <p>_____</p>
	<p>Gender: _____</p> <p>Total # of Chromosomes: _____</p> <p>Explain the role of meiosis in the formation of these chromosomes. _____</p> <p>_____</p> <p>_____</p>

Name: _____

Date: _____

Period: _____

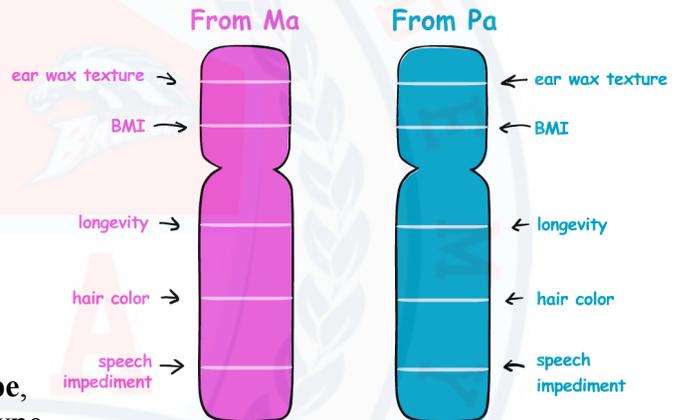
1. What is the probability that a couple that is expecting a child will have a boy or girl? _____
2. What chromosomes determine if a person is female? _____
3. What chromosomes determine if a person is male? _____
4. After meiosis, each female gamete (egg) cell contains _____.
5. After meiosis, each male gamete (sperm) cell contains _____.
6. Punnett squares show the probability of that offspring will inherit a trait, based on their parents' traits. Fill in the Punnett square below.



- a. What is the probability that the children will be female?
- b. What is the probability that the children will be male?

Homologous chromosomes carry different versions of the same genes (see Figure 1). A version of a gene is called an **allele**. Alleles can be either **dominant** or **recessive**. For example, brown hair is dominant to blonde hair. We will represent the dominant allele as B and the recessive allele as b. Since B is dominant, if a person has at least one B allele, this person will have brown hair. The only way a person can have blonde hair, is if he/she only has recessive alleles (bb).

The genetic makeup of a person is the **genotype**, while the physical appearance of a trait, is the **phenotype**. If a person's genotype has two dominant alleles, this person's genotype is also called **homozygous dominant**. If a person's genotype has two recessive alleles, this person's genotype is also called **homozygous recessive**. If a person has one dominant and one recessive allele, the person's genotype is called **heterozygous**.



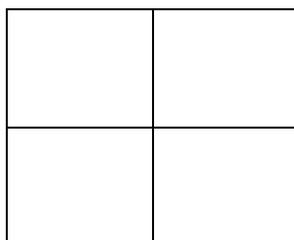
CHROMOSOME 16

Figure 1

7. Complete Figure 2 for hair color.
8. Complete the Punnett square for a mother who has brown hair and is heterozygous and a father who has blonde hair.

Genotype	Phenotype	Description
BB		
Bb		
bb		

Figure 2



- a. What is the probability that their children will have brown hair?
- b. What is the probability that their children will have blonde hair?
- c. What is the probability that their children will be heterozygous?