

Directions: Read and annotate the passages. Then answer the questions.

Have you ever wondered why you do not look exactly like your brother or sister, even though you came from the same parents? The answer lies in the way our genetic material separates into our **gamete cells**, or sperm and egg cells.

The DNA in each cell in your body is over 3 meters long! The only way to package DNA such that it does not break or get tangled is to coil it around proteins to form a **chromosome** (see Figure 1). Because of the length of DNA, our cells have 23 pairs of chromosomes for a total of 46 chromosomes in each cell.

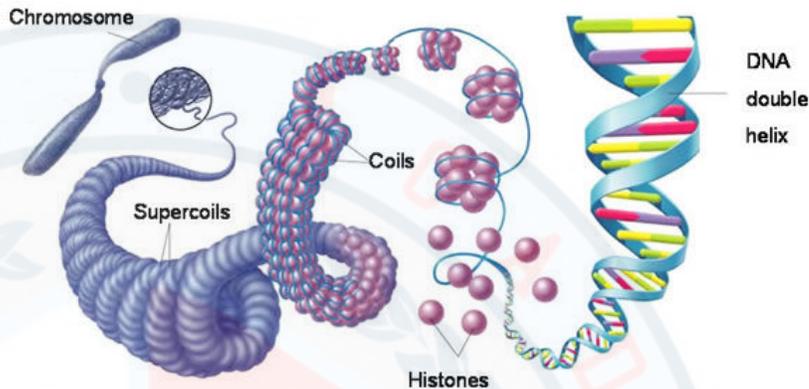


Figure 1

- (RST.9-10.1) What is the difference between chromosomes and DNA?

You inherited 23 chromosomes from your mother and 23 **homologous**, or corresponding, chromosomes from your father (see Figure 2). This means that every one of your cells is **diploid**, since they each have two sets of homologous chromosomes.

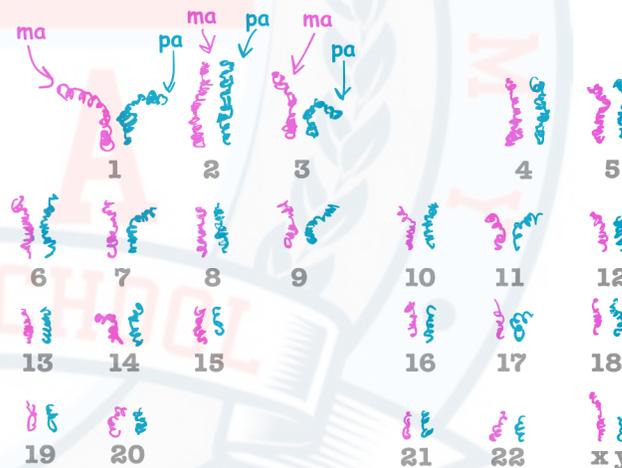


Figure 2

- (RST.9-10.1) Explain how your genes are a combination of both your mother's and father's genes.

In reproduction, one egg cell from your mother and one sperm cell from your father fuse to create a single cell, called a zygote. This cell has two sets of chromosomes (diploid), so therefore each gamete cell has one set of chromosomes, and is **haploid**. The formation of haploid cells occurs in the process of **meiosis**. Each gamete cell has just one chromosome from each of the 23 pairs of chromosomes. Which chromosome they get from each pair is random, so each sperm or egg cell is unique (see Figure 3).

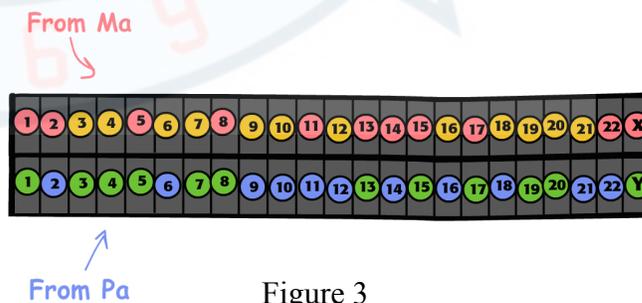


Figure 3

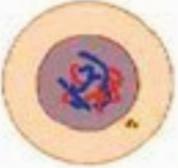
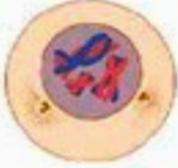
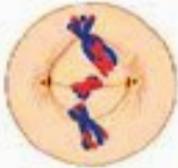
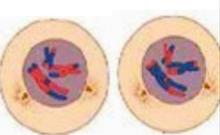
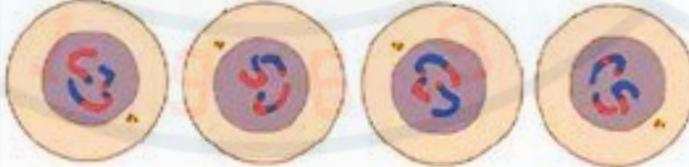
- (RST.9-10.1) How can you inherit traits from your grandparents? _____

Name: _____

Date: _____

Period: _____

Directions: Use p. 324 – 325 to first define meiosis and then describe each phase.

Meiosis:			
	Before meiosis I:		Start of meiosis II
	Prophase I: Crossing over:		Prophase II:
	Metaphase I:		Metaphase II:
	Anaphase I:		Anaphase II:
	Telophase I:		Telophase II:
	Result of Meiosis I:		Result of Meiosis II: