

Name _____

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GENETICS

Mendel's Principles of Heredity

Based on: [Mendel's Law & Mendelian Genetics: Law of Segregation](#) & [Law of Independent Assortment](#) and [Chromosomes X and Y and Sex Determination](#)

I. Understanding Mendel's Laws: underline the correct word/words to complete the text.

At fertilization, the union of the sperm cell and the egg cell results in a (**zygote/gamete**) that contains "*unit factors*". These unit factors are later referred to as (**DNAs/genes**). A variant of a gene controlling the same trait is called a (**chromosome/allele**). The variants of a gene for a trait may exist in pairs. By the time that the offspring is capable of producing its own sex cells (or gametes), the members of these paired unit factors will (**segregate, join**) and then assort (**independently/dependently**) into the newly formed gametes. These events occurs during (**mitosis/meiosis**). Each gamete will contain only one member of every paired unit factors.

II. Multiple Choice: encircle the letter of the correct answer.

- Alleles segregate and get distributed into the new sex cells during
 - Mitosis
 - Meiosis I
 - Meiosis II
 - Meiosis I and Meiosis II
- The random separation of the members of a pair of alleles will result in ...
 - a reproductive cell with only one member of the paired allele.
 - the total number of genes reduced to half from one generation to the next.
 - reduced gene variation.
 - the organism becoming a new species due to the resulting mutation.
- In humans, the sex is determined by
 - Autosomes
 - Sex chromosomes
 - Both autosomes and sex chromosomes
 - None of the above
- Which of these statements is correct?
 - X and Y chromosomes are an example of a homologous pair because both of them are sex chromosomes.
 - Sex-linked genes are examples of alleles that do not assort independently and therefore are inherited together.
 - In humans, females possess XX chromosomes while males possess YY chromosomes.
 - Sperm cells are *homogametic* because some will possess the X chromosome while the others will have the Y chromosome.