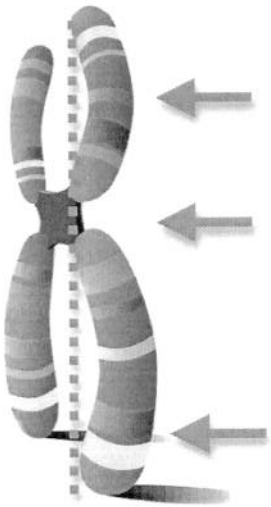
Genetics Standard 2 Study Guide **Name:** KEY **Block:** _____

Explain how genetic diversity is increased with crossing over, mutations, and genetic recombination.

Compare & Contrast Mitosis & Meiosis

	Mitosis	Meiosis
When does process take place	All the time (body cells)	During production of gamete
Cells the same or different?	Same, genetically	Genetically Different
What type of cells produced (diploid or haploid)	Diploid	Haploid
Used in asexual or sexual reproduction	Asexual it for reproduction	sexual



Whole picture: Chromosome

One arm: Chromatid

Light color band: Allele
(alternate form of trait)

Tetrad Is a structure that is formed from two homologous chromosomes.

A homologous Chromosome are two pairs of chromosomes that have the same genes but can have different alleles

Make the following vocabulary terms with the correct letter:

- Chromosome: D.
- Gene: A
- Haploid: E.
- Diploid: C.
- Allele: F.
- Crossing Over: G.
- Mutations: B.
- Genetic Recombination: H.

A. Section of DNA that contains the instructions for a particular trait
B. Change to DNA sequence or chromosome that can change the phenotype of a trait
C. Cell that contains two copies of chromosome (one from mother & one from father)
D. Condensed strand of DNA
E. Cell that contains one copy of chromosome
F. Specific type of a trait; alternate form of trait
G. Process that switches portion of chromosome between homologous chromosomes
H. Process that results in chromosomes randomly dividing into game cells

Asexual vs. Sexual Reproduction:

Asexual reproduction is the production of offspring from a(n) sirgle parent(s). Sexual reproduction is the production of offspring from a(n) two parent(s). Meiosis _____ (does/~~does not~~) occur during asexual reproduction. Asexual reproduction is the primary form of reproduction in many single celled organisms.

For the following conditions, select sexual or asexual as the best response:

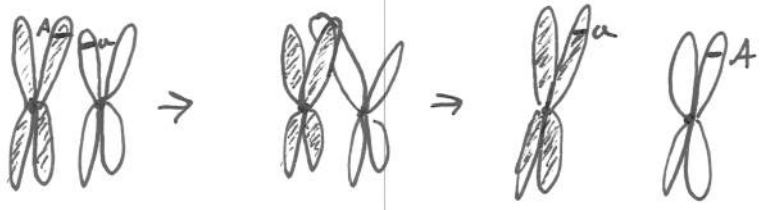
- An organism that does not move during it's lifetime: asexual
- A rapidly changing environment: sexual
- An environment with little to no changes: asexual
- Increases genetic diversity among a population: sexual

The exchange of genetic information between homologous chromosomes is referred to as crossing over. It occurs during prophase I of meiosis and creates mixing up of genes. It is not a mutation.

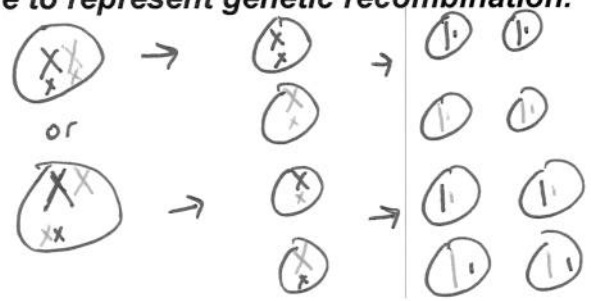
Mutations are changes to the DNA sequence (nucleotides) or the Chromosome. Four types include point (change of one nucleotide), deletion (loss or removal of a nucleotide), translocation (moving of one portion of chromosome to another), or inversion (inverting/reversing DNA). ~~If~~ a mutation occurring in gametes will be passed on to offspring; a mutation occurring in somatic (body) will not be passed on to offspring.

Genetic recombination is the mixing of chromosomes. It can create multiple possibilities of gametes because chromosomes assort (divide) independently of one another.

Draw a picture to represent crossing over.



Draw a picture to represent genetic recombination.



Mixes up [redacted] chromosomes during meiosis to increase # of combinations