

Assignment Number _____

Name: _____

Hour: _____

Genetics Basics (Heredity)

Important Terms (that can get very confusing):

DNA – is made up of _____ and is the ' _____ ' for an organism, it contains all the information that determines _____

Genes – are a series of nucleotides found within the DNA that _____ for a given _____

Alleles – _____ forms of the _____ genes (example eye color)

Chromosomes – the _____ of DNA made up of _____

Homologous Chromosomes – _____ that have the same _____ of _____, ' _____ '

Draw out a pair of homologous chromosomes (label where a gene falls at a particular location):

Remember: Genes are a series of nucleotides found within the DNA that encodes for a given trait. Alleles are different forms of the same genes.

Two types of alleles:

1. _____ – describes an allele that is _____ expressed
_____ the allele is present (usually represented by an
_____ letter)
2. _____ – describes an allele that is expressed _____ when there is
_____ allele present in an individual (usually represented by a
_____ letter)

Example:

R=round and r=wrinkled

Something with the genes

Will look

Two Types of Genetic Expression:

1. _____ – represents the alleles that are _____
2. _____ – actual traits that we _____

Example: If an organism inherited an R from the female and r from the male, what would be its genotype? Phenotype?

Genotype – Phenotype –

_____ **zygous** – when the alleles are the _____, the individual is said to be homozygous, or '_____'; so letters would be either _____ uppercase or lowercase (BB, dd, RR, rr)

_____ **zygous** – when the alleles are _____, in this case the _____ allele is _____ (Pp, Aa)

Solving Punnett Squares

1. Read the problem...
2. Underline what the dominant allele and recessive allele represent.
3. Put a circle around the genotypes of the parents (when writing out the genotypes, any dominant alleles always go first)
4. Write out the genotypes of the Punnett square, separating the alleles (letters)
5. Fill in the squares down and across using the alleles in each column and row. Remember dominant alleles always go first!

Example: In garden peas, round seed coats (R) is dominant over wrinkled seed coats (r). What will the results be of a cross between a homozygous dominant male and a recessive female?

Example 2: In humans, straight toes (S) is dominant over curled toes (s). What would be the result of a cross between a recessive male and a heterozygous female?

Example #3: Ms. Pilarz and Gregory Mendel (famous geneticist we will learn about soon) fell in love and married. Both of them have had family members die from a recessive disease called Biologist Syndrome, which is brought on by loving Biology too much. If we assume they are both heterozygous for this disease, what are the chances of Ms. Pilarz and Mr. Mendel having a child with Biologist Syndrome?