

Name:  
Class:

### Genetics Review-Academic

Fill in the blanks.

1. The genes in your DNA code to make \_\_\_\_\_ that create your traits.
2. The study of patterns of inheritance for these genes is referred to as - \_\_\_\_\_.
3. The different forms for every gene are called \_\_\_\_\_; one of which will always cover the other if inherited.
4. An Austrian monk named \_\_\_\_\_ discovered the rules of inheritance and did his research by crossing \_\_\_\_\_ plants.
5. He did his crosses by transferring the male plant sperm called \_\_\_\_\_ to the female flower part to pollinate it. The sperm would grow a tube down into the female ovary at the base of the flower to fertilize the eggs so they could become seeds.
6. The fleshy part that is around the seeds (mature ovary) we call a \_\_\_\_\_ (examples include tomatoes and apples).
7. Mendel discovered when true breeding plants were crossed; one allele always covered the other and he called this the \_\_\_\_\_ allele. If a person inherits even \_\_\_\_\_ copy of these alleles, that gene form will show physically.
8. The other form that gets covered is called the \_\_\_\_\_ allele and needs two copies to be inherited in order to show physically.
9. Mendel called this the law of \_\_\_\_\_ where one form always covers the other.
10. Mendel crossed a true breeding tall with a true breeding short and found all the offspring were tall. We now know the genotype of the true breeding tall was \_\_\_\_\_ and the true breeding short's genotype was \_\_\_\_\_ and the first generation (F1) offspring would all have a \_\_\_\_\_ genotype.
11. Mendel self pollinated the tall offspring with each other and got a 3tall: 1 short ratio in the second generation (F2). From this he discovered that each parent only passes one of its two alleles called the Law of \_\_\_\_\_ (or  $\frac{1}{2}$  of the DNA is separated and passed down).
12. Lastly he made his 3<sup>rd</sup> law of \_\_\_\_\_ which states that each trait is passed down independently of the others as a separate and equally random event.
13. Mendel didn't know about DNA or genes but rather called the genes "factors" that were passed. We now refer to the combination of gene/allele forms that is inherited as your \_\_\_\_\_ and the physical appearance of the offspring caused by those genes as your \_\_\_\_\_.
14. When an individual has two different alleles (Dd) their genotype is called \_\_\_\_\_ and when they have two dominant alleles (DD) it is called \_\_\_\_\_ and two recessive alleles (dd) it is called \_\_\_\_\_.
15. If R=round peas and r=wrinkled peas then the dominant allele is the \_\_\_\_\_. The plant with RR will have \_\_\_\_\_ shaped peas phenotype while a plant with Rr phenotype will be \_\_\_\_\_ and a plant with aa will be \_\_\_\_\_.

16. Animals that are homozygous and for generations produce the same phenotype (like white sheep WW that only produce more white sheep) are called \_\_\_\_\_ and a white mated with a black would produce a genetically blended offspring or \_\_\_\_\_. But sometimes you don't know if your white sheep is WW or Ww and you will need to perform a test mating or \_\_\_\_\_ to find out.
17. The unknown dominant WW or Ww will always be mated with a \_\_\_\_\_ or homozygous recessive. If all the offspring were white the unknown had a \_\_\_\_\_ genotype but if any sheep were black (ww) the unknown had a \_\_\_\_\_ genotype.
18. When two heterozygous (Rr X Rr—both round pea plants) are crossed they will always have a genotype ratio of \_\_\_RR: \_\_\_Rr: \_\_\_rr and a phenotype ratio of \_\_\_Round: \_\_\_wrinkled.
19. If you cross a heterozygous (Rr) with a homozygous recessive (rr) their offspring will always have a ratio of \_\_\_RR: \_\_\_Rr: \_\_\_rr and a phenotype ratio of \_\_\_Round: \_\_\_wrinkled.
20. The \_\_\_\_\_ square is a tool to show all the *possible* egg/sperm and offspring for a given cross.
21. The egg/sperm have only half of the parents' DNA and are called \_\_\_\_\_ cells.
22. A diagram showing a family tree is called a \_\_\_\_\_ where females are represented by a \_\_\_\_\_ shape and males are represented by \_\_\_\_\_.
23. These diagrams are usually used to follow recessive alleles and determine if anyone in the family is a \_\_\_\_\_ -a person who *has* the recessive allele but doesn't *show* the disease because they are heterozygous.
24. Humans have 46 \_\_\_\_\_ chromosomes all of which are in pairs (one from mom & one from dad) and contain the same \_\_\_\_\_ but not necessarily the same alleles. The pairs #1-22 code for body traits and are called \_\_\_\_\_.
25. The last pair of chromosomes do not match and are called sex chromosomes and if you are a female they match and are \_\_\_\_\_ but if you are male they do not match and you are \_\_\_\_\_.
26. The chances of having a boy or a girl are \_\_\_\_\_ : \_\_\_\_\_ and is determined by which sperm fertilizes the egg. If the sperm carries a Y you will be a \_\_\_\_\_. If a family has 3 boys the chance of having another boy is still \_\_\_\_\_.
27. Genes found on the sex chromosomes are called \_\_\_\_\_ and will affect girls / boys more often.
28. Hemophilia is an example of a sex-linked trait and is dominant / recessive. Boys receive one /two copies of the trait from their mom / dad. Girls must inherit \_\_\_ copies in order to be affected.