Genetics Unit Test   Name:

Define:

alleles

codominance

dominant

recessive

gene

genetics

genotype

phenotype

punnett square

incomplete dominance

Fill in the blanks:

Word bank:

Gregor Mendel	genotype	phenotype	alleles
traits	dominant	recessive	genetics
twins	incomplete dominance	codominance	punnett square

1. Characteristics that can be observed are called _____.
2. The first organized study of heredity was made by _____.
3. Non-Mendelian heredity in which a third phenotype is displayed that is a *blending* of the parent phenotypes is called _____.
4. Non-Mendelian heredity in which a third phenotype is displayed in which both of the parent phenotypes are displayed together is called _____.
5. Organisms arising from one zygote, bearing identical genetics, are called _____.
6. The genes that an organism bears for a trait is called the _____.
7. The physical display of the traits is called the _____.
8. The different available genes for one trait are referred to as _____.
9. When one gene masks the presence of another, it is considered _____.
10. When one gene is masked by the presence of another, it is considered _____.
11. The study of heredity is called _____.
12. The method by which one can determine the possible genotypes and phenotypes when two parents are crossed is called _____.

Multiple Choice:

1. If two organisms that exhibit heterozygous traits are crossed, the trait that shows up in the first generation of offspring is called
   a. codominant   c. recessive
   b. dominant   d. allelic
2. The trait that remains hidden in the first generation is called the
   a. dominant   c. recessive
   b. codominant   d. phenotype

3. **The specimen used by Mendel in his work was the**

   a. fruit fly   c. firefly

   b. snapdragon   d. garden pea

4. **Red cattle crossed with white cattle produce a red and white hybrid. This type of inheritance is known as**

   a. mutation   c. recessive

   b. codominance   d. transformation

5. **When an organism has both genes the same, either dominant or recessive, for a trait, it is considered**

   a. homozygous   c. heterozygous

   b. homologous   d. heterologus

Short Answer:

1. **Although Gregor Mendel did not know about genes, he formulated three basic principles of heredity. Explain.**

2. **Give an example in which Mendel's law of dominance does not hold true.**

3. **What ethical questions might be raised against the use of genetic engineering?**

Punnett Squares:

1. Draw a Punnett Square for a Red Heterozygous flower [Rr] and a White Homozygous [rr} flower. Please write what genotypes and phenotypes result below it.

2. Draw a Punnett Square for a Tall, Red Heterozygous [TtRr] flower and a Tall, Red Homozygous [TTRR] flower. Please write what genotypes and phenotypes result below it.

3. What phenotypic ratio of offspring should be expected from the cross AaBb x Aabb?

4. Codominance: One breed of cattle can be red, white, or roan. The cross between 2 roans produces equal number of red and white progeny and twice as many roans., If a farmer wanted to breed an all roan herd, what animals should be the parents? [Do a Punnett Square for each]

a. roan x roan
b. red x red
c. white x white
d. red x white
e. roan x red

5. Explain the difference between incomplete dominance and codominance. Give an example of both.

6. Why are the result of genetic crosses shown in Punnett squares interpreted as probabilities, not certainties? Give some specific reasons.