Heredity Unit Test Name _____
Study Guide

Heredity Checklist

Can you…

___ explain how characteristics of living things are passed on through generations?
___ explain the difference between inherited and acquired traits?
___ explain how chromosomes and genes work to determine the traits of an organism?
___ explain the advantages and disadvantages of asexual and sexual reproduction?

Heredity Review Questions

1. What is an **inherited trait**? How is it different from an **acquired trait**?
2. What are **genes** and where are they located? How do genes affect an organism's traits?
3. How many chromosomes do human body cells have? How many chromosomes do human **gametes** have?
4. How many genes code for each trait?
5. How does the environment affect the development of traits?
6. What is **asexual reproduction**? What are the advantages (benefits) and disadvantages (drawbacks)?
7. What is **sexual reproduction**? What are the advantages (benefits) and disadvantages (drawbacks)?
8. What is **selective breeding**? Give an example.
9. Make a punnett square to predict the outcome of the crossing of a green pea pod and purple pea pod plant. **GG x gg**
10. Make a punnett square to predict the outcome of two of the **offspring** from #10.
11. Are punnett squares 100% accurate? Explain.

Answer Sheet for Heredity Test Study Guide

Name _____

1. _____

_____

2. _____

_____

3. _____

_____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

8. _____

_____

_____

_____

9.

10.

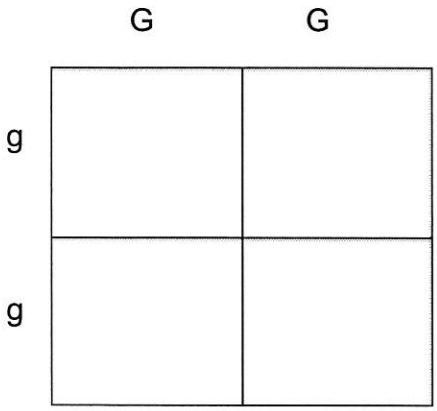
11. _____

Answer Key:

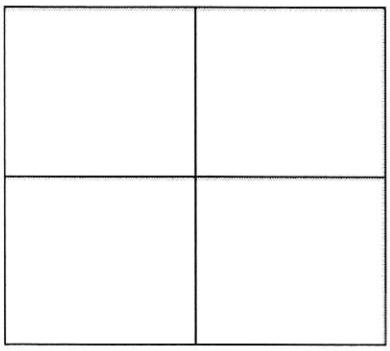
1. Inherited traits are characteristics passed down from parent to offspring through the genes, like eye or hair color. An acquired trait is received through the environment, like a limp sustained from an injury, or a scar.
2. Genes are the parts of the chromosomes (DNA) that code for the inherited traits. The chromosomes are located in the nucleus of every cell. Genes control all of the inherited traits of an organism.
3. All human body cells contain 46 chromosomes, (23 pairs). Human gametes (reproductive cells) contain only 23 chromosomes (singles, not pairs).
4. Each trait is controlled by 2 genes. In sexual reproduction, each parent provides one gene to the offspring.
5. The environment can affect the development of traits. For example, if a child is not properly nourished, he or she may not grow to the height that the genes would code for. Environmental factors include food, air, water and sunlight. The environment rarely changes the genes of an organism, though certain factors like radiation or carcinogens can.
6. Asexual reproduction is the creation of offspring requiring only one parent. Bacteria and most single-celled organisms reproduce this way. Asexual reproduction results in offspring that are identical to the parent. Advantages include fast reproduction, higher numbers of offspring, and no need for a mate. Disadvantages include a lack of genetic diversity. If an environmental threat occurs, this lack of diversity can lead to the extinction of the colony.
7. Sexual reproduction is the creation of offspring requiring 2 parents. Each parent contributes one gene for each gene pair. Inherited traits of the offspring will be a combination of the mother's and father's genes. Advantages include greater genetic diversity which makes a more stable population and the ability to adapt (the ability of a population to change with its environment over time). Disadvantages include the need to find a mate and fewer offspring.

8. Selective breeding is the manipulation of traits in a population by choosing parents with desirable traits to mate or cross (in plants) in order to produce offspring with desirable traits. Examples include breeding of livestock to produce more meat, breeding racehorses to be faster, breeding crops to have more mass (corn) or to be pest or drought resistant.

9. GG x gg



10. Gg x Gg



11. Punnett squares show the <u>probability</u> of traits occurring in the offspring. They are <u>not</u> 100% accurate, as the gene pairing is entirely up to chance.