

Heredity Unit Test Study Guide

Name _____

Heredity Checklist

Can you...

LS 1-4

- explain how special plant structures increase the odds of successful reproduction?
- explain how some plants depend on animal behaviors to reproduce?
- explain how animal behaviors can increase the odds of successful reproduction?

LS 1-5

- explain what a mutation is and how it impacts genetic variation?
- explain how both genetic and environmental factors influence the growth of a plant or animal?
- explain the difference between inherited and acquired traits?

LS 3-2

- explain how chromosomes and genes work to determine the traits of an organism?
- explain the differences between asexual and sexual reproduction, and how these impact genetic variation?
- explain how characteristics of living things are passed on through generations?

Heredity Review Questions

LS 3-2

1. What is an **inherited trait**? How is it different from an **acquired trait**?
2. What are **genes** and where are they located? What do they do?
3. How many chromosomes do **human** body cells have? How many chromosomes do human **gametes (reproductive cells)** have?
4. How many genes (minimum) code for each trait?
5. How are **dominant and recessive** traits different?
6. What are **blended** traits?
7. What is **asexual reproduction**? What types of organisms typically reproduce this way? What are some characteristics of the offspring?
8. What is **sexual reproduction**? What types of organisms typically reproduce this way? What are some characteristics of the offspring?
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 always 100% accurate? Explain.
12. What is a mutation?
13. What is genetic variation? Is there more genetic variation in the offspring of sexual or asexual reproduction?

OVER

LS1-5

14. How does the **environment** affect the development of traits?
15. List some environmental factors affecting the development of a plant's traits.
16. List some environmental factors affecting the development of an animal's traits.
17. Environmental or Genetic? Tell the type of factor influencing the organism's development of traits in each example:
 - a. A drought decreases plant growth, so a farmer's corn crop doesn't grow as tall as usual. _____
 - b. My mom bought a new brand of fertilizer, and now her marigolds are brighter and taller than ever. _____
 - c. Miniature horses are about 35 inches tall, while Clydesdale horses are about 72 inches tall. _____
 - d. Fish grow larger in large ponds than they do in small ponds.

LS1-4

18. Describe two specialized plant characteristics that increase the probability that the plant will be able to survive and reproduce.
19. Give two examples of how some plants use animals to help them reproduce.
20. Give three examples of behaviors that animals do to help them reproduce.

**Answer Sheet for Heredity Test
Study Guide**

Name _____

1. _____

2. _____

3. _____

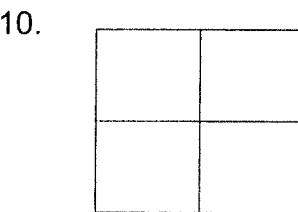
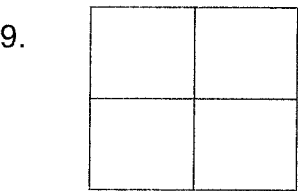
4. _____

5. _____

6. _____

7. _____

8. _____



11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

- 17.
- a. _____
 - b. _____
 - c. _____
 - d. _____

18. _____

19. _____

20. _____

Heredity Test Study Guide Answer Key:

1. Inherited traits are characteristics passed down from parent to offspring through the genes, like eye or hair color, or an instinctual behavior. An acquired trait is received through the environment, like a limp sustained from an injury, or a scar. An acquired trait can also be a learned behavior.
2. Genes are the sections 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, and are the blueprints passed on to the offspring.
3. All human body cells contain 46 chromosomes, (23 pairs). Human gametes (reproductive cells) contain only 23 chromosomes (a single set, not pairs).
4. Each trait is controlled by at least 2 genes. In sexual reproduction, each parent provides one gene to the offspring, so genes come in pairs. Many traits are controlled by multiple gene pairs.
5. Dominant traits (D) always show (are expressed), while recessive traits only show if a dominant trait is not present. So a DD or Dd genotype will show the dominant phenotype, while dd will show the recessive phenotype.
6. Blended traits occur when neither gene is dominant/recessive. Both are co-dominant, and both genes express, so the result is a mix of the two traits, like grey chickens from black and white parents.
7. 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. There is no genetic variation in the offspring resulting from asexual reproduction, with the exception of mutations.
8. 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. There is greater genetic variation in offspring resulting from sexual reproduction.
9. **GG x gg** G = green (dominant trait) g = purple (recessive trait)

10. **Gg x Gg**

11. Punnett squares show the probability of traits occurring in the offspring. They are not 100% accurate, as the gene pairing is entirely up to chance.
12. A mutation is a random change in the genetic code during reproduction. It is like a “typo.” Most mutations occur in DNA that doesn’t cause much of a change in the organism’s traits, and most mutations are harmless. However, some mutations can be harmful or helpful to the offspring, depending on what trait was changed. Mutations are not planned changes; they usually happen by accident. However, certain types of chemicals and radiation can cause mutations.
13. Genetic variation describes the differences in genes within a population. Genetic variation comes from the crossing of genes from two different parents in sexual reproduction, and also from mutations in both sexual and asexual reproduction. Offspring of sexual reproduction have much more genetic variation than offspring of asexual reproduction. This is because the only way for genes to change in asexual reproduction is through mutation.
14. The environment can affect the development of traits by encouraging or discouraging the expression of the genes in the organism’s DNA. For example, a child may have genes to make him tall (tall parents), but if he does not get proper nutrition, he may not grow to be as tall as he should have been. Environmental factors include food, air, water and sunlight. The environment rarely changes the actual genes of an organism, though certain factors like radiation or carcinogens can.
15. Environmental factors that affect the development of plant traits include amount of sunlight, water, nutrients (fertilizer), space to grow.
16. Environmental factors that affect the development of animal traits include amount of nutritious food, water, temperature, environmental toxins, space to grow.

17.

- a. environmental
- b. environmental
- c. genetic
- d. environmental

18. Specialized plant characteristics that increase a plant's probability of surviving and reproducing include bright colored petals to attract pollinators, thorns to deter predators, scents to attract animals for seed dispersal, odors to "call for" help when in distress, chemical dispersal to protect growth space.
19. Some plants depend on animals for pollination or seed dispersal. Examples include flowers needing bees, other insects or birds to transfer pollen between different plants. These plants have brightly colored flowers and sweet nectar to attract the animals that will help them pollinate. Other plants have sweet, bright fruits that animals will eat. The fruits contain the seeds of the plant, and animals will disperse the seeds when they poop them out. Some plants have burrs on their seeds that get stuck in animals' fur as they walk by. These seeds will eventually fall off and a new plant will grow.
20. Animals engage in behaviors that attract mates, such as dances or courtship rituals. Males of many species also fight for the privilege of mating with a female. The stronger or more successful male usually earns the right to mate, thereby passing on genes that are more likely to help the offspring survive. Females (and often males) engage in behaviors that protect the offspring, once born, such as den or nest building, protection and feeding of the offspring, etc.

