

Genetics Test Study Guide

1. Fill out the table

	Definition	Benefits	Negatives	Examples
Sexual reproduction	When two parents mix their DNA together to produce offspring	There will be a variety in their offspring. They're not all the same.	It takes a long time. They have to find a mate.	A flowering plant is pollinated by bees. Most plants and animals do sexual reproduction.
Asexual reproduction	When one parent produces offspring that are genetically identical to the parent	It is fast. They don't have to find a mate. A lot of offspring are produced quickly.	They are all identical	Bacteria, ameobas

2. Why is variety in offspring a benefit to organisms?

- When there is a change in the environment, then not every single organism will die because they are not all the same. Some of the ones that are different might have a trait that will help them survive.

3. What is an adaptation?

- A trait that helps an organism to survive and reproduce.

4. Give and explain two examples of a **structural** adaptation that helps **plants** to reproduce.

- Plants have flowers that are colorful, smell good, and have nectar to attract insects that will pollinate them.
- Plants can do asexual reproduction that produces a lot of new plants.
- Fruits – animals eat them and then poop out the seeds far away from the plant.
- Burrs – they stick to animals and then fall off far away from the plant.

5. Give and explain two examples of a **structural** adaptation that helps **animals** reproduce.

- Colorfulness helps to attract a mate to reproduce
- Horns help males to fight other males in order to reproduce.
- Size help males to fight other males in order to reproduce.

6. Give and explain two examples of a **behavioral** adaptation that helps **animals** reproduce.

- Animals dance in order to impress females
- Animals produce sounds/sing in order to impress females or scare off other males.

7. Give and explain two examples of **behavioral** adaptations that **parents** of animals use to help their offspring survive.

- Birds build nests to protect their young
- Living in groups/herds to protect young
- Parents feed their young until they're old enough to get their own

8. What is a mutation?

- A change in the genetic code of an organism

9. Give an example of a mutation that helps an animal or plants to survive.

- A change in color that helps an organism be camouflaged and blend into their environment so a predator can't eat them.
- A change in color could help an organism attract a mate.

10. Give an example of a mutation that is harmful to a plant or an animal.
- A change in color that makes an animal stand out and easier to catch by a predator
11. Give an example of a mutation that is neutral to a plant or an animal.
- Attached earlobes in humans.
12. If a mutation happens to an animal that is helpful, what will happen with that mutation over many generations?
- It will help that animal survive, and then it will pass this trait onto its offspring. This will make the mutation more common in the population.
13. Describe selective breeding (also called artificial selection).
- Humans choose the parents of an animal or plant so that their offspring will have desirable traits.
14. Give examples of selective breeding.
- Humans selected cows that produced a lot of milk to breed so that their offspring produce a lot of milk.
 - Other examples: corn, Honey bees, bananas, cotton, horses
15. How has selective breeding benefited humans?
- Most of the food crops and animals that we eat have been bred to produce more food. Without these crops we wouldn't have enough food for everybody.
16. How is genetic modification different than selective breeding?
- Selective breeding is where humans choose the parents so the offspring will have a certain trait, but genetic modification is when we insert specific genes into a living thing so it will have a certain trait.
17. What are the pros and cons of genetic modification?
- Pros - Genetic modification can be faster and cheaper and produce better crops that can benefit people.
 - Cons – Those plants could have a negative effect on the ecosystem. They might also have allergic reactions to people.
18. Describe gene therapy.
- Gene therapy is inserting genes into humans in order to help treat certain genetic diseases.
19. In rabbits, black fur is dominant (B) to white fur (b). If you cross a **homozygous recessive** male with a **heterozygous** female, what are the possible genotypes and phenotypes of the offspring?
- Possible genotypes: Bb = 50% or 2:4 and bb = 50% or 2:4
 - Possible phenotypes: Black fur = 50% or 2:4 and white fur = 50% or 2:4

	B	b
b	Bb	bb
b	Bb	bb