

Unit 9: Lifestyle & Environment Study Guide

1. Air pollution can influence a person's quality of life. What type of influence is air pollution: genetic, **environmental**, dietary, or behavioral?

2. Krista and Beth are identical twins that were separated at birth. Both of the girls were born healthy. Krista's adoptive parents live in Florida. Krista spends lots of time outdoors and rarely uses sunscreen. Beth's adoptive parents live in Oregon, where it is often cloudy and rainy. Krista develops skin cancer later in life, but Beth does not. Why would Krista get skin cancer but Beth would not?

Due to differences in their ENVIRONMENT, Krista may have been exposed to more ultraviolet radiation from spending so much time outdoors and not using sun screen.

3. An organism's traits are largely determined by the genetic makeup of its parents. A mutation in what type of cells in a parent could cause a new trait to appear in the offspring?

A mutation in the SPERM or EGG cells would cause a new trait to appear in the offspring.

4. Decide whether each of the following would be an ADAPTATION (A) or DISADVANTAGE (D)?

A or **D** A bird that has feathers that match its surroundings.

A or **D** A fish that can swim faster.

A or **D** A turtle with a harder shell.

A or **D** A polar bear with less fur.

5. Explain how both behavior and genes determine the length and quality of a person's life.

Both genetics and behavior affect the length and quality of a person's life. For example, a person can inherit genes that make them more at-risk to develop heart disease. A person's behaviors (smoking, high fat diet, inactivity) can also make them more at-risk to develop heart disease.

6. Decide whether of the following traits is affected by genes (G), the environment (E), or both (circle both).

G or **E** a person's gender

G or **E** the color of a person's eyes

G or **E** how long a person lives

7. Rat snakes are a species made of many distinct populations in different areas. Each of the populations has different markings and colorings. What color would a rat snake most likely be in each of the following habitats?

In a forest - **green**

In a swamp - **brown**

In a stone pit - **gray**

In a corn field - **green/yellow**

8. If the weather patterns change and stay colder for longer, what type of adaptation will help a coyote survive?

Coyotes that grow a thicker coat of fur will be able to better survive the colder temperatures.

9. Sickle-cell anemia is a genetic disease that affects the blood. The table below lists some characteristics of the disease. People who are homozygous for the trait usually have many health problems. People who have one copy of the sickle-cell allele are usually healthy.

Genotype	Effect on health?	Can pass a sickle-cell allele on to children?	Resistant (protects against) cholera?	Resistant (protects against) malaria?
Homozygous, normal (two normal alleles)	No effect on health	No	No	No
Heterozygous (one normal allele and one sickle-cell allele)	No effect on health	Yes	No	Yes
Homozygous with sickle-cell disease (two copies of the sickle-cell allele)	Can severely negative affect health	Yes	No	No

When would it be beneficial to have one copy of the sickle-cell allele?

During an outbreak of malaria, a person who is heterozygous would be protected against malaria, but would not have any health problems from sickle-cell disease.

10. Decide whether of the following influences on the quality of a person's life is affected by genes (G) or behavior (B).

Influences on the Quality of Life		
1.	Inheriting genetic diseases	G or B
2.	Using tobacco products	G or B
3.	Eating healthy food	G or B
4.	Drinking clean water	G or B

11. Decide whether each of the following scenarios is a result of genetics (G) or lifestyle choices (L).

G or **L** Arnold's parents and grandparents all have heart disease. Although Arnold has always exercised, avoided unhealthy foods, and followed doctor's instructions, he also has heart disease.

G or **L** As an adult Matt started smoking cigarettes to relieve his stress. Going to the gym every day helped his identical twin, Rob, relieve stress. Later in life Matt finds out he has emphysema, but Rob does not.

G or **L** Everyone in Erin's family has blue eyes and brown hair.

G or **L** Tanya and Michelle are sisters. Both have sickle-cell disease. Their father also has sickle-cell disease, but their mother does not.

12. **True** or **False**: A genetic disorder will most likely result when a gene is abnormal, missing, or incorrect?

13. Decide whether each of the following scenarios is a result of inheritance (I) or lifestyle choices (L).

I or **L** Arnold's parents and grandparents all have diabetes. Although Arnold has always exercised, avoided unhealthy foods, and followed doctor's instructions, he also has diabetes.

I or **L** Matt had naturally been right-handed since birth. In high school, he decided to start throwing left-handed after reading there was a shortage of left-handed pitchers in the major leagues. Matt is now left-handed.

I or **L** Both of Sarah's parents are overweight. Sarah plays 3 different sports and chooses school lunches with fruits and vegetables. Sarah's weight is normal.

I or L Lisa and Anita are identical twin sisters. Lisa went to college in New York; Anita went to college in Florida. Both sisters used to catch cold easily, but now, Lisa does not. Both sisters used to sunburn easily, but now, Anita does not.

14. Which of the following is determined by genes?

The learned traits of an organism.

The inherited traits of an organism.

The lifestyle of an organism.

Traits acquired throughout life.

15. Trevor is beginning to get bald at a young age. His father is not bald, but his grandfather on his mother's side has been bald for many years. Some of the older people in his community are bald, but very few people his age are bald. What factor is most likely influencing Trevor's baldness?

Trevor's baldness is most likely due to his INHERITANCE of a gene that causes early baldness.

16. Many people in Sally's family have been diagnosed with heart disease. Sally is worried that she could develop heart disease later in life. What should she do?

To avoid developing heart disease, Sally should exercise daily, eat healthy foods, and avoid smoking.

17. Decide whether each of the following would be an acquired (A) or inherited (I) disorder.

	<u>Disorder</u>	<u>Cause</u>
A or I	I. Hemophilia	Recessive allele on the X chromosome, which results in the blood not being able to clot correctly. More common in males than females.
A or I	II. Cystic Fibrosis	The body produces abnormally thick mucus, as a result of a recessive allele.
A or I	III. Sickle-Cell Anemia	Co-dominant allele where if a person has both sickle-cell alleles, their blood will not be able to carry the normal amount of oxygen.
A or I	IV. Obesity	Having a body mass index above 30, caused by eating foods with lots of sugars and fats combined with inactivity.

18. Decide whether each of the following would be an acquired (A) or inherited (I) trait.

A or I A person has detached earlobes.

A or I A person loves pizza.

A or I A person plays guitar.

A or I A person's favorite color is blue.

19. Which of the following best shows how genetics and lifestyle affect a person's health?

A person with brown hair dyes their hair blonde.

A person with the breast cancer gene BRAC1 or 2 avoids alcohol and exercises daily.

A right handed person learns to write left handed.

An obese person eats a lot of fast food.

20. Which of the following is NOT a reason that favorable traits get passed to future generations?

Animals with favorable traits may be able to attract more mates.

Animals with favorable traits may be able to avoid predators.

Animals with favorable traits may be better able to survive in their habitat.

Animals with favorable traits have mutated genes and will die before being able to reproduce.