Name_____

Invasive Plant Species

Invasive species are plants that have an adverse effect on specific habitats and regional areas. They can either be plants nonnative to an area, plants brought in by various means, or plants that damage native plants. In the United States, the government lists at least 50 invasive plant species not native to this country.

Invasive plants have certain traits that enable them to take over native plant species. Some traits include fast growth, fast plant reproduction, and the ability to alter their growth to adapt to the local conditions. Invasive species compete with native plants, keeping them from thriving.

Kudzu is a plant species indigenous to Asia that was introduced to the United States in the late 1800s. This vine was introduced for ornamental purposes and erosion control. In the southern United States, it has been growing at a rate of 150,000 acres per year, faster than it can be sprayed with herbicides or mowed to prevent its spread. In China, the plant dies back every winter, but it thrives in the warmer southern United States climate. It impacts the economy in various ways, such as disrupting power lines.

Native to Europe, Scotch broom is a member of the pea family. It looks similar to a bush and has yellow flowers. In Europe, it is grown for ornamental reasons and livestock feed. The plants compete with seedlings in reforested areas of the Pacific Northwest and California, resulting in lost timber production.

There are several ways to curtail invasive species. They can be controlled by mechanical means, such as mowing. Other solutions rely on the use of chemicals. Herbicides, insects, competitive plants, and biological agents can all be used in the fight against invasive species.

Invasive plant species are a challenge for authorities, a drain on the economy, and a danger to habitats. The first step in managing this aspect of the environment is education and awareness.

Text Questions

1. Which of these is an example of an invasive plant species?
   a. sagebrush
   b. kudzu
   c. crabgrass
   d. juniper

2. What does the word *indigenous* mean as it is used in the third paragraph?
   a. needy
   b. existing naturally
   c. belonging
   d. original

3. Which of these is <u>not</u> a trait of an invasive plant species?
   a. grows quickly
   b. reproduces quickly
   c. allows native plants to grow
   d. alters growth to adapt to local environmental conditions

4. The author probably wrote this passage to . . .
   a. inform the reader about invasive plant species.
   b. explain the origins of Scotch broom.
   c. describe how herbicides are used in agriculture today.
   d. tell how to get rid of weeds in your garden.

5. Why are invasive plant species a concern?

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Name_____

Twins

Twins run in families, right? Not necessarily. There is more than one type of twins, and various factors influence each. Generally speaking, identical twins occur at the same rate across the population, regardless of external factors such as age or race. Fraternal twins occur at different rates, depending on various factors. Scientists have found indications that fraternal twins are hereditary, and the age of the mother and number of previous births may also be factors. Some cultural groups have a higher rate of twinning than others.

Identical twins occur when one egg is fertilized and splits into two separate zygotes. A zygote is the cell that is formed when an egg is fertilized. These two entities may remain in one amniotic sac to receive nourishment during development, or they may split into two separate sacs.

The other type of twins is fraternal, which occurs when two separate eggs are fertilized at the same time. This type usually develops in two separate sacs.

Because identical twins begin as a single cell, they receive the same genes; they are genetically identical. Therefore, they will always be the same gender and share many physical characteristics and personality traits. However, approximately 20 percent of our genes manifest themselves differently, which accounts for slight variations that may be observed in identical twins. Scientists have also observed instances in which the right side of one twin will match the left side of the other. These are called mirror twins.

Fraternal twins begin as two individual cells, and therefore, each has a unique set of DNA. The resulting offspring will look no more alike than any other siblings. As such, they may be the same gender or different.

Research on twins continues, due in part to our fascination with identical DNA, as well as the information to be learned regarding the unique DNA code of every human.

Text Questions

1. Which title would be a good alternative for this text?
   a. "One Versus Two"
   b. "Seeing Double"
   c. "DNA Studies"
   d. "Across Cultures"

2. Which word or phrase best describes twins who may not be the same gender?
   a. identical twins
   b. mirror twins
   c. fraternal twins
   d. cloned twins

3. What causes identical twins to look alike?
   a. They are born at the same time.
   b. They share the same amniotic sac.
   c. They are the same gender.
   d. They share the same DNA.

4. Based on the context, what can you infer the word *hereditary* means?
   a. passed down genetically from one generation to the next
   b. sharing the same beliefs about what causes twins
   c. inherited as a legal heir
   d. something explained by one's ancestors

5. Based on what you read and your background knowledge, in what other ways might studies of twins benefit scientific research?

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Name_____

"Beam Me Up"

"Beam me up, Scotty" is a famous line from a science-fiction television show. In the show, a "transporter" was used to move people from one place to another. Could this science fiction soon become a reality?

Recent technology has made it possible to transport small particles, known as photons, from one location to another. This is called quantum transport. Currently, its application is confined to electronics, but the theory has been proven possible.

The laws of physics may make it impossible to ever build a transporter that will send a human from one location to another. Such a machine would have to send atoms at the speed of light. It would also have to map and send trillions of atoms to include DNA mapping. Then, the molecules would have to be put back in place perfectly without so much as one being out of place.

Two other problems are dematerializing and materializing. The breaking apart of a human into subatomic particles seems highly unlikely. An even greater problem is putting the person back together in a different location.

In actuality, if such a "transportation" machine could be built, it would likely work more like a three-dimensional fax machine. In other words, the person would be scanned and a replica assembled elsewhere.

At this time, the quantum transportation of humans seems extremely unlikely. However, at least one physicist—science writer Michio Kaku—thinks further development of the technology could happen in the future. Although, he says, it will first take centuries of work.

Even in our lifetimes, technology has developed in unimaginable ways. Who knows what the future holds?

Text Questions

1. What is the closest meaning of the word *quantum* as it is used in the second paragraph?
   a. a quantity or amount
   b. a portion
   c. a complex math problem
   d. a fixed elemental unit of energy

2. According to the passage, what is one problem with the theory of quantum transport as applied to human transportation?
   a. Trillions of atoms would have to be reassembled precisely.
   b. The theory was first applied to electronics.
   c. Scientists don't have a good understanding of DNA.
   d. It would require a fax machine.

3. What question does the passage explore?
   a. How would one construct a transporter?
   b. Why do we need transportation technology?
   c. Is technology from science fiction really possible?
   d. What does the future hold for humans?

4. Which of the following statements is true?
   a. The laws of physics make it possible to build a transporter that will send a human from one location to another.
   b. Recent technology has made it possible to transport small particles, known as photons, from one location to another.
   c. It is possible to break apart a human into subatomic particles.
   d. It is easy to predict ways in which technology will develop.

5. Based on what you read, what would be the advantages and disadvantages of developing this kind of transportation technology?

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