

Reading

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This passage is about chocolate.

Around 200 BCE, the Maya of Central America prepared a chocolate drink using cacao. They ground cacao seeds into a paste that was blended with water, peppers, cornmeal, and other ingredients. Afterward, the mixture was poured back and forth from cup to pot until thick foam appeared on the surface. Cacao was a valuable commodity in this civilization, as evidenced by the report of an early explorer who noted that three cacao beans could buy a turkey egg, four could buy a pumpkin, and ten could buy a rabbit.

By the fifteenth century, expansion of the Aztec civilization throughout most of Central America brought the Aztecs into contact with the Maya. The Aztecs also viewed chocolate as a valuable commodity. It has been noted by historians that each day the emperor of the realm, Moctezuma, drank fifty cups of *xocolatl*, or "bitter water," from golden goblets. Unable to cultivate the tropical cacao in the temperate highlands where they lived, the Aztecs depended upon trade with the Maya. Men hauled cacao in woven backpacks from Honduras to Tenochtitlan, the capital of the Aztec civilization, a distance of approximately 1,400 kilometers.

Regulated by special government officials who ensured that weights, measures, and prices matched the quality of goods, the Aztec marketplace included both vendors of prepared chocolate and dealers of raw beans. Honest cacao sellers would divide the beans into separate piles according to their origin. Dishonest sellers would sell counterfeit beans by artificially coloring inferior lots of cacao or even by disguising amaranth dough or avocado seeds with cacao hulls to fool customers. Cacao was so precious to the Aztecs that it was not only used as currency but also to pay *tribute*, a tax imposed by the emperor. Over time, the Aztecs conquered large portions of Mayan territory, partly to have more of these precious beans.

151. What is the main purpose of the passage?

- a. to demonstrate why cacao was a regulated commodity
- b. to explain how commodities such as cacao could be used as currency
- c. to explain why the Aztecs conquered the Maya
- d. to describe the history of the cacao trade

152. According to the author, what indicates that cacao was valuable in the Mayan civilization?

- a. An explorer noted its use as currency.
- b. Moctezuma drank fifty cups of *xocolatl* a day.
- c. The Aztecs traded with the Maya for cacao.
- d. The Maya refused to trade it with the Aztecs.

153. How did the Aztecs first acquire cacao?

- a. They traded for it with the Maya.
- b. They discovered it in the wild.
- c. They accepted it as a tribute payment.
- d. They cultivated it in fields.

154. According to the passage, why did the Aztecs regulate cacao?

- a. so that chocolate drinks would be of high quality
- b. to ensure a fair price for the quality of the goods
- c. to restrict the use of cacao as currency
- d. so that buyers knew the origin of the beans

155. What did the Aztecs do to ensure a plentiful supply of cacao?

- a. They preserved the seeds using special ingredients.
- b. They conquered Mayan territory.
- c. They cultivated it in the highlands.
- d. They regulated the sale of cacao.

This passage is about beetles.

Most horned varieties of beetles belong to *Lamellicornia*, a large group of beetles that includes two families: the scarabs—or chafers—and the stag beetles. Though most are hornless, some scarab species develop horns that are hollow skeletal outgrowths of either the head or thorax and so are analogous to the body outgrowths that give rise to horns in mammals and reptiles. The stag beetle family is much smaller in number of species but includes proportionately more horned varieties.

Beetle horns do not develop gradually, as in mammals, but are quickly and fully formed during the last molt to the adult stage. The final size of the horns is believed to depend on nutrition, with well-fed larvae giving rise to larger-horned adults.

Early naturalists, most of them collectors, often had little time or inclination to observe the behavior of beetles in their natural habitats. Speculations on the use of horns were therefore based mainly upon examinations of pinned museum specimens, or, only rarely, on observations of beetles in captivity. Some early naturalists speculated that horns are sometimes used in defense against predators, to dig burrows, or as weapons in fights between males. Darwin thought that horns might be ornaments that impress females, while other biologists speculated that horns could be used to lacerate plant stems, permitting the beetles to feed on plant saps. Still another viewpoint, one held by Julian Huxley, is that horns serve no function and are merely byproducts of increasing body size.

When horned beetles are observed more carefully under both natural and controlled conditions, we should learn how horns are used and why they develop.

156. Why does the passage mention mammals and reptiles?

- a. to illustrate one use of beetle horns
- b. to explain how beetle horns develop
- c. to show where beetle horns develop
- d. to compare the size of beetle horns

157. How do beetles with big horns differ from beetles with small horns?

- a. Big-horned beetles frequently feed on plant sap.
- b. Big-horned beetles were better nourished as larvae.
- c. Big-horned beetles are older.
- d. Big-horned beetles are more aggressive.

158. Where did early naturalists study beetles?

- a. in their natural setting
- b. in the naturalists' laboratories
- c. in the larval stage
- d. in museum display cabinets

159. What criticism does the passage make of early naturalists?

- a. They formed hypotheses based on only a few cases.
- b. They drew conclusions from uncontrolled conditions.
- c. They rarely observed live specimens.
- d. They collected and examined only certain species.

160. According to the passage, what can be inferred about the stag beetle horn?

- a. It helps stag beetles to build homes.
- b. Its purpose is still unknown.
- c. It is a defensive tool.
- d. It is used to attract females.

This passage is about vending machines.

Few would disagree that vending machines are a great convenience. They are always on, ready to dispense a soda or snack at any time. Unfortunately, this also entails using a lot of power to keep the machines running, even when no one is around to buy anything. Vending machines typically cool less volume than a home refrigerator, while using up to five times as much energy. Recently, a North American company developed a new device that can help facility managers conserve natural and financial resources by reducing the electricity consumption of vending machines.

The device, called a Vending Miser, saves power by shutting down a soda machine when there are no potential customers present. The device consists of two parts. The first is a motion sensor installed in the wall above the vending machine that emits an infrared beam that extends several feet around the vending machine. If a moving object, such as a customer, crosses the beam, the sensor sends a signal to the second component, the power controller, which activates the vending machine, instantly bringing it to life, much the way an automatic door works.

Originally, many customers were wary of the new device, thinking that the soda machine was broken or that their favorite beverages might get too warm if the machine stayed off for a long period of time. Leaving lights running on the front panel solved the first problem. As for the second, the soda machines contain an internal thermometer, which is able to activate internal compressors that cool the beverages, even while power is cut off. Additionally, the Vending Miser itself periodically monitors the surrounding air temperature and reactivates the machine's compressors as necessary. Depending on air temperature and foot traffic patterns, energy savings resulting from use of the new device range from 24 to 76 percent.

161. What is the primary purpose of this passage?

- a. to describe a new invention and its benefits
- b. to identify the problems of a new invention
- c. to demonstrate the usefulness of vending machines
- d. to compare two methods of improving a product

162. According to the passage, how does a standard vending machine compare to a home refrigerator?

- a. Home refrigerators use infrared detectors.
- b. Home refrigerators keep sodas cooler.
- c. Vending machines use more energy to cool less space.
- d. Vending machines require constant maintenance.

163. When is a machine with a Vending Miser activated?

- a. when power is shut down
- b. when someone walks by
- c. when potential energy savings are high
- d. when lights on a panel are on

164. What is one concern that customers have expressed?

- a. They think the machine will waste energy.
- b. They think the cost of soda will rise.
- c. They are afraid their drinks will not be cold.
- d. They are afraid the machine will work too slowly.

165. In the last paragraph, what does the author mean by **foot traffic patterns**?

- a. the trends in the number of people passing by
- b. the number of people buying soda from a vending machine
- c. the distance the beam extends from a vending machine
- d. the shape the beam makes around a vending machine

This passage is about green roofs.

Recognized as having one of the largest green roofs in the world, the new Ford Truck Assembly Plant in Dearborn, Michigan, serves as a model for the twenty-first century. In this time of growing concern over environmental issues from global warming to urban sprawl, the Ford plant shows that it is possible to reduce these concerns by means of well-designed green architecture.

Green roofs are, as the name implies, gardens that are placed on the roof of a building. These roofs are composed of a waterproofing and root-repellent system designed to protect the underlying building structure, a drainage system, a lightweight growing medium, and plants selected based on characteristics such as drought tolerance. The gardens are designed to be self-sustaining, requiring little upkeep except for occasional weeding or fertilization.

In addition to supporting plant growth, the growing medium absorbs water. Experts cite the latter as the single most important advantage of green roof technology, because the plants store rainwater and return it to the atmosphere. It is predicted that the Ford Plant green roof will retain 447,000 gallons of water per year, conserving 50 percent of the rain that falls on the roof each year. Less rainwater also means less water that must pass through the city's water sewage treatment facilities.

What runoff there is has been filtered by the roof system. In addition, green roofs improve air quality by filtering the air above them and encouraging the exchange of carbon dioxide and oxygen through photosynthesis. Furthermore, they reduce the *heat island* effect in cities caused by an ever-increasing amount of hard surfaces that absorb solar radiation. Finally, green roofs are aesthetically appealing: they improve the appearance of barren urban and industrial sites.

166. What is the main idea of this passage?

- a. Green roofs need less maintenance than regular roofs.
- b. Green roofs are becoming more common on automotive plants.
- c. Green roofs have a variety of environmental benefits.
- d. Green roofs can solve the problem of global warming.

167. When do roof gardens need to be planted?

- a. after each rainfall
- b. annually each spring
- c. when first created
- d. following a period of drought

168. According to the passage, what is the most significant benefit of a green roof?

- a. It cools the building it is on.
- b. It supports plant life.
- c. It absorbs solar radiation.
- d. It retains rainwater.

169. According to the passage, what is one way in which green roofs improve air quality?

- a. by reflecting solar radiation
- b. by reducing air temperature
- c. by promoting gas exchange
- d. by absorbing rainwater

170. How do green roofs reduce the heat island effect?

- a. They capture less heat from the sun than traditional roofs.
- b. They increase the movement of air around the building.
- c. They retain a lot of rainwater.
- d. They absorb the sun's heat.