

**Paradox**

1. Based upon studies conducted over the last two decades that show head injuries can be reduced if children wear bicycle helmets, some jurisdictions have passed laws requiring that children under the age of 12 wear helmets when they ride their bicycles. A surprising result has been observed, however. Even though a large number of children do wear bicycle helmets, more head injuries than expected are continuing to occur. And this is the result even though the studies have shown that wearing a helmet reduces the incidence of head injuries.

Which one of the following statements, if true, might suitably explain the unexpected finding?

- (A) A large number of parents are not making their children wear bicycle helmets.
- (B) More children are riding bicycles now than before bicycle helmets were introduced.
- (C) Because bicycle helmets are quite expensive, many parents don't buy them for their children.
- (D) Bicycle helmets were not designed to prevent all head injuries, so it is not surprising that head injuries still occur.
- (E) Bicycle helmets do not work properly if they are not properly secured with the chin strap, and many children and their parents do not secure the chin strap properly.

2. The Blane County District Attorney claims that her senior assistant, Tom Feather, is the best criminal prosecutor in Blane County. Inexplicably, a much lower percentage of the criminal defendants Mr. Feather prosecutes are convicted of serious crimes than criminal defendants tried by other prosecutors.

Which one of the following selections goes farthest in crediting both the district attorney's confidence in Mr. Feather and Mr. Feather's low conviction rate?

- (A) Since the Blane County District Attorney appointed Mr. Feather as her senior assistant, her judgment would be questioned if she didn't claim that Mr. Feather is the best.
- (B) The district attorney followed established procedure in promoting Mr. Feather to senior assistant from among the ranks of assistant district attorneys.
- (C) Several years ago, Mr. Feather was involved in training attorneys new to the district attorney's office, and he trained a number of the assistant district attorneys currently on the staff.
- (D) In the district attorney's office, the weakest, most difficult cases are usually assigned to Mr. Feather.
- (E) Mr. Feather's conviction record is much better than the conviction record of the previous senior assistant district attorney.

3. Ten years after graduation, men and women who had participated in the Thompson High School basketball program were surveyed with regard to their individual playing records for their teams. Some of the results of the survey were curious. Seventy-five percent of those responding reported that they had started for their respective boys' or girls' teams, when the actual number of boys and girls who had started for their teams was only 50%.

Which one of the following provides the most helpful explanation for the apparent contradiction in these survey results?

- (A) A very small number of those responding were incorrect in reporting that they held starting positions.
- (B) A disproportionately high number of players who started for their teams responded to the survey.
- (C) Not all starting players responded to the survey.
- (D) Almost all men and women who played basketball for Thompson High School ten years earlier responded to the survey.
- (E) Not all good basketball players started for their teams; some good players were deliberately held out to play later in the game.

4. Most of the ultraviolet radiation reaching the Earth's atmosphere from the Sun is absorbed by the layer of stratospheric ozone and never reaches the Earth's surface. Between 1969 and 1986, the layer of stratospheric ozone over North America

thinned, decreasing by about 3 percent. Yet, the average level of ultraviolet radiation measured at research stations across North America decreased over the same period.

Which one of the following, if true, best reconciles the apparently discrepant facts described above?

- (A) Ultraviolet radiation increases the risk of skin cancer and cataracts; the incidence of skin cancer and cataracts increased substantially between 1969 and 1986.
- (B) Between 1969 and 1986, the layer of stratospheric ozone over Brazil thinned, and the average level of ultraviolet radiation reaching the Earth's surface in Brazil increased.
- (C) Manufactured chlorine chemicals thin the layer of stratospheric ozone.
- (D) Ozone pollution, which absorbs ultraviolet radiation, increased dramatically between 1969 and 1986.
- (E) Thinning of the layer of stratospheric ozone varies from one part of the world to another and from year to year.

5. In 1990 major engine repairs were performed on 10 percent of the cars that had been built by the National Motor Company in the 1970s and that were still registered. However, the corresponding figure for the cars that the National Motor Company had manufactured in the 1960s was only five percent.

Which one of the following, if true, most helps to explain the discrepancy?

- (A) Government motor vehicle regulations generally require all cars, whether old or new, to be inspected for emission levels prior to registration.
  - (B) Owners of new cars tend to drive their cars more carefully than do owners of old cars.
  - (C) The older a car is, the more likely it is to be discarded for scrap rather than repaired when major engine work is needed to keep the car in operation.
  - (D) The cars that the National Motor Company built in the 1970s incorporated simplified engine designs that made the engines less complicated than those of earlier models.
  - (E) Many of the repairs that were performed on the cars that the National Motor Company built in the 1960s could have been avoided if periodic routine maintenance had been performed.
6. When old-growth forests are cleared of tall trees, more sunlight reaches the forest floor. This results in a sharp increase in the population of leafy shrubs on which the mule deer depend for food. Yet mule deer herds that inhabit cleared forests are

less well-nourished than are herds living in old-growth forests.

Which one of the following, if true, most helps to resolve the apparent paradox?

- (A) Mule deer have enzyme-rich saliva and specialized digestive organs that enable the deer to digest tough plants inedible to other deer species.
- (B) Mule deer herds that inhabit cleared forests tend to have more females with young offspring and fewer adult males than do other mule deer populations.
- (C) Mule deer populations are spread throughout western North America and inhabit hot, sunny climates as well as cool, wet climates.
- (D) As plants receive more sunlight, they produce higher amounts of tannins, compounds that inhibit digestion of the plants' proteins.
- (E) Insect parasites, such as certain species of ticks, that feed primarily on mule deer often dwell in trees, from which they drop onto passing deer.

7. All people residing in the country of Gradara approve of legislation requiring that certain hazardous wastes be disposed of by being burned in modern high-temperature incinerators. However, waste disposal companies planning to build such incinerators encounter fierce resistance to their applications for building permits from the residents of every Gradaran community that those companies propose as an incinerator site.

Which one of the following, if true, most helps to explain the residents' simultaneously holding both of the positions ascribed to them?

- (A) High-temperature incineration minimizes the overall risk to the human population of the country from the wastes being disposed of, but it concentrates the remaining risk in a small number of incineration sites.
- (B) High-temperature incineration is more expensive than any of the available alternatives would be, and the higher costs would be recovered through higher product prices.
- (C) High-temperature incineration will be carried out by private companies rather than by a government agency so that the government will not be required to police itself.
- (D) The toxic fumes generated within a high-temperature incinerator can be further treated so that all toxic residues from a properly operating incinerator are solids.
- (E) The substantial cost of high-temperature incineration can be partially offset by revenue from sales of electric energy generated as a by-product of incineration.