LOGICAL REASONING TEST DIRECTIONS

To answer each question on the logic-based reasoning test, select the answer representing the only valid statement that can be made from the information contained in the paragraph. To identify the correct conclusion, it is essential that you use ONLY the information provided in the content paragraph.

Record your answer to each question on the machine-readable answer sheet. Make sure to completely fill in the circle that corresponds with your answer. You should provide only one answer for each question. Please do not write in the test booklet.

You have 90 minutes to read the questions and provide your responses. Do not start until I have instructed you to do so. I will give you a warning when you have one hour, 30 minutes, and 5 minutes remaining to complete the logical based reasoning test questions.

SAMPLE QUESTIONS

Question 1

Eventually, most citizens are summoned to serve on jury duty. If a government employee is asked to serve on a jury, official court leave is authorized with no charge to leave or loss of pay. Also, official court leave is always granted if the employee is summoned to appear as a witness in a judicial proceeding in which the government is a party. No fees rendered for service can be retained by the employee. Rather, they must be turned in to the agency in which he or she is employed. However, some payments designated as expenses by the courts, such as travel reimbursements, may be kept.

From the information given above, it can be validly concluded that official court leave

A) is not granted to individuals other than government employees who are summoned to serve as jurors or to appear as witnesses in judicial proceedings in which the government is a party
B) sometimes entails retention by government employees of fees received from the court for services rendered as jurors
C) is never accompanied by reimbursement for expenses incurred by government employees while serving as witnesses in judicial proceedings in which the government is a party
D) never entails loss of pay by government employees who are summoned to serve as jurors or to appear as witnesses in judicial proceedings in which the government is a party
E) is not always granted to government employees who are summoned to appear as witnesses in judicial proceedings in which the government is a party

The correct response is D. The information in the passage establishes two conditions under which court leave is authorized for government employees without charge to leave or loss of pay: (1) if the employee is asked to serve on a jury and (2) if the employee is summoned to appear as a witness in a judicial proceeding in which the government is a party. Response D reiterates this statement in negative form: Official court leave never entails loss of pay by government employees who are summoned to serve as jurors or to appear as witnesses in judicial proceedings in which the government is a party.

Response A is incorrect because the passage gives no information about court leave policies for non-government employees.

Response B is incorrect because it contradicts the information in the passage, which states that no fees rendered for service as a juror can be retained by a government employee.

Response C is incorrect because it contradicts the information in the passage, which states that some payments designated as expenses by the courts, such as travel reimbursements, may be kept by a government employee.

Response E is incorrect because it is contrary to the information in the passage, which establishes that official court leave is always granted to government employees if they are asked to serve on a jury or if they are summoned as a witness in a judicial proceeding in which the government is a party.
Question # 1 is an example of an easy question in which three of the incorrect response choices contradict the information in the passage, while one incorrect response (response A) is based on unwarranted assumptions about a set of individuals that is not discussed in the passage. More difficult errors of reasoning are illustrated in the next two sample questions.

Question 2
Whenever an investigator is involved in an intelligence operation, he or she is required to examine multiple hypotheses, thus avoiding the quick pursuit of only one path, which could turn out to be incorrect. In a recent terrorism case, which thus far has proved to be exceptionally complex and remains unresolved, several hypotheses were initially generated about the suspects, conspirators, motives, and implementation of the terrorist act. Most of these hypotheses have been disproved.

*From the information given above, it can be validly concluded that*

A) in any intelligence operation, an investigator who generates more than one hypothesis is more likely than not to succeed  
B) at least one of the hypotheses generated for the terrorism case mentioned above is not likely to be disproved  
C) if an investigator is not required to examine multiple hypotheses about a case, then he or she is not involved in an intelligence operation  
D) whenever an investigator fails to solve a case, it can be assumed that, most probably, he/she failed to generate more than one hypothesis about the case  
E) there are at least some investigative operations, other than those concerned with intelligence, that do not require the investigator to form more than one hypothesis

This question presents two aspects. One is the mandate to generate multiple hypotheses whenever an investigator conducts an intelligence operation. The second aspect is the interplay of possibilities and probabilities relative to the forming of hypotheses. The correct response, C, deals with the first aspect, while three of the four incorrect response choices deal with the second aspect. In the correct response, C, the inference (formally called a contra positive inference) represents a negative equivalent of the mandate found in the first sentence of the passage. The first sentence states an antecedent condition ("whenever an investigator is involved in an intelligence operation") from which follows a consequent condition ("he or she is required to examine multiple hypotheses"). If we transpose and negate these two conditions, as is done in C, we obtain an equivalent statement, in which the truth value of the original statement is retained.

Responses A, B, and D are based on unwarranted probabilistic inferences about (1) the likelihood that an investigator who generates more than one hypothesis will succeed (response A), the likelihood that at least one hypothesis will not be disproved in the terrorism case (response B), and the likelihood that an investigator who fails to solve a case will have failed to generate more than one hypothesis about it (response D). The passage provides no quantifying information from which such probabilistic inferences can be made. It only alludes to the *possibility* that a single hypothesis may be incorrect, which cannot be extrapolated into probabilities. In the context of probabilities, you should note that this test will not contain quantitative problems. You need to be alert only to verbal quantifying expressions such as "more likely than not," "unlikely," "most probably," etc.

Finally, in the case of response E, it is incorrect because the passage provides no information at all about investigative operations that may fall outside the set of intelligence operations.

Question 3
All forensic soil examiners compare the color, texture, and composition of two or more soils to determine if they share a common origin. Suppose, for example, that the suspect in a murder claims that soil recovered from her shovel—which actually came from a grave that she dug—was from her garden. The garden will be eliminated as the source of the soil on the shovel if and only if this soil is found to be dissimilar to soil samples taken from the garden.

*From the information given above, it CANNOT be validly concluded that*

A) upon analysis and comparison, the soil samples taken from the shovel and the garden of the above-mentioned suspect will be dissimilar if the grave was
not dug in the garden

B) analysts who are not involved in the comparison of soil samples are not forensic soil examiners

C) if, as a result of analysis and comparison, the suspect's garden is confirmed as the source of the soil on the shovel, then the soil samples taken from the garden and the shovel were found to be similar

D) if an analyst is involved in the comparison of soil samples, then he or she will be classified as a forensic soil examiner

E) if the soil samples taken from the shovel and the garden of the above-mentioned suspect are similar, then it can be assumed that the grave was dug in the garden

This question is an example of a difficult question. In the first place, it asks you to identify the only response choice that does not follow from the given information, which in and of itself makes the question slightly more difficult to analyze. Nonetheless, the difficulty of the question stems primarily from the logical complexity of its response choices. (If you are asking yourself why such complex reasoning must be included in the test, please bear in mind that the reason is, exclusively, relevance to the job. The information you will have to analyze on the job, including that found in legal manuals, will be generally as complex as this question, and frequently more so.)

The correct response is D. It represents the only fallacy found among the response choices. The fallacy is formally called a converse fallacy. The passage states that all forensic soil examiners compare the color, texture, and composition of two or more soils. From this information nothing can be concluded about whether or not there are analysts other than forensic soil examiners who carry out such comparisons. The information in the passage tells us only that the set of forensic soil examiners is entirely included in the set of analysts who carry out soil comparisons but tells us nothing about the composition or extension of the second set.

Response A is not a fallacy. The passage states (1) that the suspect's garden will be eliminated as the source of soil on the shovel if and only if this soil is found to be dissimilar to soil samples taken from the garden and (2) that the soil on the shovel came from a grave that the suspect dug. It follows that the soil samples will be dissimilar if the grave was not dug in the garden.

In the context of this question and this response, it is pertinent to note the use of the biconditional if and only if. A biconditional statement is defined as one in which the conditions included in the statement are interchangeable without affecting the truth value of the statement. Thus, to say that the suspect's garden will be eliminated as the source of soil on the shovel if and only if this soil is found to be dissimilar to soil samples taken from the garden is the same as saying that the soil on the shovel will be found to be dissimilar to soil samples taken from the garden if and only if the garden is eliminated as the source of soil on the shovel. This interchangeability of conditions permits the inference in response C: The statement in the passage establishes that the suspect's garden will be eliminated as the source of soil on the shovel if and only if this soil is found to be dissimilar to soil samples taken from the garden. It follows that if the garden is confirmed as the source of the soil on the shovel, then this soil must be similar to soil samples taken from the garden. In symbols, when we say p if and only if q, we are saying both that if p then q and if q then p. Hence, if we negate p, the negation of q must follow.

Both response B and response E illustrate the same type of inference that was illustrated before in question # 2 (Response C) except that, in question # 3, response B illustrates the inference (formally called a contra positive) in the context of sets, while response E illustrates it in the context of a conditional statement. These are discussed immediately below.

Relative to response B, the passage states that all forensic soil examiners analyze and compare soil samples. The transposed negative equivalent of this statement follows necessarily: analysts who are not involved in the comparison of soil samples are not forensic soil examiners.

Relative to response E, it represents the transposed negative equivalent of the statement in response A and hence retains the same truth value. Response A states that if the grave was not dug in the garden then the soil samples taken from the shovel and the garden will be dissimilar. Response E transposes and negates these conditions: if the soil samples taken from the shovel and the garden are similar, then it can be assumed that the grave was dug in the garden.