



ANOONIYAT

LSAT
ANALYTICAL
REASONING

Five Sample Analytical Reasoning Questions and Explanations

Directions: Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers the question and blacken the corresponding space on your answer sheet.

Passage for Question 1

A medical clinic has a staff of five doctors—Drs. Albert, Burns, Calogero, Defeo, and Evans. The national medical society sponsors exactly five conferences, which the clinic’s doctors attend, subject to the following constraints:

- If Dr. Albert attends a conference, then Dr. Defeo does not attend it.
- If Dr. Burns attends a conference, then either Dr. Calogero or Dr. Defeo, but not both, attends it.
- If Dr. Calogero attends a conference, then Dr. Evans does not attend it.
- If Dr. Evans attends a conference, then either Dr. Albert or Dr. Burns, but not both, attends it.

Question 1

If Dr. Burns attends one of the conferences, then which one of the following could be a complete and accurate list of the other members of the clinic who also attend that conference?

- (A) Drs. Albert and Defeo
- (B) Drs. Albert and Evans
- (C) Drs. Calogero and Defeo
- (D) Dr. Defeo
- (E) Dr. Evans

Explanation for Question 1

This question requires you to determine, from the conditions given, which doctors can attend the same conferences. The question tells us that “Doctor Burns attends one of the conferences,” and we are asked to choose the response that could be a list of all and only those doctors who attend the conference with Dr. Burns. Since we are asked what could be a “complete and accurate list” [emphasis added] of those doctors who attend the conference with Dr. Burns, we can eliminate as incorrect those responses which either are inaccurate (that is, cannot be true), or incomplete (that is, do not include everyone who must accompany one or more of the doctors going to the conference). This can be determined easily without the use of a diagram.

Response (A) states that, along with Dr. Burns, Drs. Albert and Defeo also attend the conference. But the first condition tells us that “if Dr. Albert attends a conference, then Dr. Defeo does not attend it.” So, Drs. Burns, Albert, and Defeo cannot all attend the same conference. Response (A), then, is incorrect.

Response (B) is incorrect for a similar reason. The fourth condition tells us what must be true if Dr. Evans attends a conference, namely, that “either Dr. Albert or Dr. Burns, but not both, attends it.” Since we know that Dr. Burns attends the conference, we know that it cannot be true that both Drs. Albert and Evans also attend that conference.

Response (C) is also incorrect. The second condition tells us what must be true if Dr. Burns attends a conference. Since we know that Dr. Burns does attend the conference, we also know that “either Dr. Calogero or Dr. Defeo, but not both, attends it.”

Responses (D) and (E) must be evaluated slightly differently. No condition rules out Dr. Burns’s and Dr. Defeo’s going to the same conference—response (D)—and no condition forbids Dr. Evans’s going with Dr. Burns to a conference—response (E). But recall that the question asks for what could be a “complete and accurate list” of the doctors who attend the conference with Dr. Burns. We know from the second condition that at least one other person must accompany Dr. Burns, and that among those who accompany Dr. Burns are either Dr. Calogero or else Dr. Defeo. Since the conditions do not require anyone to accompany Dr. Defeo, it is possible that Dr. Defeo is the only

person to accompany Dr. Burns. Thus, response (D) is an accurate response, in that it is possible that Drs. Burns and Defeo attend the same conference, and it is a complete response, in that Drs. Burns and Defeo could be the only doctors of the five to attend the conference. So response (D) is correct.

Response (E) is incorrect because we know that if Dr. Burns goes, someone other than Dr. Evans must also go. Response (E) then is incomplete. It fails to list at least one doctor whom we know must also accompany Dr. Burns.

This question is classified as “moderately difficult.”

Passage for Questions 2 and 3

Seven piano students—T, U, V, W, X, Y, and Z—are to give a recital, and their instructor is deciding the order in which they will perform. Each student will play exactly one piece, a piano solo. In deciding the order of performance, the instructor must observe the following restrictions:

- X cannot play first or second.
- W cannot play until X has played.
- Neither T nor Y can play seventh.
- Either Y or Z must play immediately after W plays.
- V must play either immediately after or immediately before U plays.

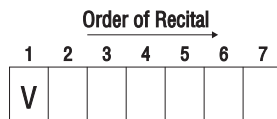
Question 2

If V plays first, which one of the following must be true?

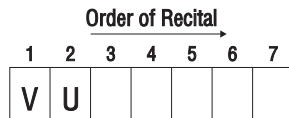
- (A) T plays sixth.
- (B) X plays third.
- (C) Z plays seventh.
- (D) T plays immediately after Y.
- (E) W plays immediately after X.

Explanation for Question 2

This question deals with an ordering relationship defined by a set of conditions as to when the seven piano students will perform. As an aid in visualizing this problem we can draw a simple diagram that shows the seven recital slots arranged in order from left to right. Student V is shown in the first slot, as specified by the condition that “V plays first”:



We can immediately fill in one of the empty slots in the diagram. The condition that “V must play either immediately after or immediately before U plays” tells us that U must occupy the second slot in the recital schedule. This is shown below:



Since the question asks us what must be true, we can eliminate incorrect responses by showing that they could be false without violating the conditions. Response (A) is incorrect because the statement that “T plays sixth” is not necessarily true—we can place T in one of the slots other than sixth and still meet all the conditions of the problem. One such recital schedule, with T playing third, is shown in the diagram below:

Order of Recital						
1	2	3	4	5	6	7
V	U	T	X	W	Y	Z

We can develop this schedule as follows. With V, U, and T in the first three positions, there are four positions left for W, X, Y, and Z.

- W must come after X—because of the condition that “W cannot play until X has played”—so if we put X fourth and W fifth, this condition will be met.
- This leaves two possible slots for Y and Z. Y cannot play seventh because of the condition that “Neither T nor Y can play seventh,” so we will place Y sixth and Z seventh.

A check will verify that this schedule meets the given conditions of the problem, including the one that “Either Y or Z must play immediately after W plays.”

The schedule shown in the diagram also demonstrates that response (B) is incorrect. In it, X plays fourth, so it is not correct that the statement, “X plays third,” must be true.

Response (C), “Z plays seventh,” is the credited response. We can show this by demonstrating that:

- all the conditions can be met with Z in the seventh slot, and
- some of the conditions would be violated with Z in any slot other than seventh.

To demonstrate that Z can play seventh, we can refer to the schedule that was developed for the discussion of response (A), above. In it, Z plays seventh, and all the conditions in the problem are met.

To demonstrate that Z cannot play in a slot other than seventh, we can attempt to find another student to play seventh. We already know that neither U nor V can play seventh. Hence, there are four remaining players: T, W, X, and Y. However, a review of the given conditions shows that none of those players can play seventh:

- The third condition states that “Neither T nor Y can play seventh.”
- W can’t play seventh, because there must be a slot following W’s in order to meet the condition, “Either Y or Z must play immediately after W plays.” If W plays seventh, then there is no such slot left for Y or Z.
- For a similar reason X can’t play seventh, because there must be a slot following X’s in order to meet the condition, “W cannot play until X has played.”

Since Z can play seventh and no other player can, then the statement that Z must play seventh is correct and (C) is the credited response.

Response (D) is incorrect because it is not necessarily true that “T plays immediately after Y.” In our discussion of response (A), we developed a schedule in which T plays third and Y plays sixth, yet all conditions are satisfied.

Response (E) is incorrect because, as shown in the diagram below, it is not necessarily true that “W plays immediately after X.” This schedule is obtained by simply reversing the order of players W and Y in the schedule we developed in the analysis of response (A).

A review will show that all of the given conditions are met by this schedule.

Order of Recital						
→						
1	2	3	4	5	6	7
V	U	T	X	Y	W	Z

This question is classified as “difficult.”

Question 3

If U plays third, what is the latest position in which Y can play?

- (A) first
- (B) second
- (C) fifth
- (D) sixth
- (E) seventh

Explanation for Question 3

This question involves the same original conditions as the previous problem, but it begins with a different assumption: “U plays third.” The test taker must determine what effect this assumption would have on the possible positions in which Y can appear in the recital schedule.

The correct response is (D), because student Y can play as late as sixth under the given constraint that “U plays third.” The diagram below shows a recital order that meets all the given conditions and has Y performing in the sixth position.

Order of Recital						
→						
1	2	3	4	5	6	7
T	V	U	X	W	Y	Z

One strategy for arriving at this solution is to work backward to see which position is the latest in which we can place Y and at the same time produce a recital schedule that meets all the given conditions.

Using that approach, we immediately see that Y cannot play as late as seventh, because of the condition that “Neither T nor Y can play seventh.” Backing up and placing Y sixth, we can begin to fill in the schedule, as follows:

Order of Recital						
→						
1	2	3	4	5	6	7
		U			Y	

This schedule has five empty slots, into which we must fit players T, V, W, X, and Z. The following is a series of reasoning steps that can be used:

- From our analysis of the previous question, we know that players T, W, and X cannot play seventh, but that Z can, so we can tentatively place Z in the seventh slot.
- We also know that “Either Y or Z must play immediately after W plays.” If we place W in the fifth slot, this condition will be met.
- By placing V in the second slot, we can meet the condition that “V must play either immediately after or immediately before U plays.”

- We must place the remaining two players, T and X, in the two remaining slots, the first and the fourth. Because the first condition states that “X cannot play first ...,” we will place X in the fourth slot and T in the first. These positions will meet the conditions that apply to T and X: T will avoid playing seventh and X will play before W.

Since Y can play as late as sixth, response (D) is the correct solution.

This question is classified as “moderately difficult.”

Passage for Questions 4 and 5

On a particular Saturday, a student will perform six activities— grocery shopping, hedge trimming, jogging, kitchen cleaning, laundry, and motorbike servicing. Each activity will be performed once, one at a time. The order in which the activities are performed is subject to the following conditions:

Grocery shopping has to be immediately after hedge trimming.

Kitchen cleaning has to be earlier than grocery shopping.

Motorbike servicing has to be earlier than laundry.

Motorbike servicing has to be either immediately before or immediately after jogging.

Question 4

If laundry is earlier than kitchen cleaning, then hedge trimming must be

- (A) fifth
- (B) fourth
- (C) third
- (D) second
- (E) first

Explanation for Question 4

This problem is concerned with determining the order in which six activities will be performed. As with many questions involving relative ordering or ranking, it is likely that you will find it useful to diagram the various relationships given in the passage.

The first condition in the passage tells us that grocery shopping has to be immediately after hedge trimming, which we can abbreviate as follows:

1. HG

The second condition tells us that kitchen cleaning has to be earlier than grocery shopping, which we can abbreviate as follows, where “...” is used to represent “earlier than” (which means any time before, including immediately before):

2. K...G

The third condition tells us that motorbike servicing has to be earlier than laundry, and the fourth condition tells us that motorbike servicing has to be either immediately before or immediately after jogging. These conditions can be abbreviated as follows, where the / symbol is used to represent “or”:

3. M...L
4. MJ/JM

Notice that the information specified in these four conditions can be collapsed into two ordering statements:

- I. K...HG (first and second conditions)

II. MJ/JM...L (third and fourth conditions)

Question 7 introduces the new supposition “laundry is earlier than kitchen cleaning”:

L...K

This new supposition works to further collapse the ordering statements in I and II to the single statement below; that is, if L must be earlier than K, then we know that the activities must be ordered like this:

MJ/JM...L...K...HG

So, with the addition of the new supposition, there are exactly two possible orderings of the six activities, differing only with respect to whether motorbike servicing is immediately before or immediately after jogging:

1	2	3	4	5	6
M	J	L	K	H	G
J	M	L	K	H	G

Question 7 asks what position hedge trimming must be in, given the new supposition. What we see here is that hedge trimming must be the fifth activity performed, and so answer choice (A) is correct.

This question is classified as “easy.”

Question 5

Which one of the following, if substituted for the condition that motorbike servicing has to be earlier than laundry, would have the same effect in determining the order of the student’s activities?

- (A) Laundry has to be one of the last three activities.
- (B) Laundry has to be either immediately before or immediately after jogging.
- (C) Jogging has to be earlier than laundry.
- (D) Laundry has to be earlier than hedge trimming.
- (E) Laundry has to be earlier than jogging.

Explanation for Question 5

This question asks you to select the condition which, if substituted for the third condition in the passage (repeated below), would have the same effect as the original condition.

Third condition: Motorbike servicing has to be earlier than laundry.

In this case, you can deduce that the correct answer choice is (C):

- (C) Jogging has to be earlier than laundry.

The fourth condition in the passage tells you that motorbike servicing has to be either immediately before or immediately after jogging. That is, M and J must be ordered as a block, either MJ or JM, with respect to the other four activities. Thus, if, as the original third condition states, M has to be earlier than L, then we know that J must also be earlier than L. Conversely, if, as the new condition in answer choice (C) states, J has to be earlier than L, then we know that M must also be earlier than L. In short, the third condition and answer choice (C) have exactly the same effect. Therefore, answer choice (C) is correct.

Another way to approach this kind of question is to attempt to eliminate all of the incorrect answer choices. Under this approach, you want to rule out any answer choice that does either of the following:

- rules out outcomes that the original condition allows
- allows outcomes that the original condition rules out

Let's see how this approach would enable us to eliminate answer choices (A), (B), (D), and (E).

Consider the condition presented in answer choice (A):

(A) Laundry has to be one of the last three activities.

We can first ask whether this condition would rule out outcomes that the original third condition allows. To answer this question, we must simply determine whether there is an outcome allowed by the original third condition along with the other conditions in which laundry is one of the first three activities. Here is such an outcome:

1	2	3	4	5	6
M	J	L	K	H	G

Because the original third condition allows this outcome, but the condition in answer choice (A) does not, answer choice (A) cannot be correct.

Consider answer choice (B):

(B) Laundry has to be either immediately before or immediately after jogging.

Again, we want to first determine whether this new condition would rule out outcomes that the original third condition allows. To answer this question, we must simply determine whether there is at least one outcome allowed by the original third condition along with the other conditions in which laundry is neither immediately before nor immediately after jogging. Here is one such outcome:

1	2	3	4	5	6
K	H	G	J	M	L

This outcome, although allowed by the original third condition, would be ruled out by the alternative condition given in answer choice (B). Thus, answer choice (B) cannot be correct.

Next consider answer choice (D):

(D) Laundry has to be earlier than hedge trimming.

Again, we want to first determine whether this new condition would rule out outcomes that the original third condition allows. To answer this question, we must simply determine whether there is at least one outcome allowed by the original third condition along with the other conditions in which laundry is not earlier than hedge trimming. One such outcome was given immediately above: since L is not earlier than H in this outcome, it would be ruled out by the condition in answer choice (D). So, answer choice (D) rules out an outcome that the original third condition allows, and therefore (D) cannot be the correct answer choice.

Finally, consider answer choice (E):

(E) Laundry has to be earlier than jogging.

Again, we want to first determine whether having this new condition would rule out outcomes that are allowed when the original third condition is in place. To answer this question, we must simply determine whether there is at least one outcome allowed by the original third condition along with the other conditions in which laundry is not earlier than jogging. One such outcome was given above: since L is not earlier than J in this outcome, it would be ruled out

by the condition presented in answer choice (E). So, answer choice (E) rules out an outcome that the original third condition allows, and therefore (E) cannot be the correct answer choice.

In sum, answer choices (A), (B), (D), and (E) can all be eliminated because in each case the condition is one that rules out outcomes that the original condition allows. For this particular question, there was no need to consider whether any of the options could be eliminated because they allowed outcomes that the original condition ruled out.

This question is classified as “moderately difficult.”