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ANALYTICAL LECTURE - 2

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The elaborately presented review section will give a detailed picture of the Critical Reasoning problems and equip them with techniques and cracking tools. Try to read the whole lecture carefully. It is also advisable – READ MORE THAN ONCE. This will help you to hone up your sensitivity of judgment. Know that the Critical Reasoning problems are designed for the Graduate level Students. You may find it a little difficult initially.

CRITICAL REASONING:

The principal objective of a critical reasoning question is to test skills in constructing and evaluating arguments. Although you don't need to know much about the constructions of logic, you do need to know a few simple terms to cope up with the critical reasoning questions. Here's what you need to know:

Argument:
An Argument is a conclusion supported by the premises and assumptions. It has three parts:

Conclusion: A conclusion is a claim, the main point of an argument. It is a statement or judgment that follows from one or more reasons.

Premise: A premise is a fact, proposition, or a statement (a piece of evidence) from which a conclusion is made.

Assumption: An assumption is an unstated premise that supports the conclusion.

Example: Nabila was absent in the class. She must have missed the bus.

The First part of the Sentence, *"Nabila was absent …"* is the **Premise** [The fact or evidence].
The **Conclusion** of the sentence, "She must have missed the bus" is based on the premise.

Taken together the premise and the conclusion form an argument. Whether or not the argument and conclusion are valid is another question.

In this case the conclusion is not valid. Nabila could have been absent for a variety of reasons, not necessarily missing the bus.

IDENTIFYING THE CONCLUSION:

While reading an argument passage, you should always try to look for the conclusion first. Ask yourself, *"What's the point? What is the author driving at? What does the author want me to believe?"* The point of the argument is the conclusion. Let's try a simple example.

"Arup plays football. Arup broke his leg.
Therefore, Arup can't play football today."

What's the main point? *"Arup can't play football today."* Did you notice that the conclusion was preceded by the indictor word therefore? Words like therefore are grammatical indications that a conclusion is about to be made.

Using the "WHY Test"

The "Why Test" is a way to check that the statement you chose as the conclusion is supported by the other statements. State what you think is the conclusion, then ask, *"Why?"* The other statements should provide the reasons.

Try using the "Why Test" on the example already given above.

Conclusion: **"**Arup can't play football today"
Why? "Arup plays football. Arup broke his leg"

You can see how the other statements support the conclusion. Notice that if we had chosen the wrong sentence, the other statements would not have supported the conclusion:

Conclusion: "Arup broke his leg"
Why? Arup plays football. Arup can't play football today."

Huh? It doesn't make sense this way, does it? So we know that we have chosen the right conclusion.

IDENTIFYING THE PREMISE(S):

On the other hand, Premises are the parts of argument that support the conclusion. Literally, the premise(s) give the reasons why the conclusion should be accepted. To identify premises, ask yourself, *"What reasons has the author used to persuade me? Why should I believe this argument? What evidence exists?"*

Because language is the test maker's weapon of choice, you must learn to recognize the words that indicate when a premise or conclusion is present. In expressing arguments, authors often use the following words or phrases to introduce premises and conclusions:

Premise Indicators	Conclusion Indicators
because	thus
since	therefore
for	hence
for example	consequently
for the reason that	as a result
in that	so
given that	accordingly
as indicated by	clearly
due to	must be that
owing to	shows that
this can be seen from	conclude that
we know this by	follows that
	for this reason

DEDUCTIVE AND INDUCTIVE ARGUMENTS:

An argument may be defined as ***Deductive*** if it is **IMPOSSIBLE** for the conclusion to be false when all the premises are true.

For Example: All men are mortal.
Sayeed is a man.
Therefore, Sayeed is mortal.

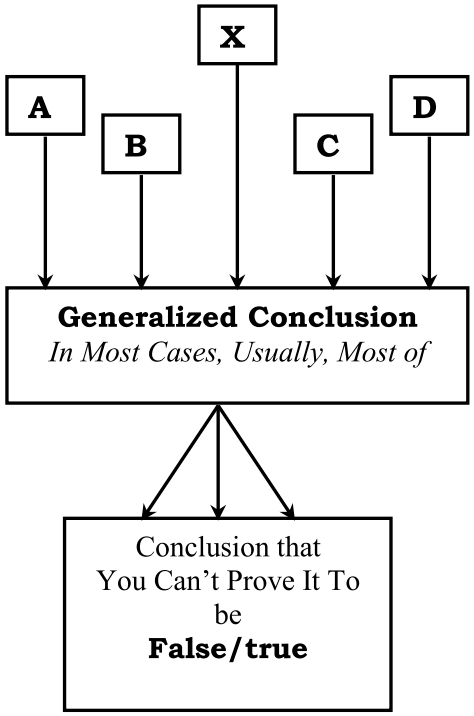
If both the premises are true, the conclusion follows automatically.

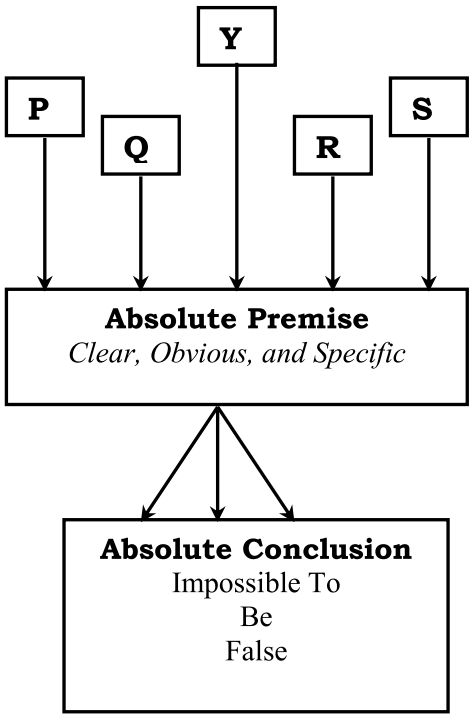
An argument is ***Inductive*** if it is **IMPROBABLE** that the conclusion is false if all premises are true. That is, the conclusion may be false even if all the premises are true. Words like usually, sometimes, generally and some are usually signals of induction.

For Example: Some cars are red.
Ratul has a Car
Therefore, Ratul's car is red.

In the above statement, both the premises are true. However, that does not necessitate the conclusion. All cars are not red. So, Ratul's car may be one of the non-red cars.

Take a Careful Look at the following Diagram:





Students, please carefully watch the following words. These are the most commonly used/confused words in Analytical Ability Questions. If you are confused with the meaning and usage of these words, please ask your teacher.

Argument	Proposition	Conclusion	Impossible
Assumption	Premise	Claim	Improbable

THE EIGHT CRITICAL REASONING QUESTION TYPES:

1. MUST BE TRUE/ MOST SUPPORTED:

These questions ask you to identify the answer choice that is best proven by the information in the stimulus. Question stem example:

"If the statements above are true, which of the following must also be true?"
"Which of the following can be validly inferred from the passage?"

2. ASSUMPTION:

An assumption bridges the gap between an argument"s evidence and conclusion. It is piece of support that isn"t explicitly stated but is essential for the conclusion to remain valid. In other words it is the statement without which the argument falls apart.

- **FINDING THE ASSUMPTION:** ***Denial Test***

The denial test is an effective way of finding the necessary assumption by the author. Simply deny the statement you think as the „possible assumption". See if the argument falls apart. If it does, it is the necessary assumption. If the argument is unaffected, the choice is wrong. Consider the following Argument:

> Saim plays Basketball for IBA.
> Therefore, he must be over six feet tall.

You should recognize that the second sentence is the conclusion. The first one provides the evidence. But is the argument complete? Try to pre-phase an assumption that necessitates the argument.
How about the following Argument:

> All basketball players of IBA are over six feet tall.

Now deny this statement. Is the argument still unaffected? Or it falls apart?

If all the basketball players of IBA are not over six feet tall, then Saim may or may not be over six feet tall. And that is our conclusive proof that the statement above is a necessary assumption.

3. STRENGTHEN/SUPPORT AND WEAKEN QUESTIONS:

Determining an argument"s necessary assumption is also essential to answer the most common question type: Strengthen or Weaken the argument questions.

Attacking the central piece of evidence can weaken the Argument. Another common way is to question the validity of the assumption and proving it unreasonable.

Let"s take the same stimulus we used before but look at it in the context of weakening the Argument. What was the assumption that holds the argument together? "All Basketball players of IBA are over six feet tall".

If it is stated: *Not all basketball players of IBA are over six feet tall*

By this statement we"ve called into doubt the author"s basic assumption, thus weakening or damaging the argument.

But what about strengthening the argument? Again, the key is the necessary assumption: *All basketball players of IBA are over six feet tall.*

TIPS: *Remember, Weakening an argument is not the same thing as disproving the conclusion, and strengthening is not the same as proving it. A Strengthener tips the scale toward believing in the validity of the conclusion; a Weakener tips the scale in the other direction, towards doubting the conclusion.*

4. RESOLVE THE PARADOX:

Every resolve the paradox stimulus contains a discrepancy or seeming contradiction. You must find the answer choice that best resolves the situation. Question stem example:

"Which of the following, if true, would most effectively resolve the apparent paradox above?"

5. METHOD OF REASONING:

Method of reasoning questions ask you to describe, in abstract terms, the way in which, the author made his/her argument. Question stem example:

"Which one of the following describes the technique of reasoning used above?"

6. Flaw in the Reasoning:

Flaw in the reasoning questions ask you to describe, in abstract terms, the error of reasoning committed by the author. Question stem example:

"The reasoning in the astronomer's argument is flawed because this argument…

7. Parallel Reasoning or Resemble Questions:

Parallel reasoning or resemble questions ask you identify the answer choice that contains reasoning most similar in structure to the reasoning presented in the stimulus. Question stem example:

"Which of the following arguments is most similar in its pattern of reasoning to the argument above?"
"Which of the following most closely resembles the meaning used in the argument?"
Remember that you are not supposed to correct the argument. You are supposed to find an answer choice with a similar structure even if the original argument contains a fallacy. Also, be careful to notice exactly what is to be paralleled all of an argument, one speaker, or whatever.

Take the following example:

"My father, my uncles, and both my grandfather became irritating within five years after they had started smoking. I don't want to become irritating. So, I will start drinking."

Which of the following most closely resembles the meaning used in the argument above?

(a) Every time I drink coffee before going to bed, I have trouble falling asleep. I want to sleep well tonight. So I am going to take a sleeping pill.
(b) All of the teenagers in my neighborhood have got tickets for speeding on Baily Road within the year. I don't want to have to pay a fine, so I am going to speed on Baily Road.
(c) The other management trainees on my shift each got married within a week after eating at Star Kabab. I don't want to get married, so I am going to eat at La Bonanza.
(d) Everyone else got transferred out of our department within three years after starting to work hard. I do not want to work in another department. So I'm going to start working harder.

How to solve it?

Let us assume, Smoking = X
Becoming irritating = Y
Not becoming irritating = Y^
Drinking = Z

Here, X is the cause of Y. To prevent Y or to be Y^, the speaker does not want to adopt X. Rather he/she would prefer to adopt an alternate method, that is Z.

X ⟶ Y
Y^ ⟶ Z

Now let us draw similar diagrams for each of the answer options:

For answer choice **(A)** Drinking Coffee = X
Trouble falling asleep = Y
Sound sleep = Y^
Taking sleeping pill = Z

X ⟶ Y
Y^ ⟶ Z

For answer choice **(B)** Speeding on Baily Road = X
Getting ticket = Y
Not getting a ticket/ not paying a fine = Y „

X ⟶ **Y**
Y^ ⟶ **X**

For answer choice **(C)** Eating at Star Kabab = X
Getting Married = Y
Not getting married = **Y^**
Eating at La Bonanza = Z

X ⟶ **Y**
Y^ ⟶ **Z**

For answer choice **(D)** Working hard = X
Getting transferred = Y
Not getting transferred = **Y^**

X ⟶ **Y**
Y^ ⟶ **X**

Here we can see that answer choice (A) & (C) both match the diagram drawn for the statement given in the question. It indicates that both (A) & (C) have the similar logical sequence.

However, in the original argument, the speaker is ***relying on consequences faced by others***. While in answer choice (A) the speaker ***relies on his/her own past experience***. So, answer choice (A) cannot be chosen over choice (C).

Thus the best answer is answer choice (C).

8. EVALUATE THE ARGUMENT:

With Evaluate the Argument questions, you must decide which answer choice will allow you to determine the logical validity of the argument. Question stem example:

"The answer to which of the following questions would contribute most to an evaluation of the argument?"

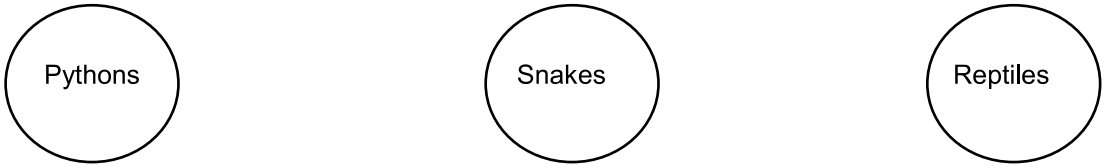
Although there are 8 separate question types, each question type does not appear with the same frequency. The most popular question types are Strengthen/ Weaken, Must be True, Assumption, and Resolve.

USING THE "VENN" DIAGRAM:

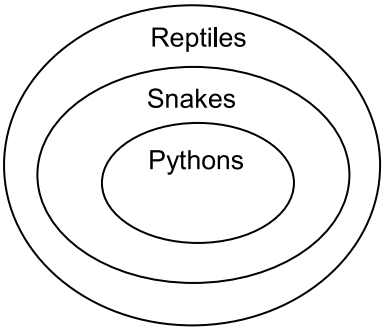
A good way to check whether or not the conclusion follows from premises is to draw a Venn diagram. A simplified form of the Venn diagram may consist of circles, one for each term of an argument. Take a simple argument:

All Pythons are snakes; all snakes are reptiles. Therefore, all Pythons are reptiles.

We can now classify the various things (terms) in this argument and enclose each in a circle. Thus:



The deductive argument can be arranged to show the premises and conclusion, by showing that "Pythons" are totally included in "snakes" & "snakes" are totally included in "reptiles".

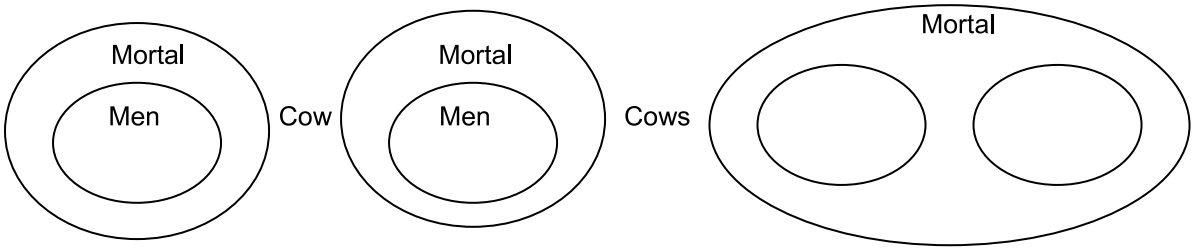


Since, Pythons are totally included in "reptiles", the conclusion of the argument is valid.

Venn diagram can also be used to show if arguments are invalid. For example:

> "Because all men are mortal and all cows are mortal.
> Then all men must be cow."

By placing men, mortals, and cows in circles and arranging them appropriately, we arrive at:



We can see that the conclusion – „all men are cows" does not stand under scrutiny, since men and cows are not in the same small circle. All we can conclude is both men and cows are mortal.

ONLY& ALL – A COMMON ANALYTICAL TRICK:

A very common trick in analytical question is the confusion between „only" & „all". Take the following argument:

> Arafat is a member of Dhaka Club.
> Only Dhaka Club members are industrialists.
> Therefore, Arafat is an industrialist.

The above conclusion is false because the argument did not mention that "All Dhaka Club members" are industrialists. If it were said that all Dhaka club members are industrialists, then we would have concluded that Arafat is an industrialist.

It is clear that the above argument makes it necessary for all industrialists to be Dhaka Club members, but it never necessitate every Dhaka Club member has to be an industrialist.

Take another argument:

Arafat is a member of Dhaka Club.
All Dhaka Club Members are industrialists.
Bush is not a member of Dhaka Club.
Therefore, Bush is not an industrialist.

This conclusion is also invalid, because the statement "All members of Dhaka Club are industrialists" – doesn't say that other people cannot be industrialists. Other people can be industrialists, but all members of Dhaka club must be industrialists.

Beware of the questions that confuse „only" & „all". This is a very commonly used trick of Analytical Ability questions.

BRAINSTORMING:

Example I:

Premise 1: The BUET admission test exam contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

Premise 2: This is a BUET Admission Test Question.

Conclusion: This question contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

This is a deductive argument and the conclusion is obvious & specific.

Example II:

Premise 1: The BUET admission test exam contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

Premise 2: This question contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

Conclusion: This is a BUET Admission test question.

Is this conclusion valid? Defend your answer with necessary Evidence.

Example III:

Premise 1: Only BUET admission test exam contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

Premise 2: This question contains 60 questions; 18 Math, 18 Physics, 18 Chemistry & 6 English questions.

Conclusion: This is a BUET Admission test question.

Now what is your opinion about this conclusion? Differentiate between Example II and Example III.

SUMMARY TO APPROACH CRITICAL REASONING PROBLEMS:

As we indicated earlier, the difficulty with the Logical Reasoning question is that there is such a variety of question stems that it is difficult to provide a mechanical procedure for approaching such problems. The following tips, however, may help make our somewhat abstract discussion of logic easier to apply to actual problems.

PREVIEW QUESTION STEM:

The first point of attack in the Logical Reasoning question is to read the question stem *(the part to which the question mark is attached)* before reading the paragraph or sample argument. The reason for this suggestion is easily explained.

There are many different questions that one might ask about an argument: "How can it be strengthened?" "How can it be weakened" "What are its assumptions?" "How is the argument developed?" - and so on. If you read an argument without focusing your attention on some aspect of it, all of these aspects of argumentation (and even more) are likely to come to mind.

Unfortunately, this is distracting. The most efficient way to handle the Logical Reasoning questions is to read the stem of the question first. Let that guide you in what to look for as you read.

Find the conclusion. This is always helpful, even when it is merely a descriptive statement. Keep in mind the importance of finding the exact conclusion for structuring the argument and assessing its strengths or weaknesses.

Attack the answer choices:

The differences between the answer choices often help you isolate the issues in the problem. Attack the answer choices by:

1. always reading all the answer choices
2. eliminating obviously incorrect choices
3. contrasting remaining choices to isolate the relevant issues

Remember that you are only trying to choose the best answer. The best is often not perfect, and the less than best and thus incorrect answers often have some merit.

What's Next? So there you have it – a quick demonstration of how to use the strategies & techniques for Analytical Ability Problems. Remember that IBA admission test may contain a mixture of both critical & normal problems. It's your IQ that will lead you to a good score in the Analytical Ability Section. Best of Luck!

1. Wasif must be a football player; he is wearing a football jersey.
   The conclusion above is valid only if it is true that:
   (A) Football players often wear football jerseys.
   (B) All football players wear football jerseys.
   (C) Football players never wear any kind of shirt other than football jerseys.
   (D) Football players are required to wear football jerseys.
   (E) Only football players wear football jerseys.

2. Which of the following contradicts the statement that "only the intelligent become rich"?
   (A) Muib was intelligent, yet he was poor his whole life.
   (B) Both "intelligent" and "rich" are relative terms.
   (C) Different people are intelligent in different ways.
   (D) Some intelligent people do not desire to become rich.
   (E) Zarif is stupid yet he amassed a large fortune by the age of 30.

3. Which of the following contradicts the statement that “all the intelligent become rich”?
   (A) Muib was intelligent, yet he was poor his whole life.
   (B) Both “intelligent” and “rich” are relative terms.
   (C) Different people are intelligent in different ways.
   (D) Some intelligent people do not desire to become rich.
   (E) Zarif is stupid yet he amassed a large fortune by the age of 30.

4. It is important to teach students to use computers effectively. Therefore, students should be taught programming in school.
   Which of the following if true most weakens the argument above?
   (A) Only people who use computer effectively are skilled at computer programming.
   (B) Only people skilled at computer programming use computers effectively.
   (C) Some people who use computers effectively cannot write computer programs.
   (D) Some schools teach computers programs more effectively.
   (E) None of the above.

5. Studies in restaurants show that the tips left by customers who pay their bill in cash tend to be larger when the bill is presented on a tray that bears a credit card logo. Consumer psychologists hypothesize that simply seeing a credit-card logo makes many credit card holders willing to spend more because it reminds them that their spending power exceeds the cash they have immediately available.
   Which of the following, if true, most strongly supports the psychologists‟ interpretation of the studies?
   (A) The effect noted in the studies is not limited to patrons who have credit cards.
   (B) Patrons who are under financial pressure from their credit-card obligation tend to tip less when presented with a restaurant bill on a tray with a credit-card logo than when the tray has no logo.
   (C) In virtually all of the cases in the studies, the patrons who paid bills in cash did not possess credit cards.
   (D) In general, restaurant patrons who pay their bills in cash leave larger tips than do those who pay by credit cards.
   (E) The percentage of restaurant bills paid within a given brand of credit card increases when that credit card‟s logo is displayed on the tray with which the bill is presented.

6. All elephants are gray. And all mice are gray.
   Therefore, I conclude that all elephants are mice.
   The argument above is invalid because:
   (A) The writer bases his argument on another argument that contains circular reasoning.
   (B) The writer has illogically classified two disparate groups together when there is no relationship between them except that they have the same color.
   (C) The writer has made a mistaken analogy between two dissimilar qualities.
   (D) The writer has used a fallacy that involves the ambiguous description of animals by their color.
   (E) The writer has failed to express his reasoning fully.

7. While many people think of genetic manipulation of food crops as being aimed at developing larger and larger plant varieties, some plant breeders have in fact concentrated on discovering or producing dwarf varieties, which are roughly half as tall as normal varieties.
   Which of the following would, if true, most help to explain the strategy of the plant breeders referred to above?
   (A) Plant varieties used as food by some are used as ornamentals by others.
   (B) The wholesale prices of a given crop decrease as the supply of it increases.
   (C) Crops once produced exclusively for human consumption are often now used for animal feed.
   (D) Short plants are less vulnerable to strong wind and heavy rains.
   (E) Nations with large industrial sectors tend to consume more processed grains.

8. Zafar: I wish you wouldn"t drink so much beer, it"s bad for your health.
Muib: How can you say that? I don"t weigh a pound more than I did a year ago.
Which of the following responses would most strengthen Muib"s argument?

(A) You weigh ten pounds more than you did six years ago.
(B) Most people who drink a lot of beer do put on weight.
(C) If you keep drinking so much beer, you will soon put on weight.
(D) Putting on weight is not the only harmful effect of drinking beer.
(E) You can put on weight on other ways than by drinking.

9. All good athletes want to win, and all athletes who want to win eat a well-balanced diet; therefore, all athletes who do not eat a well-balanced diet are bad athletes.
If the assumptions of the argument above are true, then which of the following statements must be true?

(A) No bad athlete wants to win.
(B) No athlete who does not eat a well-balanced diet is a good athlete.
(C) Every athlete who eats a well-balanced diet is a good athlete.
(D) All athletes who want to win are good athletes.
(E) Some good athletes do not eat a well-balanced diet.

10. If your TV was made after 1992, it has a stereo feature.

The statement above can be deduced logically from which of the following statements?

(A) Only if a TV was made after 1992 could it have a stereo feature.
(B) All TVs made after 1992 have a stereo feature.
(C) Some TVs made before 1992 had a stereo feature.
(D) Some stereo features are found in TVs made after 1992.
(E) Stereo features for TVs were fully developed only after 1992.

11. I am afraid that Raiad will never be an outstanding footballer again. Last month he broke his knee and the doctors failed to cure that.

The argument above is based upon which of the following assumptions?

1) One must have healthy knees to play football.
2) How well one plays football may be influenced by the condition of one"s knees.
3) Healthy knees is a must for a professional football career

(A) 1 only (B) 2 only
(C) 1 & 2 only (D) 2 & 3 only
(E) 1, 2 & 3 together, but not individually

12. Blooming flowers are beautiful, even if no one is there to appreciate them."

This statement would be a logical contradiction to which of the claims?

(A) People will see only what they want to see.
(B) Beauty is only skin deep.
(C) There is no accounting for taste.
(D) Beauty exists only in the eye of the beholder.
(E) The greatest pleasure available to mankind is the contemplation of beauty.

13. In one Central Asian community, it is customary for both men and women to keep their hair cut extremely short. However, some of the bestselling items in the community market are beaded hair bands that work only with long hair.
Which of the following statements, if true, can best reconcile this apparent discrepancy?

(A) The store obtains its beaded hair bands from another Central Asian community where more residents have long hair.
(B) The quality of the beaded hair bands in the community market is superior to that of hair bands available elsewhere.
(C) The few residents in the Central Asian community who do have long hair tend to share hair bands with one another.
(D) The community market caters to a large number of Western tourists, many of whom have long hair.
(E) The quality of the beaded hair bands in the community market is roughly equivalent to the quality of beaded hair bands that can be purchased in other nearby community markets.

14. Only a reduction of 10 percent in the number of scheduled flights using Greentown"s airport will allow the delays that are so common there to be avoided. Hevelia airstrip, 40 miles away, would, if upgraded and expanded, be an attractive alternative for fully 20 percent of the passengers using Greentown airport. Nevertheless, experts reject the claim that turning Hevelia into a full-service airport would end the chronic delays at Greentown.

Which of the following, if true, most helps to justify the experts" position?

(A) Turning Hevelia into a full-service airport would require not only substantial construction at the airport itself, but also the construction of new access highways.
(B) A second largely undeveloped airstrip close to Greentown airport would be a more attractive alternative than Hevelia for many passengers who now use Greentown.
(C) Hevelia airstrip lies in a relatively undeveloped area but would, if it became a full-service airport, be a magnet for commercial and residential development.
(D) If an airplane has to wait to land, the extra jet fuel required adds significantly to the airline"s costs.
(E) Several airlines use Greentown as a regional hub, so that most flights landing at Greentown have many passengers who then take different flights to reach their final destinations.

15. A major network news organization experienced a drop in viewership in the week following the airing of a controversial report on the economy. The network also received a very large number of complaints regarding the report. The network, however, maintains that negative reactions to the report had nothing to do with its loss of viewers.

Which of the following, if true, most strongly supports the network"s position?

(A) The other major network news organizations reported similar reductions in viewership during the same week.
(B) The viewers who registered complaints with the network were regular viewers of the news organization"s programs.
(C) Major network news organizations publicly attribute drops in viewership to their own reports only when they receive complaints about those reports.
(D) This was not the first time that this network news organization has aired a controversial report on the economy that has inspired viewers to complain to the network.
(E) Most network news viewers rely on network news broadcasts as their primary source of information regarding the economy.