Chapter 30

Critical Reasoning

INTRODUCTION

Critical Reasoning (CR) is ability to reason clearly to evaluate and judge arguments. You are using this skill a lot during your everyday life while reading newspapers or watching movies. When you think that the movie is pushing the limit of the Reasonable or the news sounds less reasonable than the movie that was pushing the limit, you are using your Critical Reasoning skills to produce these conclusions. The argument you meet can be anything from a classical argument to an advertisement or a dialog. Critical Reasoning questions will ask you to manipulate the argument to weaken/ strengthen it, find the conclusion, assumption, explanation, do an inference or supplement a statement, etc. Whatever it is that you have to do, you will need 2 things to succeed: know the basic structure of arguments and clearly understand the argument.

In general, most of them, arguments consist of evidence, usually 2 pieces, a conclusion - the main point of an argument, and an assumption - the bridge between the evidence and conclusion. The majority of the arguments you encounter on the test will be 3 step arguments:

Evidence 1 + Evidence 2 = Conclusion.

EXAMPLE 1. Last week Mike was detained for shoplifting at a groceries store near his house, but he has been a Christian for 10 years, therefore, the police must have been wrong accusing him in stealing.

Note : There are two pieces of evidence: *'Mike was accused of stealing'* and that *'he is a Christian'*. The conclusion is that **'the police are wrong'**. Therefore, our huge assumption here is that '*a Christian could not have stolen anything.'*

EXAMPLE 2. There are a lot of mosquitoes outside today, please do not turn on the light in the room because a lot of them will fly in.

Note : Here the evidences are *'there are a lot of mosquitoes outside today'* and *'do not turn on the light'*. The conclusion is that '**Many will fly in**' and the assumption is 'mosquitoes will approach the light.'

There is no set scheme for structure in CR, but since the majority of the arguments are only a few sentences long,

the conclusion usually comes in the first or the last sentence. However, some of the arguments encountered will not have a conclusion at all or will have just an implied one.

Strategy to Crack Critical Reasoning Questions

This strategy is not the easiest way to do CR (the easiest would be read-and-answer), but it lets you get the most questions right spending less time per correct answer.

1. Read the questions first; this is needed so that you would know what to look for and what to do: find an assumption, strengthen/weaken, infer something or else; do not worry about the details in the question, read for keywords, such as strengthen, deny, or explain. [Use symbols for convenience, e.g. + for strengthen or – for weaken].
2. Read the passage very attentively because in contrast to Reading Comprehension, there is very little text here and mostly everything is important; try to read only once. Reread if required.
   As you read, look for the problem in the passage (evaluate how convincing it is)
3. Paraphrase (reword) the passage. It is a very important step because when you do a paraphrase, you check whether you understood the passage and at the same time you extract the skeleton of the argument, making it easier to identify the conclusion and the assumption. Very often, the paraphrase of the passage will be pretty close to the conclusion. It is not surprising, since the conclusion is the main point and evidence just supports it.) Your paraphrase should be as close to the text and as simple as possible so that you would understand it easily and at the same time could fully trust it. Do not make it too general nor too detail oriented. When you do a paraphrase, do it in three steps: Evidence1, Evidence2, and Conclusion; put "therefore" word before you start your conclusion, this will help you to set it off.
4. Read the question again (now with more understanding of what is being asked; reading the question 2 times, it will also help you to make sure your answer exactly what is stated and that you understand the question.)
5. Answer before reading the answer choices. There are two reasons for this :
   (i) if you can think of the correct answer or at least the general direction that the answer choice needs to be, you will identify it among the wrong choices much faster, thus spend less time reading the answers, which usually take 30 seconds to cover.
   (ii) Often students are seduced by the author's wording. One reads a few words that were used in the passage and the brain identifies this choice with the passage, thus making it seem more right that it needs to be. The more problems you practice with, the more chance is you will guess the right answer even before reading it.
6. Go through the answers, first time scan them for YOUR answer choice (usually you will guess correctly in 60-70% of cases), if you did not find it, reread them more attentively.

7. Draw a grid to eliminate the wrong answers easier. Use "✓" for a sure answer, "×" for a definitely wrong answer choice, and "?" for an answer that may be right or questionable. This will help to concentrate only on a few answer choices and will prevent you from reading same answers several times if you get confused or keep having troubles locating the right answer.

TYPES OF CRITICAL REASONING QUESTIONS

Critical reasoning questions will ask you to:

1. Identify the inference / Must be true question
2. Identify the assumption.
3. Strengthen an argument.
4. Weaken an argument.
5. Select the best conclusion/Main Point
6. Identify the paradox
7. Evaluation/ Reasoning
8. Identify a parallel argument/Structure.

1. Identify the Inference / Must be True Question

These type of questions are extremely common. An **Inference** means the same thing as "must be true". **Conclusions** differ from **inferences** in that conclusions are the result of premises and inferences are something that must be true. The following are the typical Inference (Must be true) based Questions:

- If the statements above are true, which of the following must also be true?
- Which of the following is [implied, must be true, implicit, most reasonably drawn] in the passage above?
- Which of the following inferences is best supported by the statement made above?

❑ Shortcut Approach

How to tackle "Identify the inference / Must be true questions":

- Read the stimulus and look for the argument.
- Note that Must Be True questions may not contain an argument. They may just be a series of facts. Nevertheless, try to find the argument.
- Avoid choices which contain absolute statements - never, always, none, only etc. Although these words might appear in some correct choice, you should be very sure about them.
- Some of the options can be eliminated as they go beyond the scope of the passage. Note that an inference can be based on only some of the information provided and not the complete passage.

EXAMPLE 1. Stimulus Argument

Increases in funding for police patrols often lower the rate of crimes of opportunity such as petty theft and vandalism by providing visual deterrence in high-crime neighborhoods. Levels of funding for police patrols in some communities are increased when federal matching grants are made available.

Question : Which of the following can be correctly inferred from the statements above?

Options :

(a) Areas with little vandalism can never benefit from visual deterrence.

(b) Communities that do not increase their police patrols are at higher risk for crimes of opportunity late at night.

(c) Federal matching grants for police patrols lower the rate of crimes of opportunity in some communities.

(d) Only federal matching grants are necessary to reduce crime in most neighborhoods.

(e) None of these

Sol.

(c) is a summary of the information provided; it is the logical end of a chain of reasoning started in the stimulus argument. The sequence of events goes like this :

Increased funding → Increased visual deterrence → Lower crime

The last statement could be mapped as follows:

Federal grants → Increased patrol funds

(c) makes the chain complete by correctly stating that federal grants can lead to lower crime in some communities. Now the logical chain becomes:

Federal grants → Increased funding → Increased visual deterrence → Lower crime

The other answer choices may not be correctly inferred because they go beyond the scope of the argument. They may be objectively, factually correct, or they may be statements that you would tend to agree with. However, you are limited to the argument presented when choosing a correct answer.

2. Identify the Assumption

An assumption is an unstated premise that supports the author's conclusion. It's the connection between the stated premises and the conclusion., which together forms the passage. An assumption is something that the author's conclusion depends upon. Assumption questions are extremely common and have types that look like this:

- Which of the following most accurately states a hidden assumption that the author must make in order to advance the argument above?
- Which of the following is an assumption that, if true, would support the conclusion in the passage above?

❑ Shortcut Approach

How to approach "Identify the assumption Questions"

- Look for gaps between the premises and the conclusion. Ask yourself why the conclusion is true. Before you progress to the answer choices, try to get feel of what assumption is necessary to fill that gap between the premises.
- Beware of extreme language in the answer choices of assumption questions. Assumptions usually are not extreme. "Extreme" answer choices usually contain phrases such as always, never, or totally.

EXAMPLE 2. Stimulus Argument

Traditionally, decision making by doctors that is carefully, deductively reasoned has been considered preferable

to intuitive decision making. However, a recent study found that senior surgeons used intuition significantly more than did most residents or mid-level doctors. This confirms the alternative view that intuition is actually more effective than careful, methodical reasoning.

Question : The conclusion above is based on which of the following assumptions?

Options :

(a) Senior surgeons are more effective at decision making than are mid-level doctors.

(b) Senior surgeons have the ability to use either intuitive reasoning or deductive, methodical reasoning in making decisions.

(c) The decisions that are made by mid-level and entry-level doctors can be made as easily by using methodical reasoning as by using intuitive reasoning.

(d) Senior surgeons use intuitive reasoning in making the majority of their decisions.

(e) None of these

Sol.

(a) The correct answer is (a), which provides a missing link in the author's reasoning by making a connection from the evidence: that intuition is used more by senior surgeons than other, less-experienced doctors, and the conclusion: that, therefore, intuition is more effective. None of the other choices helps bridge this gap in the chain of reasoning. Although some of the other statements may be true, they are not responsive to the question. In fact, they mostly focus on irrelevant factors such as appropriateness, ease of application, ability, etc.

3. Strengthen an Argument

Assumptions connect premises to conclusions. An argument is strengthened by strengthening the assumptions. Here are some examples of Strengthen question types :

- The conclusion would be more properly drawn if it were made clear that...
- Which of the following, if true, would most strengthen the conclusion drawn in the passage above?

❑ Shortcut Approach

How to approach "Strengthen an argument"

- Once you have identified the argument of the passage, i.e. the evidence(s) + conclusion, try putting in each option with the argument. Check if the assumption(s) you have drawn is (are) strengthened if you accept the content of the option as true.

EXAMPLE 3. Stimulus Argument

Three years after the Bhakra Nangal Dam was built, none of the six fish species native to the area was still reproducing adequately in the river below the dam. Because the dam reduced the average temperature range of the water from approximately 40° to approximately 10°, biologists have hypothesized that sharp increases in water temperature must be involved in signaling the affected species to begin their reproduction activities.

Question :

Which of the following statements, if true, would most strengthen the scientists' hypothesis?

Options :

(a) The native fish species were still able to reproduce in nearby streams where the annual temperature range remains approximately 40°.

(b) Before the dam was built, the river annually overflowed its banks, creating temporary backwaters that were used as breeding areas for the local fish population.

(c) The lowest temperature ever recorded in the river prior to dam construction was 30°; whereas the lowest recorded river temperature after construction was completed has been 40°.

(d) Non-native fish species, introduced after the dam was completed, have begun competing with the native species for food.

(e) None of these

Sol.

(a) most strengthens the conclusion that the scientists reached. It does so by showing that there is a control group. In other words, a similar population, not subjected to the same change as the population near the dam, did not experience the same type of result. Here the basic assumption about the conclusion that scientists reached is that 'because of the reduction of average temperature range of the water, the reproduction of the native fish species has reduced drastically'. Option (a) clearly strengthens the assumption.

4. Weaken an Argument

Assumptions connect premises to conclusions. An argument is weakened by weakening the assumptions. Here are some examples of Weaken question types:

- Which of the following, if true, would weaken the conclusion drawn in the passage above?
- The argument as it is presented in the passage above would be most strengthened if which of the following were true?

❑ Shortcut Approach

How to approach "Weaken an argument"

- Once you have identified the argument of the passage, i.e. the evidence(s) + conclusion, try putting in each option with the argument. Check if the assumption(s) you have drawn is (are) weakened if you accept the content of the option as true.

EXAMPLE 4. Stimulus Argument

A drug that is very effective in treating some forms of cancer can, at present, be obtained only from the bark of the Raynhu, a tree that is quite rare in the wild. It takes the bark of approximately 5,000 trees to make one pound of the drug. It follows, then, that continued production of the drug must inevitably lead to the raynhu's extinction.

Question :

Which of the following, if true, most seriously weakens the above conclusion?

Options :

(a) The drug made from Raynhu bark is dispensed to doctors from a central authority.

(b) The drug made from the Raynhu bark is expensive to produce.
(c) The Raynhu generally grows in largely inaccessible places.
(d) The Raynhu can be propagated from cuttings and cultivated by farmers.
(e) None of these

Sol.

(d) provides an alternate source of the Raynhu bark. Even though the tree is rare in the wild, the argument is silent on the availability of cultivated trees. The author of the argument must be assuming that there are no Raynhu trees other than those in the wild, in order to make the leap from the stated evidence to the conclusion that the Raynhu is headed for extinction. The option (d) weakens the assupmtion - 'there are limited raynhu trees' - by saying that there are other ways as well for the propogation of Raynhu. The other answer choices all contain information that is irrelevant. Note that the correct choice does not make the conclusion of the argument impossible. In fact, it is possible that there may be domesticated Raynhu trees and the species could still become extinct. Answer choice (d) is correct because it makes the conclusion about extinction less likely to be true.

5. Conclusion / Main Point Question

In Main Point / Conlcusion questions, you have to identify the conclusion of an argument. You are trying to find the author's point and should approach this question in a similar way to the reading comprehension main point questions. They come in several different formats:

- The main point of the passage is that...
- Which of the following statements about... is best supported by the statements above?
- Which of the following best states the author's conclusion in the passage above?
- Which of the following conclusions can be most properly drawn from the data above?

The conclusion of arguments in Main Point questions is usually not directly stated. To find the conclusion, identify the premises and then identify the conclusion drawn from the premises. Main Point questions differ from the other Critical Reasoning questions in that the argument in the stimulus is usually valid. (In most other Critical Reasoning questions the reasoning is flawed.) Conclusion questions require you to choose the answer that is a summary of the argument.

❑ Shortcut Approach

How to approach "Main Point Questions":

- Main Point answers must be within the scope of the passage.
- Your opinions or information outside of the passage are always outside of the scope.
- Some of the options given can be out of the scope of the passage.

- Knock out answers with extreme wording. Main Point answers typically do not use *only, always, never, best* or any strong words that leave little room.

EXAMPLE 5. Stimulus Argument

People should be held accountable for their own behaviour, and if holding people accountable for their own behaviour entails capital punishment, then so be it. However, no person should be held accountable for behaviour over which he or she had no control.

Question : Which of the following is the most logical conclusion of the argument above?

Options :

(a) People should not be held accountable for the behaviour of other people.
(b) People have control over their own behaviour.
(c) People cannot control the behaviour of other people.
(d) People have control over behaviour that is subject to capital punishment.
(e) None of these

Sol.

(b) The correct response is (b). The argument includes the following two premises:

Premise 1: People are accountable for their own behaviour.

Premise 2: People are not accountable for behaviour they cannot control.

Here's the logical conclusion based on these two premises:

Conclusion: People can control their own behaviour.

(a) would require that people never have control over the behaviour of other people. Yet the argument does not provide this premise.
(b) would require that people should not be held accountable for the behaviour of other people. Yet the argument does not provide this premise.
(d) is not inferable. The argument allows for the possibility that a person might not have control over another person's behaviour which is subject to capital punishment.
(e) None of these

6. Identify the Paradox

These questions present you with a paradox, a seeming contradiction or discrepancy in the argument, and ask you to resolve it or explain how that contradiction could exist. In other words, there are two facts that are both true, and yet they appear to be in direct conflict with one another. Here are some examples of the ways in which these questions are worded:

- Which of the following, if true, would help to resolve the apparent paradox presented above?
- Which of the following, if true, contributes most to an explanation of the apparent discrepancy described above?

❑ Shortcut Approach

How to approach "Identify the paradox questions"

- Read the argument and find the apparent paradox, discrepancy, or contradiction.

- State the apparent paradox, discrepancy, or contradiction in your own words.
- Use process of elimination. The best answer will explain how both sides of the paradox, discrepancy, or contradiction can be true. Eliminate answers that are out of scope.

EXAMPLE 6. Stimulus Argument

Town Y is populated almost exclusively by retired people and has almost no families with small children. Yet Town Y is home to a thriving business specializing in the rental of furniture for infants and small children.

Question : Which of the following, if true, best reconciles the seeming discrepancy described above?

Options :

(a) The business specializing in the rental of children's furniture buys its furniture from distributors outside of Town Y.

(b) The few children who do reside in Town Y all know each other and often stay over night at each other's houses.

(c) Many residents of Town Y who move frequently prefer to rent their furniture rather than buy it outright.

(d) Many residents of Town Y must provide for the needs of visiting grandchildren several weeks a year.

(e) None of these

Sol.

(d) The correct answer (d), explains why a town of mostly retired residents might need to rent children's furniture. The other answer choices all contain irrelevant information. This further illustrates the fact that, on all question types, if you eliminate the irrelevant choices, the remaining choice will most likely be correct.

7. Evaluation/ Reasoning Based Questions

Reasoning questions ask you to describe how the argument was made, not necessarily what it says. These questions are closely related to assumption, weakening, and strengthening questions. The correct answer identifies a question that must be answered or information that must be gathered to determine how strong the stimulus argument is. The information will be related to an assumption that the author is making. Another type of question that you will encounter asks you to *identify a flaw* in the stimulus argument. The question tells you that there is a problem with the logic of the argument. You just have to choose the answer that describes the flaw. Here are some examples of the ways in which these questions are worded:

- How does the author make his point?
- A major flaw in the argument above is that it...
- A's response has which of the following relationships to B's argument?

❑ Shortcut Approach

How to approach Reasoning Questions

- Read the argument and find the conclusion.
- State the reasoning in your own words.
- Check whether the reasoning given in the various options fall in line with the reasoning described above.

EXAMPLE 7. Stimulus Argument

Some observers have taken the position that the recently elected judge is biased against men in divorce cases that involve child custody. But the statistics reveal that in 40% of such cases, the recently elected judge awards custody to the fathers. Most other judges award custody to fathers in only 20%–30%of their cases. This record demonstrates that the recently elected judge has not discriminated against men in cases of child custody.

Question : The argument above is flawed in that it ignores the possibility that

Options :

(a) A large number of the recently elected judge's cases involve child custody disputes.

(b) The recently elected judge is prejudiced against men in divorce cases that do not involve child custody issues.

(c) The majority of the child custody cases that have reached the recently elected judge's court have been appealed from a lower court.

(d) The evidence shows that men should have won custody in more than 40% of the recently elected judge's cases involving divorcing fathers.

(e) None of these

Sol.

(d) The correct answer (d), points out a flaw in the argument. Specifically, it points out that the author of the argument was comparing the recently elected judge to other judges, not to the evidence presented in the recently elected judge's cases. In other words, the author of the argument made an unwarranted assumption that the recently elected judge did not rule against many men in custody battles where the evidence clearly favored the men. As with strengthening and weakening questions, the correct answer in flaw questions often involves unwarranted assumptions.

EXAMPLE 8. Stimulus Argument

Although dentures produced through a new computer-aided design process will cost more than twice as much as ordinary dentures, they should still be cost effective. Not only will fitting time and X-ray expense be reduced, but the new dentures should fit better, diminishing the need for frequent refitting visits to the dentist's office.

Question : Which of the following must be studied in order to evaluate the argument presented above?

Options :

(a) The amount of time a patient spends in the fitting process versus the amount of money spent on X-rays

(b) The amount by which the cost of producing dentures has declined with the introduction of the new technique for producing them

(c) The degree to which the use of the new dentures is likely to reduce the need for refitting visits when compared to the use of ordinary dentures

(d) The amount by which the new dentures will drop in cost as the production procedures become standardized and applicable on a larger scale

(e) None of these

Sol.

(c) The correct answer (c), highlights an assumption in the stimulus argument. It shows that the author must be assuming that the reduction in refitting with the new dentures compared to ordinary dentures is significant in order to conclude that that difference will help offset an initial outlay that is twice as much. In other words, if you answer the question posed by answer choice (c) with "not much," the argument is weakened. If you answer it with "a tremendous amount," the argument is strengthened. The other answer choices are all irrelevant because no matter what the answers are, there is no impact on the relationship between the evidence presented in the stimulus argument and its conclusion.

8. Identify a Parallel Argument / Structure.

The last type of Critical Reasoning question is the *parallel structure* question. In this type of question, you must choose the answer that has the same structure as the stimulus argument. In other words, you have to find the argument that is analogous to the given argument in that it includes the same relationship between the evidence presented and the conclusion. Here are some examples of the ways in which these questions are worded:

- Which of the following is most like the argument above in its logical structure?
- Which of the following is a parallel argument to the above given argument?

EXAMPLE 9. Stimulus Argument

It is true that it is against international law to provide aid to certain countries that are building nuclear programs. But, if Russian companies do not provide aid, companies in other countries will.

Question : Which of the following is most like the argument above in its logical structure?

Options :

(a) It is true that it is against United States policy to negotiate with kidnappers. But if the United States wants to prevent loss of life, it must negotiate in some cases.

(b) It is true that it is illegal to sell diamonds that originate in certain countries. But there is a long tradition in Russia of stockpiling diamonds.

(c) It is true that it is illegal for an attorney to participate in a transaction in which there is an apparent conflict of interest. But, if the facts are examined carefully, it will clearly be seen that there is no actual conflict of interest in the defendant's case.

(d) It is true that it is against the law to steal cars. But someone else certainly would have stolen that car if the defendant had not done so first.

(e) None of these

Sol.

(d) The correct answer (d), has the same structure as the stimulus argument. If you just replace "aid to developing nuclear powers" with "car theft," and "Russian companies" with the "defendant," it is essentially the same argument. Sometimes the parallel structure is easier to see if you use symbols to represent the terms of the argument: It is true that X is illegal. But, if Y doesn't do it, others will. Here X is stealing cars and Y is the defendant.

❑ Shortcut Approach

How to crack Parallel Argument Question?

- Read the argument and find the conclusion.
- Try to establish a reasoning structure between the premise and the condusion.
- Read out the options and look out for one having the similar reasoning structure.

ebooks Reference		*Page No.*
Practice Exercises with Hints & Solutions	–	P-199-208
Chapter Test	–	C-59-60
Past Solved Papers		