

Selective Thinking Skills • Lesson 3

Checking Reasoning To Detect Errors

Detecting reasoning error questions are questions that ask you to identify an error or flaw in the reasoning of an argument. Such an error in reasoning may occur if something has not been thought of or has been assumed when drawing a conclusion.

To successfully answer these types of questions we can follow these steps:

1. Read the question first.
2. Read the argument and identify the premise and conclusions.
3. Analyse the conclusions and try to detect any inconsistencies based on the information provided.
4. Eliminate wrong answers by detecting errors in any of the conclusions.

Case 1: Students Are Asked To Identify The Mistake In Reasoning

The questions are typically structured in the same manner.

1. A premise is given.
2. Person A makes reasoning based on the given premise.
3. The questions ask students to identify a sentence that shows a mistake in Person A's reasoning.



WORKED EXAMPLE 1

“Jarrah’s music teacher has promised that any student who did not have a chance to perform in the Spring concert will definitely be chosen to play in the Autumn concert.”

Jarrah: “ Well I did perform in the Spring concert. So that means I definitely won’t be chosen for Autumn. I’ll have to find something else to do.”

Which one of the following sentences shows the mistake Jarrah has made?

- A.** Just because anyone who did not play in the Spring will make Autumn, it does not mean that anyone who played in Spring will not play in autumn.
- B.** Just because somebody is chosen for a concert it does not mean they will actually perform.
- C.** Just because Jarrah was chosen to perform at a concert in the past, it does not mean he will be chosen again in the future.
- D.** Just because someone did not like to perform in the Spring concert, it does not mean that they would have liked to.

A is correct. Although Jarrah played in the spring, it is not stated in the context that those who played in the spring will definitely not play in the autumn.

B is correct. This statement is irrelevant to the reasoning that Jaarah made.

C is incorrect. This statement is irrelevant to the reasoning that Jaarah made.

D is incorrect. This statement is irrelevant to the reasoning that Jaarah made.



Case 2: Students Are Asked To Determine Whose Reasoning Is Correct

1. A premise (a piece of factual statement) is given.
2. Person A makes a conclusion/ logical reasoning based on the given premise.
3. Person B makes another conclusion/ logical reasoning based on the given statement.
4. The questions ask students to determine whose conclusion is correct.
 - Person A only.
 - Person B only.
 - Both Person A and B.
 - Neither Person A nor B.

SUCCESS HINT

It is important for you to be aware of the modality (tone) that is being used in the conclusion. The two types of modality are:

- High modality: conveys a high level of certainty that something will happen (eg. must and definitely).
- Low modality: conveys events that have a possibility of happening (eg. may).

WORKED EXAMPLE 2

Blue coloured flowers are the only types of flowers that attract butterflies.

Jack: If you see a flower with a butterfly on it, you know the flower must be blue”

Amelia: “And if you see a plant that you know is not blue with a butterfly on it, then it must not be a flower”

If the information in the box is true, whose reasoning is correct?

- A.** Jack only.
- B.** Amelia only.
- C.** Both Jack and Amelia.
- D.** Neither Jack nor Amelia.



A is incorrect. Jack's reasoning is correct since the premise states that only blue flowers attract butterflies hence a flower with a butterfly on it must be blue.

B is incorrect. Amelia's reasoning is correct given that the premise states that only blue flowers attract butterflies. If there is a butterfly on a plant that is not blue we can say that it must be a different type of plant and not a flower.

C is correct. Since both Jack's and Amelia's reasoning are correct this option answers the question best.

D is incorrect. By the process of elimination, this is incorrect.

WORKED EXAMPLE 3

"Only those students who attend the after-school meeting today will be allowed to go to the school's swimming carnival on Thursday"

Mia: "Jason is going to the meeting today so he will definitely be able to go to the excursion"

Tyles: "Nathan is going to swimming practice after school, so he won't be able to go to the carnival"

If the information in the box is true, whose reasoning is correct?

- A. Mia only
- B. Tyler only
- C. Both Mia and Tyler
- D. Neither Mia nor Tyler

A is incorrect. We know that only students that attend the meeting will be allowed to go to the carnival. However, Mia uses high modality language when she says 'definitely and creates a high level of certainty'. However, there may be other reasons why a student is not allowed at the carnival therefore we cannot say that Jason will definitely be allowed to go to the carnival.

B is correct. Only students that attend the meeting will be allowed to go to the carnival. Since Nathan is not attending the meeting it is logical to deduce that he will not be allowed at the carnal on Thursday.



C is incorrect. As a process of elimination.

D is incorrect. As a process of elimination.

Activity 1: Complete the following questions by identifying the mistakes in the reasonings made.

1.

A school asked their students to complete a questionnaire about their study habits. The survey found that students who spent more time playing video games scored lower grades (on average) than students who didn't.

Emily: "This shows that video games negatively impact academic performance."

Which one of the following sentences shows the mistake that Emily has made?

- A.** It could be that students who are struggling with their academics are using video games as a way to cope with stress.
- B.** It could be that students who don't play video games spend more time in extracurricular activities and have less time to study.
- C.** It could be that some students have access to educational video games that help them improve their academic skills.
- D.** It could be that students who perform well academically are simply not interested in playing video games.



2.

Sarah wants to join her school's leadership program. To qualify, students must have at least one year of prior experience in a leadership role.

Alex: "Sarah was the class monitor last year, so she meets the requirement for the leadership program this year. She will definitely be selected."

Which one of the following sentences shows the mistake Alex has made?

- A. Sarah might not have demonstrated effective leadership skills during her time as a class monitor.
- B. There might be limited spots available in the leadership program, and it could be highly competitive.
- C. Prior leadership experience in school might not be the only criterion for selection into the program.
- D. Other students might also have prior leadership experience, making it a competitive selection process.

3.

Ms Johnson, the teacher, tells her students that those who did not complete all their homework assignments will not be able to participate in silent reading time

Amy: "I finished all my work, so I will definitely get to have silent reading time."

Which of the following sentences shows the mistake that Amy has made?

- A. Amy did not finish all her homework assignments.
- B. There may be another reason Amy is not able to have silent reading time.
- C. Amy might deserve to have silent reading time even if she did not complete all her assignments.
- D. We do not know if all the other students finished their homework assignments.



4.

In a baking competition, prizes are awarded to the bakers who win first, second, and third place, as well as to those who use a secret ingredient correctly.

Sophia: “Well I heard the judges say that one baker used the secret ingredient correctly, so that means four bakers will receive prizes”.

Which of the following sentences shows the mistake that Sophia has made?

- A. Some bakers might deserve a prize even if they didn't use the secret ingredient correctly.
- B. The baker who used the secret ingredient correctly might also win first, second, or third place.
- C. It's possible that multiple bakers used the secret ingredient correctly.
- D. We do not know the total number of bakers participating in the competition

5.

To be eligible for the school's drama club, students must either have attended at least three drama workshops during the year or have successfully auditioned for a main role in a school play.

This year, 20 students have been accepted into the drama club.

Ella: “I know that there were a total of ten main roles in the various plays that our school put on throughout the year. So that means that half of our drama club members must be main role performers!”

Which of the following sentences shows the mistake that Sophia has made?

- A. Some of the students in the drama club may have attended drama workshops to qualify.
- B. The number of students obtaining main roles in school plays this year may be higher than in previous years.
- C. Some students might have successfully auditioned for more than one main role in different school plays.
- D. Students who are main performers may have also attended the drama workshops



6.

To be considered for the school's debate team, students must have demonstrated both their persuasive skills and their dedication to debating throughout the year.

Oliver: "I did not make it to the debate team."

If the information in the box is true, which statement shows incorrect reasoning?

- A. If Oliver did not make it to the debate team, he cannot have demonstrated his dedication to debating.
- B. If Oliver did not make it to the debate team, he cannot have demonstrated his persuasive skills.
- C. If Oliver did not demonstrate his dedication to debating as well as his persuasive skills, he could not have made it to the debate team.
- D. If Oliver demonstrated his persuasive skills and dedication to debating, he must have made it to the debate team.

7.

Mr. Smith, the basketball coach, has promised that any player who did not get a chance to play in the last game will definitely get to play in the next game.

Josh: "Well, I did play in the last game. So that means I definitely won't get to play in the next game. I'll have to sit on the bench."

Which one of the following sentences shows the mistake Josh has made?

- A. Just because any player who did not play in the last game will get to play in the next game, it does not mean that any player who played in the last game will not get to play in the next game.
- B. Just because somebody is chosen to be in the basketball team does not mean they will actually get playing time in the game.
- C. Just because Josh played in the last game, it does not mean he will get a chance to play in the next game.
- D. Just because someone did not want to play in the last game, it does not mean that they wouldn't want to play in the next game.



Activity 2: Complete the following questions by determining whose reasoning is correct.

1.

People who eat more vegetables tend to have better eyesight.

Liam: "Your mum might need glasses because she doesn't eat as many vegetables as my mum. So my mum's eyesight must be better than hers."

Emma: "No, that's not true. My mom's eyesight might be better than your mum's"

If the information in the box is true, whose reasoning is correct?

- A. Liam only.
- B. Emma only.
- C. Both Liam and Emma.
- D. Neither Liam nor Emma.

2.

Jason and Roberto are brothers. Their parents have told them that they will definitely be allowed to go to the amusement park today if they have completed their chores.

Natalie: "Jake is going to the amusement park, but Robert is not, so Robert must not have completed his chores."

Daniel: "Jake must have completed his chores."

If the information in the box is true, whose reasoning is correct?

- A. Natalie only.
- B. Daniel only.
- C. Both Natalie and Daniel.
- D. Neither Natalie nor Daniel.



3.

The skills required for crocheting, knitting, and sewing are very similar.

- Anyone who can crochet can also knit.
- Anyone who can crochet can also sew.
- Not everyone who can knit can crochet.
- Anyone who can sew can also crochet.

Sophia: "Amelia has been sewing for years. She will have no trouble crocheting."

Ethan: "Oliver is unable to crochet. He won't be able to knit."

If the information in the box is true, whose reasoning is correct?

- A. Sophia only.
- B. Ethan only.
- C. Both Sophia and Ethan.
- D. Neither Sophia nor Ethan.

4.

At the start of the school year, every student in the class gets one vote to elect the class captain. Everyone must use their vote. The student who gets the most votes becomes the class captain for the year. This year, there are 25 students in the class, and there are 5 candidates running for the position.

Lucas: "The class captain will need to get at least 6 votes."

Aisha: "If a candidate gets 13 votes, then they will definitely become the class captain."

If the information in the box is true, whose reasoning is correct?

- A. Lucas only.
- B. Aisha only.
- C. Both Lucas and Aisha.
- D. Neither Lucas nor Aisha.



5.

Magpies are a species of bird that will hide some of the shiny objects they collect in order to save some "treasure" for later.

Scientists studying the species made an interesting discovery:

- Some magpies move the hidden objects if they see other magpies watching them hide the objects the first time.
- It is only those magpies who have previously had their hidden objects stolen by other magpies that move their treasures.

Jason: "That means a magpie must be able to recognize which other magpies are more likely to steal its treasures."

Taylor: "If a magpie moves a hidden object, you can be sure it has experienced theft before."

If the information in the box is true, whose reasoning is correct?

- A.** Jason only.
- B.** Taylor only.
- C.** Both Jason and Taylor.
- D.** Neither Jason nor Taylor.



6.

To participate in the school science fair, project submissions must be handed in by Monday. There are only 30 spots available, and these are allocated to the first 30 students to submit their projects.

Sophie: "I've already handed in my project, so I'll definitely get a spot in the science fair."

Ella: "I won't be able to submit my project until Monday, so I won't get a spot in the science fair."

If the information in the box is true, whose reasoning is correct?

- A. Sophia only.
- B. Ella only.
- C. Both Sophie and Ella.
- D. Neither Sophie nor Ella.



Selective Thinking Skills • Revision 3

1.

In a music band, members are sometimes removed by the band manager if they are not contributing enough to the group or if they miss important rehearsals. Additionally, some members may be dropped if they do not attend band meetings regularly.

Kai: "The band manager said she's going to drop Maya, even though she's been playing her instrument well! She can't have been attending all the band meetings."

Zara: "If Maya attended all the band meetings regularly and improved her playing even further, the band manager definitely wouldn't drop her."

If the information in the box is true, whose reasoning is correct?

- A. Kai only.
- B. Zara only.
- C. Both Kai and Zara.
- D. Neither Kai nor Zara.

2.

Ferdinand has a comprehensive phone book that he can use to look up any contact number in the city.

Ferdinand: "If you tell me the name of a person, you don't need to tell me which area they are in – I can look up their contact number in my phone book."

Which of the following sentences shows the mistake Ferdinand has made?

- A. There are some people who have the same name as the street they live on.
- B. There are some people who have the same name as each other.
- C. There are some areas which do not have any listed phone numbers.
- D. There are some people whose contact numbers have changed.



3.

Being a professional chef requires creativity and attention to detail. It involves investing in your own equipment, including high-quality knives, kitchen appliances, and cookware. Aspiring chefs must learn various cooking techniques and culinary skills. They need to practise, experiment, and develop a professional portfolio of their dishes.

Liam: "Frankie has all her own equipment and she's always experimenting with new recipes, but she's not very organised and lacks attention to detail. I don't think professional cooking will suit her."

Sophie: "Adam can afford to buy his own equipment, but whenever he can, he borrows kitchen tools and tries out hundreds of recipes. He's a talented chef and very ambitious. He's likely to make a great professional chef."

If the information in the box is true, whose reasoning is correct?

- A. Liam only.
- B. Sophie only.
- C. Both Liam and Sophie.
- D. Neither Liam nor Sophie.

4.

At the amusement park, visitors must meet a minimum height requirement to be eligible to go on a particular roller coaster. The sign at the entrance states that any person shorter than 140 cm cannot ride the roller coaster.

Liam: "I'm 150 cm tall, so I will definitely be able to ride the roller coaster."

Which of the following sentences shows the mistake Liam has made?

- A. Liam is shorter than 140cm.
- B. There may be another reason Liam is not able to ride the roller coaster.
- C. Liam might still be too young to ride the roller coaster even if he meets the height requirement.
- D. We do not know the maximum height allowed for the roller coaster.



5.

Alex and Emily are both writers. This year, they each submit short stories to a writing competition. In the competition, each entry is given a score for creativity and a score for storytelling. The two scores are then added together to get the final score. Alex and Emily just found out that their stories got the same final score.

Alex: "If our stories each received a different score for creativity, then their scores for storytelling must have been different too."

Emily: "If our story creativity scores were the same, then their scores for storytelling must have been the same too."

If the information in the box is true, whose reasoning is correct?

- A. Alex only.
- B. Emily only.
- C. Both Alex and Emily.
- D. Neither Alex nor Emily.

6.

The three countries of Eloria, Zandar, and Vellona have languages that are quite similar to each other, and they share some words in common. For example, the word "korin" means "mountain" in all three languages. Any word that is the same in Eloria and Zandar is also the same in Vellona. Zandar and Vellona have many words in common, but they never share words for colours. Words for colours are always different.

Hannah: "If a word is the same in Eloria and Zandar, it can't be a colour."

Eva: "If a word is the same in Eloria and Vellona, it can't be a colour."

If the information in the box is true, whose reasoning is correct?

- A. Hannah only.
- B. Eva only.
- C. Both Hannah and Eva.
- D. Neither Hannah nor Eva.



7.

Alice and Jack are students at the same school. In their school, whenever there is a school event, the classrooms are always decorated with colourful posters and banners.

Alice: "That's strange. I thought there was a school event today, but I don't see any decorations in the classrooms. I must have got the date wrong."

Jack: "Well, I remember seeing lots of decorations in the classrooms last Wednesday - that must have been when the school event was."

If the information in the box is true, whose reasoning is correct?

- A. Alice only.
- B. Jack only.
- C. Both Alice and Jack
- D. Neither Alice nor Jack.

8.

To get a coupon for a free ice cream cone, customers must purchase an ice cream at the local parlour. There are only 20 coupons available, and they are given to the first 20 customers who make a purchase.

Sophie: "I've already purchased my ice cream, so I'll definitely get a coupon for a free ice cream cone."

Ella: "I won't be able to buy an ice cream until later today, so I won't get a coupon for a free ice cream cone."

If the information in the box is true, whose reasoning is correct?

- A. Sophie only.
- B. Ella only.
- C. Both Sophie and Ella
- D. Neither Sophie nor Ella.



Selective Thinking Skills • Answers 3

Activity 1:

1. A
2. C
3. B
4. B
5. C
6. D
7. A

Activity 2:

1. B
2. C
3. A
4. C
5. D
6. D

Revision:

1. D
2. B
3. C
4. B
5. C
6. A



7. A

8. D

