

Step-by-Step Verification Guidelines

Logical Deduction

Overview

We've used an AI model to generate a sequence of steps to complete a task, but some of these steps might be wrong. Your task is to **go through each step and verify whether it is correct or not**.

The AI's task is to figure out the order of some objects based on a list of clues. The question always contains 3, 5, or 7 objects, and a list of clues that provide information about where an object is relative to other objects. Each step should work through information that is given by the clues, combining it with information from previous steps.

Here are some examples of questions and answers:

The following statements each describe a set of three objects arranged in a fixed order. The statements are logically consistent.

- *On a shelf, there are three books: a white book, a green book, and an orange book.*
- *The white book is to the left of the green book.*
- *The orange book is the second from the right.*










Q: Given the above statements, which of the following is correct?













Options:

(A) The white book is the leftmost

(B) The green book is the leftmost

(C) The orange book is the leftmost

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|--|---|
| To answer the question, I need to identify the positions of all five golfers. I should first find and look through any statements about absolute positions of golfers. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination. |    |
| The orange book is second from the right. There are three books in total, so the orange book is the middle book. |    |
| So from left to right: first can be any book, then second is the orange book, then third can be any book. |    |

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| The white book is to the left of the green book, so the white book cannot be rightmost. We previously concluded that the orange book is the middle book, so the white book must be the leftmost book. |    |
| The white book is to the left of the green book, so the green book cannot be leftmost. We previously concluded that the orange book is the middle book, so the green book must be the rightmost book. |    |
| So from left to right: first is the white book; then second is the orange book; then third is the green book. |    |
| According to this ordering, the leftmost book is the white book. So the answer is (A) |    |

Another example question:










The following statements each describe a set of three objects arranged in a fixed order. The statements are logically consistent.

- *On a shelf, there are three books: a white book, a green book, and an orange book.*
- *The green book is to the right of the white book.*
- *The orange book is to the right of the green book.*

Q: Given the above statements, which of the following is correct?

Options:

- (A) The white book is the leftmost*
(B) The green book is the leftmost
(C) The orange book is the leftmost

| | |
|--|---|
| To answer the question, I need to identify the positions of all five golfers. I should first find and look through any statements about absolute positions of golfers. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination. |    |
| The green book is to the right of the white book, so the green book cannot be the leftmost and the white book cannot be the rightmost. |    |
| So from left to right: first is the white book or the orange book, then second can be any book, then third is the green book or the orange book. |    |



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| The orange book is to the right of the green book, so the orange book cannot be the leftmost. We previously concluded that the leftmost book is the white book or the orange book, so the leftmost book must be the white book. | 😊 😐 😞 |
| The orange book is to the right of the green book, so the green book cannot be the rightmost. We previously concluded that the rightmost book is the green book or the orange book, so the rightmost book must be the orange book. | 😊 😐 😞 |
| By process of elimination, the middle book must be the green book. | 😊 😐 😞 |
| So from left to right: first is the white book, then second is the green book, then third is the orange book. | 😊 😐 😞 |
| According to this ordering, the leftmost book is the white book. So the answer is (A) | 😊 😐 😞 |

Some things to note:

- The first step is optional, and describes a potential strategy to read through the sentences. It is acceptable if later steps diverge from this strategy.
- If you encounter a statement such as “X is to the left of Y” or “X is to the right of Y”, this does not necessarily mean *immediately* to the left/right; there *can* be objects in between X and Y as well (but might not be). See **example 4** in the [Additional Examples](#) section.

Instructions

- (1) You should label each step as positive or negative.
Once you label one step, the next step will be unlocked.

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| <p>Positive</p>  |  <p>Negative</p> <p>This step is one or more of the following:</p> |
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| <p>This step is logically correct and contributes to task progression.</p> <p>Typos, grammatical mistakes, and alternative ways of formatting are allowed as long as the logic is still correct.</p> | <ul style="list-style-type: none"> Logically incorrect or requiring large logical jumps <ul style="list-style-type: none"> Repetitive or redundant Off-topic or contains gibberish Leads to an obvious dead end <ul style="list-style-type: none"> Refers to external links, images, or graphs |
|--|---|

(2) Each set of steps can be submitted when **either**:

(a) All the steps have been labelled as positive; **or**

(b) The last labelled step is negative. In this case, the next step will not unlock and you do not have to label the remaining steps.

Example labels

In this section, we've taken the "positive" steps for this example and added some "negative" examples so you can compare them side-by-side. Note that you will not be able to do this when doing the annotation, so make sure to check each step carefully!

The following statements each describe a set of five objects arranged in a fixed order. The statements are logically consistent.

The following statements each describe a set of three objects arranged in a fixed order. The statements are logically consistent.

- On a shelf, there are three books: a white book, a green book, and an orange book.*
- The white book is to the left of the green book.*
- The orange book is the second from the right.*



Q: Given the above statements, which of the following is correct?

Options:

(A) The white book is the leftmost



(B) The green book is the leftmost

(C) The orange book is the leftmost

|  |  | Reason |
|---|---|---|
| To answer the question, I need to identify the positions of all five golfers. I should first find and look through any statements about absolute positions of | [MISSING] | The first step is a general strategy and is optional. |

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| golfers. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination. | | |
| The orange book is second from the right. There are three books in total, so the orange book is the middle book. | The orange book is second from the right. There are three books in total, so from right to left: any, orange, any | Different ways of describing the logic and conclusions is fine, as long as the information is clear. |
| So from left to right: first can be any book, then second is the orange book, then third can be any book. | | |
| The white book is to the left of the green book, so the white book cannot be rightmost. We previously concluded that the orange book is the middle book, so the white book must be the leftmost book. | The white book is to the left of the green book. Therefore, the white book can only be in the middle or the left, but the orange book is in the middle, so the green book must be the leftmost book. So from left to right: first is the white book; then second is the orange book; then third is the green book. | Different ways of going through the logical steps is fine, as long as it is clear and logical. |
| The white book is to the left of the green book, so the green book cannot be leftmost. We previously concluded that the orange book is the middle book, so the green book must be the rightmost book. | The white book is to the left of the green book, so the green book cannot be leftmost. We previously concluded that the orange book is the middle book, so the green book must be the rightmost book. So from left to right: first is the white book; then second is the orange book; then third is the green book. | Combining or splitting up steps is fine, as long as there are no jumps in logic. |
| So from left to right: first is the white book; then second is the orange book; then third is the green book. | | |

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| According to this ordering, the leftmost book is the white book. So the answer is (A) | | |
|--|--|--|

|  |  | Reason |
|--|---|--|
| To answer the question, I need to identify the positions of all five golfers. I should first find and look through any statements about absolute positions of golfers. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination. | | |
| The orange book is second from the right. There are three books in total, so the orange book is the middle book. | | |
| So from left to right: first can be any book, then second is the orange book, then third can be any book. | So from left to right: first is the orange book , then second is the orange book, then third can be any book. | The clue says that the orange book is second from the right, which means that the leftmost book should not be orange. |
| The white book is to the left of the green book, so the white book cannot be rightmost. We previously concluded that the orange book is the middle book, so the white book must be the leftmost book. | The white book is to the left of the green book. Therefore, the green book cannot be leftmost, and the white book cannot be rightmost. So from left to right: first is the white book, then second can be any book , then third is the green book. | This is considered negative because it does not account for the conclusions that have been drawn in previous steps. It is no longer true that the second book can be any book, because we know that the second book is orange. |
| The white book is to the left of the green book, so the green book cannot be leftmost. We previously concluded that the | | |

| | | |
|---|---|--|
| orange book is the middle book, so the green book must be the rightmost book. | | |
| So from left to right: first is the white book; then second is the orange book; then third is the green book. | | |
| According to this ordering, the leftmost book is the white book. So the answer is (A) | According to this ordering, the leftmost book is the white book. So the answer is (B) | Even though the ordering in the last step might be correct and the first sentence in this step is correct, the letter corresponds to the wrong option. |
| | ABCDE | Gibberish is considered negative |

Additional examples

Example 1

- On a shelf, there are three books: a red book, a gray book, and a white book.
- The white is to the left of the gray book.
- The gray book is the second from the left.

Q: Given the above statements, which of the following is correct?

Options:

- (A) The red book is the leftmost
 (B) The gray book is the leftmost
 (C) The white book is the leftmost

To answer the question, I need to identify the positions of all ~~five~~ three books. I should first find and look through any statements about absolute positions of books. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination.

The white book is to the left of the gray book. The gray book is the second from the left, so the white book must be the leftmost.

This step diverges from the typical strategy in our examples, describing and drawing conclusions from two clues in one single step. However, it correctly describes the information

from the question, and correctly draws conclusions from that information, so it should be considered positive.

Example 2

The following statements each describe a set of five objects arranged in a fixed order. The statements are logically consistent.

- *On a shelf, there are five books: a red book, a gray book, a white book, a blue book, and a green book.*
- *The white book is the leftmost.*
- *The gray book is the second from the left.*
- *The red book is the second from the right.*
- *The blue book is to the right of the red book.*

Q: Given the above statements, which of the following is correct?

Options:

- (A) *The red book is the leftmost*
- (B) *The gray book is the leftmost*
- (C) *The white book is the leftmost*
- (D) *The blue book is the leftmost*
- (E) *The green book is the leftmost*

To answer the question, I need to identify the positions of all five books. I should first find and look through any statements about absolute positions of books. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination.

The gray book is second from the left. There are five books in total, so the gray book is the fourth rightmost book.

So from left to right: first can be any book, then second is the gray book, then third, fourth, and fifth can be any book.

The white book is to the left of the gray book. We previously concluded that the second leftmost book is the gray book, so the white book must be the leftmost book. So the answer is (C)

This step goes straight to the answer and skips all the other clues, because the other clues are not needed to answer the question. As long as there are no logical errors, this is considered positive. (Compare this with Example 3 below.)

Example 3

The following statements each describe a set of five objects arranged in a fixed order. The statements are logically consistent.

- On a shelf, there are five books: a red book, a gray book, a white book, a blue book, and a green book.

- The white book is the leftmost.

- The gray book is the second from the left.

- The red book is the second from the right.

- The blue book is to the right of the red book.

Q: Given the above statements, which of the following is correct?

Options:

(A) The red book is the leftmost

(B) The gray book is the leftmost

(C) The white book is the leftmost

(D) The blue book is the leftmost

(E) The green book is the leftmost

To answer the question, I need to identify the positions of all five books. I should first find and look through any statements about absolute positions of books. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination.

The gray book is second from the left. There are five books in total, so the gray book is the fourth rightmost book.

So from left to right: **first is the white book**, then second is the gray book, then third, fourth, and fifth can be any book.

So far, we have only looked at the statement “The gray book is second from the left.” Therefore, we would not know which book is in the first position. This is considered a jump in logic, and should be negative (even though it matches the correct arrangement).

Example 4

The following statements each describe a set of five objects arranged in a fixed order. The statements are logically consistent.

- On a shelf, there are five books: a red book, a gray book, a white book, a blue book, and a green book.

- The white book is the leftmost.

- The gray book is the third from the left.

- The red book is to the right of the gray book.

- The blue book is to the right of the red book.

Q: Given the above statements, which of the following is correct?

Options:

(A) The red book is the leftmost

(B) The gray book is the leftmost

- (C) *The white book is the leftmost*
(D) *The blue book is the leftmost*
(E) *The green book is the leftmost*

To answer the question, I need to identify the positions of all five books. I should first find and look through any statements about absolute positions of books. Then, if there are remaining gaps, I can look through statements about relative positions and find the final order by process of elimination.

The gray book is the third from the left. There are five books in total, so the gray book is the middle book.

So from left to right: first and second can be any book, then third is the gray book, then fourth and fifth can be any book.

The red book is to the right of the gray book. We previously concluded that the gray book is the third from the left, so the red book is the fourth from the left. So from left to right: first and second can be any book, then third is the gray book, then fourth is the red book, then fifth can be any book.

The clue says, “The red book is to the right of the gray book”. This means that the red book can be in any of the positions to the right of the gray book, not just the one **immediately** to the right. We know that the third (middle) book is the gray book, so the red book can be **either** the fourth **or** the fifth book.

In this example, the final arrangement is: white green gray red blue. So, the statement “fourth is the red book” is correct, but in Step 3 we do not have enough information to say whether the red book is fourth or fifth, because we have only looked at 2 clues so far. So Step 3 is still negative.