Charta | LESSON NOTES

Inference in a passage: one small step

Verbal Reasoning

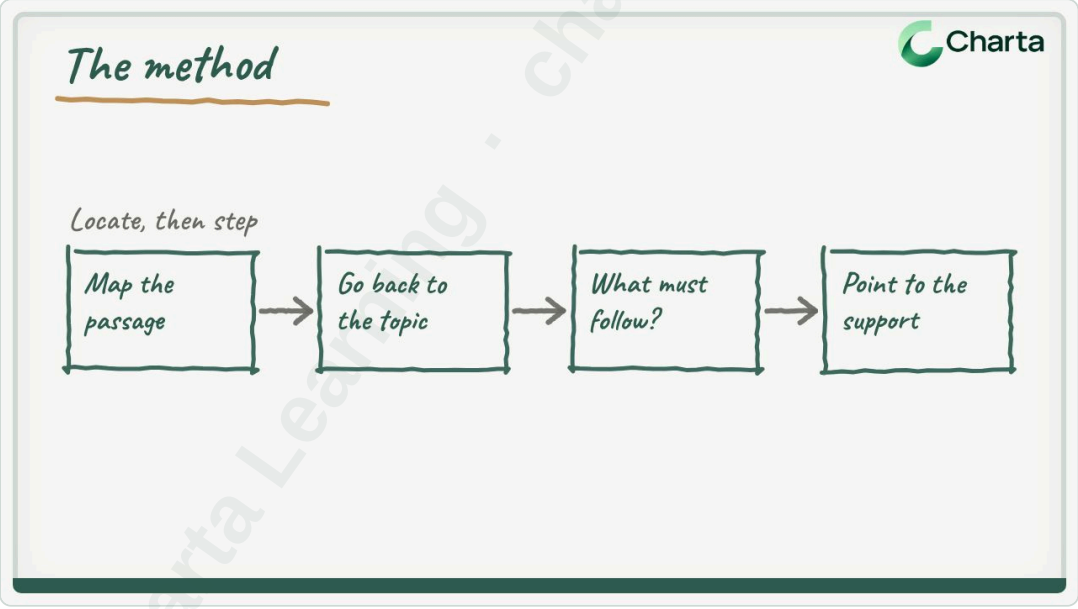
1 What the question asks

- It can be inferred; the passage suggests
- Not stated, but it follows from what is stated
- One small, safe step; no outside knowledge
- Need your own assumptions? Not the answer

IN THE LESSON

- Inference questions say, it can be inferred from the passage, the passage suggests, or the author would most likely agree.
- The answer is not written word for word, but it must follow from what is written, with no outside knowledge.
- Think of it as the inference questions in Critical Reasoning, applied to a passage: the right answer must be true, or very nearly so, given the passage.
- So the same rule holds.
- The bolder the choice, the more likely it is wrong.
- The right answer usually combines two sentences, or takes one sentence one step further.
- If you need to add your own assumptions to make a choice work, it is not the answer.

2 The method



IN THE LESSON

- Here is the method.
- Step one, read the passage and map it.
- Step two, find exactly what the question is about, often a phrase from the passage, and go back to that place.
- Step three, read the lines there and ask, what do these lines force to be true about my topic?
- Say it in your own words.
- Step four, test each choice: can I point to the lines that support it?
- If you cannot point to support, cross it out.
- Why this order?
- Because inference choices are designed to sound reasonable.
- Pointing to the lines is the only reliable test, and it is also the quickest.

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3 The traps in the wrong choices

- The opposite of what the lines imply
- A confused term: two things mixed up
- Unsupported, or too strong a verdict
- Changes what the question holds fixed

IN THE LESSON

- Here are the traps, by name.
- The first is the opposite: a choice that says the reverse of what the lines imply, such as useful in every copy when the passage says useful only for one.
- The second is a confused term: it mixes up two things the passage keeps apart, such as a concordance and an index.
- The third is unsupported: it might be true, but nothing in the passage backs it.
- The fourth is too strong: it turns a careful claim into a flat verdict, such as at least as strong a claim into a stronger claim overall.
- And the fifth changes what the question holds fixed, such as the size of an eruption when the question says it is the same.

4 Question 1: the first indexes, part one

- Readers today take for granted that a serious work of scholarship will end with an index, but the device was slow to emerge and owed less to the invention of printing than is often supposed. Its origins lie in the universities and preaching orders of the thirteenth century. Friars preparing sermons needed to find, quickly, every passage in Scripture or in the Church Fathers bearing on a theme such as charity or pride, and scholars working through large compilations faced similar needs. The response included concordances, which listed every occurrence of a word, and subject indexes arranged in alphabetical order.

IN THE LESSON

- Our first passage is the easy one, on the history of the book index.
- If you watched the detail lesson, you have met it before.
- Read along with me again.
- Readers today take for granted that a serious work of scholarship will end with an index, but the device was slow to emerge and owed less to the invention of printing than is often supposed.
- Its origins lie in the universities and preaching orders of the thirteenth century.
- Friars preparing sermons needed to find, quickly, every passage in Scripture or in the Church Fathers bearing on a theme such as charity or pride, and scholars working through large compilations faced similar needs.
- The response included concordances, which listed every occurrence of a word, and subject indexes arranged in alphabetical order.

5 Question 1: the first indexes, part two

- Alphabetical order was then a novelty in this use. Earlier compilers had generally arranged material by importance or by what they took to be the natural order of things, placing God before angels and angels before human beings. Ordering entries by the accident of their first letters struck some writers as arbitrary, and a few prefaced their indexes with apologies explaining the system to readers. Its advantage was that a user needed no prior understanding of an author's scheme to find what he sought.

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- Its advantage was that a user needed no prior understanding of an author's scheme to find what he sought.

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6 Question 1: the first indexes, part three

- There was, however, a difficulty that only printing would resolve. A manuscript index could direct a reader to a book and chapter but not to a page, because each hand-copied manuscript divided its text differently. Some indexers therefore numbered the leaves of a particular copy, which made the index useful only for that copy. Printing produced many identical copies, so that one index with page numbers served them all. The printed index was thus less an invention than the completion of a tool that scholars had been refining for two centuries.

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- Printing produced many identical copies, so that one index with page numbers served them all.
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7 Question 1: map the passage

The first indexes: the map

Paragraph 1	indexes began before printing	**origins**
Paragraph 2	alphabetical order was new	**novelty**
Paragraph 3	copies differed; printing fixed	**printing**
Step	one copy's leaves: one copy	**infer**

IN THE LESSON

- Here is the map.
- Paragraph one: indexes began with thirteenth century friars and scholars.
- Paragraph two: alphabetical order was a novelty.
- Paragraph three: a manuscript index could not give a page, because each hand copy divided its text differently, so some indexers numbered the leaves of one particular copy, which made the index useful only for that copy.
- Printing solved this with identical copies.
- The question asks about an index that referred to the numbered leaves of a particular copy.
- That phrase takes us straight to paragraph three.
- What follows?
- If the index works only for that copy, then a reader holding another copy, whose text is divided differently, would find it of little use.
- That is one small step from the line.

8 Question 1: the question

- It can be inferred from the passage that a manuscript index that referred to the numbered leaves of a particular copy:
- A. allowed readers to find passages in every copy of a work
- B. was the first kind of index to be arranged in alphabetical order
- C. listed every occurrence of a word in the text it covered
- D. would be of little use to a reader holding another copy of the same work
- E. made concordances unnecessary for friars preparing sermons on themes such as charity or pride

IN THE LESSON

- Here is the question, and the five choices.
- It can be inferred from the passage that a manuscript index that referred to the numbered leaves of a particular copy: Choice A.
- allowed readers to find passages in every copy of a work Choice B.
- was the first kind of index to be arranged in alphabetical order Choice C.
- listed every occurrence of a word in the text it covered Choice D.
- would be of little use to a reader holding another copy of the same work Choice E.
- made concordances unnecessary for friars preparing sermons on themes such as charity or pride For each choice, ask: can I point to the lines?

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9 Question 1: test each choice

It can be inferred from the passage that a manuscript index that ...

A: works in every copy	only that copy, says the line	**opposite**
B: first alphabetical index	never said	**unsupported**
C: listed every word	that is a concordance	**confused term**
D: little use with another copy	one step from the line	**the answer**
E: concordances unnecessary	never said	**unsupported**

IN THE LESSON

- Choice A says such an index let readers find passages in every copy.
- The passage says the opposite: it was useful only for that copy.
- Choice B says it was the first alphabetical index.
- The passage dates alphabetical indexes to the thirteenth century and never links them to numbered leaves.
- Unsupported.
- Choice C says it listed every occurrence of a word.
- That is how the passage defines a concordance, a different tool.
- Confused term.
- Choice D is our step: an index tied to one copy's leaves would be of little use to a reader holding another copy, whose text was divided differently.
- We can point to the line.
- Choice E says it made concordances unnecessary for friars, which the passage never says.
- The answer is D.

10 Question 2: volcanoes and climate, part one

- It might seem that the volcanic eruptions most likely to cool the global climate would be those that hurl the most ash into the sky, but ash plays only a small part. Ash particles are relatively large and fall out of the atmosphere within days or weeks, too quickly to affect temperatures beyond the region of the eruption. The more important ingredient is sulfur dioxide gas. When an eruption is powerful enough to inject this gas into the stratosphere, the layer of the atmosphere above the one in which weather occurs, the gas reacts with water to form tiny droplets of sulfuric acid. These droplets reflect a portion of incoming sunlight back to space, and because the stratosphere lacks the rain that would wash them out, they can persist for one to three years, spreading around the globe.

IN THE LESSON

- Our second passage is a medium one, about how volcanic eruptions cool the climate.
- It explains a process step by step, so map each step.
- It might seem that the volcanic eruptions most likely to cool the global climate would be those that hurl the most ash into the sky, but ash plays only a small part.
- Ash particles are relatively large and fall out of the atmosphere within days or weeks, too quickly to affect temperatures beyond the region of the eruption.
- The more important ingredient is sulfur dioxide gas.
- When an eruption is powerful enough to inject this gas into the stratosphere, the layer of the atmosphere above the one in which weather occurs, the gas reacts with water to form tiny droplets of sulfuric acid.
- These droplets reflect a portion of incoming sunlight back to space, and because the stratosphere lacks the rain that would wash them out, they can persist for one to three years, spreading around the globe.

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11 Question 2: volcanoes and climate, part two

- Two consequences follow. First, the climatic effect of an eruption depends less on its overall size than on its sulfur content and on whether its plume reaches the stratosphere. A spectacular eruption of sulfur-poor magma may have little global effect, whereas a less dramatic eruption of sulfur-rich magma can lower average temperatures noticeably. Second, location matters. Material injected into the stratosphere near the equator tends to spread into both hemispheres, while material from an eruption at high latitude generally remains in the hemisphere where it originated.
- For this reason, researchers reconstructing past eruptions from ice cores drilled in Greenland and Antarctica look for sulfate deposits rather than ash. A sulfate layer found in cores from both polar regions at the same date points to a tropical eruption whose effects were felt worldwide; a layer found in only one points to an eruption nearer that pole.

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- Second, location matters.
- Material injected into the stratosphere near the equator tends to spread into both hemispheres, while material from an eruption at high latitude generally remains in the hemisphere where it originated.
- For this reason, researchers reconstructing past eruptions from ice cores drilled in Greenland and Antarctica look for sulfate deposits rather than ash.
- A sulfate layer found in cores from both polar regions at the same date points to a tropical eruption whose effects were felt worldwide; a layer found in only one points to an eruption nearer that pole.

12 Question 2: map the passage

Volcanoes and climate: the map

Paragraph 1	sulfur, not ash; no rain up high	**process**
Paragraph 2	sulfur and height; latitude	**consequences**
Paragraph 3	both poles: worldwide effect	**ice cores**
Step	low plume: rain, less spread	**infer**

IN THE LESSON

- Here is the map.
- Paragraph one: ash falls out within weeks.
- What matters is sulfur dioxide reaching the stratosphere, where it forms droplets that reflect sunlight.
- Because the stratosphere has no rain to wash them out, they last years and spread around the globe.
- Paragraph two: so the effect depends on sulfur content and on reaching the stratosphere, and on latitude.
- Paragraph three: a sulfate layer in both polar ice cores at the same date points to a tropical eruption felt worldwide.
- Now the question changes one thing only: the plume stays in the lower layer, where weather and rain happen, at the same latitude with the same gas.
- Combine the lines.
- Rain washes droplets out, so they spread less, so the sulfate is less likely to reach both poles.
- That is our step.

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13 Question 2: the question

- Suppose a large, sulfur-rich eruption sends its plume only into the lower atmosphere, the layer in which weather occurs. It can be inferred from the passage that this eruption, compared with one that injects the same gas into the stratosphere at the same latitude, would be less likely to:
- A. leave a layer of ash in ice cores from at least one polar region
- B. leave sulfate layers of the same date in both polar ice cores
- C. emit as much sulfur dioxide gas as the stratospheric eruption does
- D. form sulfuric acid droplets from the sulfur dioxide it releases
- E. originate at a higher latitude than the stratospheric eruption

IN THE LESSON

- Here is the question, and the five choices.
- Suppose a large, sulfur-rich eruption sends its plume only into the lower atmosphere, the layer in which weather occurs.
- It can be inferred from the passage that this eruption, compared with one that injects the same gas into the stratosphere at the same latitude, would be less likely to: Choice A.
- leave a layer of ash in ice cores from at least one polar region Choice B.
- leave sulfate layers of the same date in both polar ice cores Choice C.
- emit as much sulfur dioxide gas as the stratospheric eruption does Choice D.
- form sulfuric acid droplets from the sulfur dioxide it releases Choice E.
- originate at a higher latitude than the stratospheric eruption Hold fixed what the question holds fixed.

14 Question 2: test each choice

Suppose a large, sulfur-rich eruption sends its plume only into ...

A: ash layer at a pole	ash falls out fast either way	**unsupported**
B: sulfate at both poles	rain washes it out sooner	**the answer**
C: emit as much gas	the question says the same gas	**changes fixed**
D: form acid droplets	water is plentiful low down	**unsupported**
E: a higher latitude	the question fixes latitude	**changes fixed**

IN THE LESSON

- Choice A is about ash in the ice cores.
- The passage says ash falls out within days or weeks, so plume height gives it no better or worse chance of reaching a pole.
- Unsupported.
- Choice B is our step: a plume in the rainy lower layer is washed out sooner, spreads less, and so is less likely to leave sulfate layers of the same date at both poles.
- Choice C says it would emit less gas, but the question says the same gas.
- Choice D says it would be less likely to form droplets.
- But droplets form when the gas meets water, which is plentiful in the weather layer.
- Height decides how long they last, not whether they form.
- Choice E changes the latitude, which the question also holds fixed.
- The answer is B.

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15 Question 3: the early libraries, part one

- In the eighteenth century, books in Britain and its American colonies were expensive enough that few readers outside the wealthy could own more than a handful. One response was the subscription library, in which members paid an entrance fee and an annual charge in return for the right to borrow from a shared collection. Such libraries are often cited as early ancestors of the free public library, and in a narrow institutional sense they were: they established the idea that a community of readers could hold books in common.

IN THE LESSON

- Our third passage is a hard one, about libraries in the eighteenth century, and you may remember it from the main idea lesson.
- The question is about the author's final sentence, so read that sentence with special care.
- In the eighteenth century, books in Britain and its American colonies were expensive enough that few readers outside the wealthy could own more than a handful.
- One response was the subscription library, in which members paid an entrance fee and an annual charge in return for the right to borrow from a shared collection.
- Such libraries are often cited as early ancestors of the free public library, and in a narrow institutional sense they were: they established the idea that a community of readers could hold books in common.

16 Question 3: the early libraries, part two

- It would be a mistake, however, to regard them as democratic institutions in spirit. Their fees, though modest by the standards of the gentry, were well beyond the reach of labourers, and many libraries admitted new members only by vote of existing ones. Their collections reflected the tastes of the merchants, clergy, and professionals who governed them: history, theology, travel, and natural philosophy predominated, while novels were often excluded as frivolous. A subscription library was, in effect, a club whose members had agreed to share their books.

IN THE LESSON

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- Their collections reflected the tastes of the merchants, clergy, and professionals who governed them: history, theology, travel, and natural philosophy predominated, while novels were often excluded as frivolous.
- A subscription library was, in effect, a club whose members had agreed to share their books.

17 Question 3: the early libraries, part three

- A different institution served readers of more modest means. Commercial circulating libraries, run for profit by booksellers, charged by the volume or by the quarter and asked no questions of their customers. Moralists denounced them for supplying novels to apprentices and servants, and their stock was indeed weighted toward fiction, because fiction was what paying customers most wanted. If one seeks a precedent for the idea that a library should serve whoever walks through its door, the despised circulating library has at least as strong a claim as its respectable subscription counterpart.

IN THE LESSON

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- Moralists denounced them for supplying novels to apprentices and servants, and their stock was indeed weighted toward fiction, because fiction was what paying customers most wanted.
- If one seeks a precedent for the idea that a library should serve whoever walks through its door, the despised circulating library has at least as strong a claim as its respectable subscription counterpart.

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18 Question 3: map the passage

The early libraries: the map

Paragraph 1	ancestors, in a narrow sense	**granted**
Paragraph 2	however, not democratic	**author**
Paragraph 3	at least as strong a claim	**precedent**
Step	it depends on the feature	**infer**

IN THE LESSON

- Here is the map.
- Paragraph one grants that subscription libraries were ancestors of the public library in a narrow institutional sense: they established the idea that a community could hold books in common.
- Paragraph two says they were not democratic in spirit.
- Paragraph three ends with the final sentence: if one seeks a precedent for the idea that a library should serve whoever walks through its door, the circulating library has at least as strong a claim.
- Now combine the first and last paragraphs.
- For one feature, holding books in common, subscription libraries are the ancestors.
- For another feature, serving anyone, circulating libraries have at least as good a claim.
- So which counts as the forerunner depends on which feature you have in mind.
- That is the careful step.

19 Question 3: the question

- Which of the following can be inferred from the passage about the author's final sentence?
- A. Subscription libraries made no real contribution to the later idea of the free public library.
- B. Whether a library counts as a forerunner depends on which feature of the public library one has in mind.
- C. Circulating libraries have a stronger overall claim than subscription libraries to be called ancestors of the free public library.
- D. Fiction was the main reason circulating libraries make a better precedent for the free public library than subscription libraries do.
- E. Subscription libraries excluded novels in order to keep out readers of modest means.

IN THE LESSON

- Here is the question, and the five choices.
- Which of the following can be inferred from the passage about the author's final sentence?
- Choice A.
- Subscription libraries made no real contribution to the later idea of the free public library.
- Choice B.
- Whether a library counts as a forerunner depends on which feature of the public library one has in mind.
- Choice C.
- Circulating libraries have a stronger overall claim than subscription libraries to be called ancestors of the free public library.
- Choice D.
- Fiction was the main reason circulating libraries make a better precedent for the free public library than subscription libraries do.
- Choice E.
- Subscription libraries excluded novels in order to keep out readers of modest means.
- Watch for choices that turn a careful claim into a flat verdict.

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20 Question 3: test each choice

Which of the following can be inferred from the passage about the ...

A: no real contribution	paragraph one grants a link	**too strong**
B: depends on the feature	first and last paragraphs	**the answer**
C: stronger claim overall	only at least as strong	**too strong**
D: fiction was the reason	the reason is serving anyone	**confused**
E: novels kept the poor out	a motive never given	**unsupported**

IN THE LESSON

- Choice A says subscription libraries made no real contribution.
- But paragraph one grants them a narrow institutional role, so this is too strong.
- Choice B is our step: whether a library counts as a forerunner depends on which feature of the public library you have in mind.
- We can point to the first paragraph and the last sentence together.
- Choice C says circulating libraries have a stronger claim overall.
- The author says only at least as strong, and only for one feature.
- Too strong again.
- Choice D says fiction was the main reason.
- But the precedent rests on serving whoever walks in, not on what was on the shelves.
- Choice E invents a motive for excluding novels that the passage never gives.
- The answer is B.

21 Accurate and quick

- Map as you read
- Go back to the topic's lines
- Say what must follow
- Point to the support, or cross it out
- Prefer the modest choice

IN THE LESSON

- Some habits that keep you accurate and quick.
- First, map the passage as you read, so you can return to the right lines quickly.
- Second, find the exact topic of the question, often a phrase lifted from the passage, and go back to it.
- Third, read the lines and say what must follow, in a few words, before looking at the choices.
- Fourth, for each choice, point to its support in the passage.
- If you cannot, cross it out, however sensible it sounds.
- Fifth, prefer the modest choice.
- Words like no, never, only, overall and stronger are warning signs, because a passage rarely supports such sweeping claims.

22 What the three questions taught

- One line, one small step
- Combine two lines; hold the rest fixed
- First and last paragraphs together
- Always point to the support

IN THE LESSON

- Look back at the three inferences.
- In the index passage, one line, useful only for that copy, led one small step to, of little use with another copy, and the traps were the opposite, a confused term and claims never made.
- In the volcano passage, we combined two lines, no rain up high and spread around the globe, and held fixed what the question held fixed.
- In the library passage, we combined the first paragraph with the final sentence to reach a careful conclusion, and the traps turned that careful claim into flat verdicts.
- In every case the answer was close to the text, and we could point to its support.

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23 Quick check

1. A reasonable choice, but no line supports it. Good inference?
   Answer: No: unsupported.
2. 'At least as strong' versus 'stronger'. The same?
   Answer: No: at least as strong allows equal.
3. Same gas, same latitude. Can the answer turn on gas?
   Answer: No: the question holds it fixed.

IN THE LESSON

- A quick check.
- Pause after each question.
- Question one.
- A choice sounds very reasonable, but you cannot find any line in the passage that supports it.
- Is it a good inference?
- The answer is no.
- It is unsupported.
- An inference must rest on the passage.
- Question two.
- The author says one option has at least as strong a claim as another.
- A choice says the author thinks it has a stronger claim.
- Is that the same?
- The answer is no.
- At least as strong allows equal.
- The choice is too strong.
- Question three.
- The question says, an eruption with the same gas at the same latitude.
- Can the answer depend on a different amount of gas?
- The answer is no.
- The question holds that fixed.

24 Recap: the inference method

- Go back; what must follow?
- One small step, or two lines combined
- Point to the support
- Name the trap in each wrong choice

IN THE LESSON

- Let us recap.
- Map the passage, go back to the exact topic, and ask what the lines there force to be true.
- Take one small, safe step, or combine two lines, and say it in your own words.
- Then test each choice by pointing to its support, and name the trap in every wrong one: the opposite, a confused term, unsupported, too strong, or a choice that changes what the question holds fixed.
- The right answer stays close to the text and is as careful as the author.
- Practise this on every inference question, and you will find they are not guesses at all.

Summary notes for the Charta whiteboard lesson. Figures are from the lesson's made-up examples.

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