

During your initial reading of the passage, identify the main idea of each body paragraph without getting bogged down in the details.

## The Skeletal Sketch

The creation of a Skeletal Sketch has several key elements:

1. The top of a skeleton (the skull) is its most defined feature. Likewise, the first paragraph of every long passage gives shape to the text. As such, **your Skeletal Sketch requires a defined “skull.”**

The primary difference between a long passage and a short passage is that, with a long passage, the first paragraph is often substantially more important than the other paragraphs. Thus, you should take extra time to summarize the first paragraph, making sure that you thoroughly understand it.

To form the skull, read the first sentence of the first paragraph. Summarize it concisely on your scratch paper. Use the same notations and abbreviations as you do for Headline Lists of short passages.

Continue to read the first paragraph. As with short passages, you must decide how frequently you stop to take notes: after each sentence, after a couple of sentences, or after the entire paragraph. Again, the answer is that it depends on how well you are grasping the content and purpose of the text. The more difficult the passage, the more frequently you should stop to process what you have read.

In the skull, you should end up with notes on **every** sentence. After you have finished the first paragraph, mark the most important idea you have noted down. This is the main idea of the first paragraph.

**2. The limbs of your Skeletal Sketch are short headlines or one-sentence summaries of each of the remaining paragraphs.**

The subsequent paragraphs of a long passage are generally not as important as the first. As a result, you should read these paragraphs differently than you read the first paragraph.

Read each body paragraph to determine its main point or purpose. Focus on the first one or two sentences of the paragraph, since this is where the paragraph's topic is usually found.

Read the remaining sentences quickly, intentionally skimming over details and examples. There is no point in trying to absorb the nitty-gritty details in these sentences during this initial reading. If you are asked a question about a specific detail, you will need to reread these sentences anyway. In fact, it is often *counter-productive* to try to absorb these details, since doing so takes you away from the main goal of your initial reading and sketching.

That said, you must actually read everything. Be on the lookout for big surprises or important results. Sometimes, the GMAT buries such surprises or results within the body of a later paragraph, and you must be ready to add them to your Skeletal Sketch.

If you focus on constructing the simple story, then you will read with the appropriate level of attention: not too close, not too far away, but just right.

### 3. Once you have finished the passage, identify the Point.

After you have finished reading the passage and creating the Skeletal Sketch, glance back over your notes and over the passage. Make sure you know what the Point of the passage is. If it is not in your Skeletal Sketch already, be sure to add it. Then, label or mark the Point, so that you articulate it to yourself. This way, you are certain of the author's most important message. Now proceed to the first question.

## Using Your Skeletal Sketch

How do you use your Skeletal Sketch to answer questions about the passage? The same way you use a Headline List for a short passage: you should avoid having to use it at all! The purpose of the Sketch is to facilitate your comprehension of the passage. You should be able to answer all GENERAL questions without referring either to your notes or to the passage.

As for SPECIFIC questions, you will need to find the details in the passage. You can often find these details on your own. But you can also use your Skeletal Sketch as a search tool.

## Timing for Long Passages

Recall from our discussion of short passages the following rule to determine how much time to spend on a particular reading passage: **you have two minutes per question, total**, including time to read the passage, create a Skeletal Sketch, and answer all the questions.

Typically, each long passage has four questions associated with it. Thus, you have roughly **eight minutes** to read and sketch the long passage and then answer the associated questions.

Out of this eight-minute period, you should spend approximately 3.5 to 4 minutes reading and generating your Skeletal Sketch. Then you should spend between 60 and 70 seconds actually answering each question, taking more time for Specific questions and less time for General questions, as noted in the previous chapter.

You can best learn to create Skeletal Sketches by repeated practice. Study the model given at the end of this chapter, and do the In-Action exercises. Also create Skeletal Sketches of Official Guide passages as you practice later.

Spend approximately 8 minutes reading, creating a Skeletal Sketch, and answering all the questions for a given long passage.

## Common Structures of Long Passages

Long passages often display one of the following three structures. These are essentially the same structures as for short passages, except that “Point First” means “Point in First Paragraph” and “Point Last” means “Point in Last Paragraph.”

In a long passage, the first paragraph provides either the Point itself or background information crucial for understanding the Point.

Point First	Point Last	(Point in Middle)
<div>POINT <i>E.g., X is true</i></div> <div>Support <i>Here's why</i></div> <div>(Optional Implications) <i>Here's what could result</i></div>	<div>Background <i>E.g., Phenomenon Q happens</i></div> <div>Support <i>There is theory X There is theory Y Pros &amp; cons</i></div> <div>POINT <i>Theory X is better</i></div>	<div>Background <i>E.g., Phenomenon Q happens</i></div> <div>POINT <i>Theory X explains Q</i></div> <div>Support <i>Here's why</i> (Optional Implic.)</div>

Remember that the GMAT is not limited to these structures, especially if the Point is split up (i.e., the pieces are located in more than one place in the passage). Also remember that there is frequently foreshadowing.

Long passages often have more of a **narrative** to their simple story than short passages do. Here are three abstracted narratives contained within some long passages on the GMAT. Of course, there can be many others! Do NOT impose these narratives on every passage.

### 1. A Theory

Here is an area of scientific or historical **research**.

Here is a **theory** about that area of research.

Here is **support** for that theory.

(Possibly) Here are **implications** of that theory.

Point: EITHER the theory itself OR an assertion about the theory, e.g. **Theory X can now be tested**. In the latter case, support for the assertion is given.

### 2. A Couple of Theories

Here is a **phenomenon** in some area of scientific or historical research.

Here are a couple of **theories** about that phenomenon.

Here is **support** for each of those theories.

Point: **Theory X is best** OR **they all fall short**.

### 3. A Solution (rarer)

Here is a **problem** or a situation.

Point: I advocate this **solution** or this outcome.

Here is **support** for my position, and possibly **implications**.

## Model Long Passage: *Electroconvulsive Therapy*

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Electroconvulsive therapy (ECT) is a controversial psychiatric treatment involving the induction of a seizure in a patient by passing electricity through the brain. While beneficial effects of electrically induced seizures are evident and predictable in most patients, a unified mechanism of action has not yet been established and remains the subject of numerous investigations. ECT is extremely effective against severe depression, some acute psychotic states, and mania, though, like many other medical procedures, it has its risks.

Since the inception of ECT in 1938, the public has held a strongly negative conception of the procedure. Initially, doctors employed unmodified ECT. Patients were rendered instantly unconscious by the electrical current, but the strength of the muscle contractions from uncontrolled motor seizures often led to compression fractures of the spine or damage to the teeth. In addition to the effect this physical trauma had on public sentiment, graphic examples of abuse documented in books and movies, such as Ken Kesey's *One Flew Over the Cuckoo's Nest*, portrayed ECT as punitive, cruel, overused, and violative of patients' legal rights.

In comparison with its earlier incarnation, modern ECT is virtually unrecognizable. The treatment is modified

by the muscle relaxant succinylcholine, which renders muscle contractions virtually nonexistent. Additionally, patients are given a general anesthetic. Thus, the patient is asleep and fully unaware during the procedure, and the only outward sign of a seizure may be the rhythmic movement of the patient's hand or foot. ECT is generally used in severely depressed patients for whom psychotherapy and medication prove ineffective. It may also be considered when there is an imminent risk of suicide, since antidepressants often require several weeks to show results. Exactly how ECT exerts its influence on behavior is not known, but repeated applications affect several important neurotransmitters in the brain, including serotonin, norepinephrine, and dopamine.

ECT has proven effective, but it remains controversial. Though decades-old studies showing brain cell death have been refuted in recent research, many patients do report loss of memory for events that occurred in the days, weeks or months surrounding the ECT. Some patients have also reported that their short-term memories continue to be affected for months after ECT, though some doctors argue that this memory malfunction may reflect the type of amnesia that sometimes results from severe depression.

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By skimming over the details and thereby saving time, you should be able to read and sketch a long passage in roughly 3.5 to 4 minutes.

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Turn the page to examine a model Skeletal Sketch.

## Model Skeletal Sketch: *Electroconvulsive Therapy*

The limbs of your sketch are concise one-line summaries of each body paragraph.

- 1) ECT = contro. psych. treat: Electr. into brain → seizure  
– Beneficial, but mech not understood  
\*\* Very effective for some conditions; has risks
- 2) Since 1938, public dislikes ECT
- 3) Modern ECT totally diff
- 4) ECT effective but still contro ← Point

Notice that the “skull” of the sketch includes the most detail, as it carefully outlines the major points of the first paragraph.

The limbs of the sketch are each very concise, consisting only of a brief summary of the main idea of each body paragraph. Note that for each of the body paragraphs, the main idea is found in the first one or two sentences of the paragraph. This is often the case.

The Point of the passage is the first sentence of the last paragraph: *ECT has proven effective, but it remains controversial*. This is the most important message that the author wants to convey. Of course, we need the rest of the passage to supply context (e.g., to explain what ECT is in the first place). In fact, the last sentence of the first paragraph is very similar to the Point, but notice that *risks* are not quite the same thing as *controversy*.

The structure of this passage is Point Last (in the last paragraph). What comes before the Point is Background (explaining what ECT is) and Support, both for the controversial side of ECT (paragraph 2) and the effective side of ECT (paragraph 3).

Notice that the narrative here does NOT exactly fit one of the patterns mentioned earlier. The narrative here might best be expressed as “A Judgment about a Method”: *Here is a method. It is effective but controversial*.

## Problem Set

1. Read the following passage and create a Skeletal Sketch in 3.5-4 minutes. Afterward, using the sample given, critique your Skeletal Sketch by identifying ways in which it succeeds, as well as ways in which it could be improved.

### Passage: Ether's Existence

In 1887, an ingenious experiment performed by Albert Michelson and Edward Morley severely undermined classical physics by failing to confirm the existence of "ether," a ghostly massless medium that was thought to permeate the universe. This finding had profound results, ultimately paving the way for acceptance of Einstein's special theory of relativity.

Prior to the Michelson-Morley experiment, nineteenth-century physics conceived of light as a wave propagated at constant speed through the ether. The existence of ether was hypothesized in part to explain the transmission of light, which was believed to be impossible through "empty" space. Physical objects, such as planets, were also thought to glide frictionlessly through the unmoving ether.

The Michelson-Morley experiment relied on the fact that the Earth, which orbits the Sun, would have to be in motion relative to a fixed ether. Just as a person on a motorcycle experiences a "wind" caused by her own motion relative to the air, the Earth would experience an "etheral wind" caused by its motion through the ether. Such a wind would affect our measurements of the speed

of light. If the speed of light is fixed with respect to the ether, but the earth is moving through the ether, then to an observer on Earth light must appear to move faster in a "downwind" direction than in an "upwind" direction.

In 1887 there were no clocks sufficiently precise to detect the speed differences that would result from an ethereal wind. Michelson and Morley surmounted this problem by using the wavelike properties of light itself to test for such speed differences. In their apparatus, known as an "interferometer", a single beam of light is split in half. Mirrors guide each half of the beam along a separate trajectory before ultimately reuniting the two half-beams into a single beam. If one half-beam has moved more slowly than the other, the reunited beams will be out of phase with each other. In other words, peaks of the first half-beam will not coincide exactly with peaks of the second half-beam, resulting in an interference pattern in the reunited beam. Michelson and Morley detected only a tiny degree of interference in the reunited light beam—far less than what was expected based on the motion of the Earth.

2. What is the Point of this passage? Justify your choice.
3. Identify the other components of the passage, if present: Background, Support, and Implications. Again, justify your assignments.
4. What is the structure of this passage? Where is the Point positioned, and why? What is the abstract narrative of this passage?

5. Read the following passage and create a Skeletal Sketch in 3.5–4 minutes. Afterward, using the sample given, critique your Skeletal Sketch by identifying ways in which it succeeds, as well as ways in which it could be improved.

**Passage: Prescription Errors**

In Europe, medical prescriptions were historically written in Latin, for many centuries the universal medium of communication among the educated. A prescription for eye drops written in Amsterdam could be filled in Paris, because the abbreviation OS meant “left eye” in both places. With the disappearance of Latin as a lingua franca, however, abbreviations such as OS can easily be confused with AS (“left ear”) or *per os* (“by mouth”), even by trained professionals. Such misinterpretations of medical instructions can be fatal. In the early 1990s, two infants died in separate but identical tragedies: they were each administered 5 milligrams of morphine, rather than 0.5 milligrams, as the dosage was written without an initial zero. The naked decimal (.5) was subsequently misread.

The personal and economic costs of misinterpreted medical prescriptions and instructions are hard to quantify. However, anecdotal evidence suggests that misinterpretations are prevalent. While mistakes will always happen in any human endeavor, medical professionals, hospital administrators, and policymakers should continually work to drive the prescription error rate to zero, taking simple corrective steps and also pushing for additional investments.

Certain measures are widely agreed upon, even if some are difficult to enforce, given the decentralization of the country’s healthcare system. For instance, the American Medical Association and other professional organizations have publicly advocated against the use of Latin abbreviations

and other relics of historical pharmacology. As a result, incidents in which *qd* (“every day”), *qid* (“four times a day”), and *qod* (“every other day”) have been mixed up seem to be on the decline. Other measures have been taken by regulators who oversee potential areas of confusion, such as drug names. For instance, the FDA asked a manufacturer to change the name of Levoxine, a thyroid medication, to Levoxyl, so that confusion with Lanoxin, a heart failure drug, would be reduced. Likewise, in 1990 the antacid Losec was renamed Prilosec at the FDA’s behest to differentiate it from Lasix, a diuretic. Unfortunately, since 1992 there have been at least a dozen reports of accidental switches between Prilosec and Prozac, an antidepressant. As more drugs reach the market, drug-name “traffic control” will only become more complicated.

Other measures are controversial or require significant investment and consensus-building. For instance, putting the patient’s condition on the prescription would allow double-checking but also reduce patient privacy; thus, this step continues to be debated. Computerized prescriber order entry (CPOE) systems seem to fix the infamous problem of illegible handwriting, but many CPOE systems permit naked decimals and other dangerous practices. Moreover, since fallible humans must still enter and retrieve the data, any technological fixes must be accompanied by substantial training. Ultimately, a multi-pronged approach is needed to address the issue.

6. What is the Point of this passage? Justify your choice.

7. Identify the other components of the passage, if present: Background, Support, and Implications. Again, justify your assignments.

8. What is the structure of this passage? Where is the Point positioned, and why? What is the abstract narrative of this passage?

### 1. Ether's Existence — Skeletal Sketch

- (1) 1887, M+M experim. undermined class. physics ← Point
  - No ether (ghostly medium thru-out univ)
  - Profound result → accept E's thry rel
- (2) Before: light = wave in ether
- (3) M+M used Earth's motion in ether (like wind)
- (4) → looked for speed diffs, found alm nothing

The "skull" of this sketch summarizes the brief first paragraph. The limbs are the summarized main ideas of each of the subsequent three paragraphs.

Notice that you have to pull more from the last paragraph than just the first sentence. You do not have to master how an interferometer works, but you have to have read everything in that last paragraph to get to the main idea, which is distributed throughout.

2. The Point of the passage is contained in the first sentence of the passage: *In 1887, an ingenious experiment performed by Albert Michelson and Edward Morley severely undermined classical physics by failing to confirm the existence of "ether,"...* (Of course, you should not copy this word for word into your Skeletal Sketch, but instead abbreviate it dramatically, as is shown above.) Everything else in this passage is secondary to this assertion.

3. The first paragraph gives Background on the ether (*a ghostly massless medium that was thought to permeate the universe*) and also gives an Implication (*This finding had profound results... theory of relativity*). The rest of the passage is a combination of Background knowledge and Support for the assertion made in the Point.

4. The structure of the passage is Point First. In fact, the Point is the very first sentence. By placing the Point first in this passage, the author plants a stake in the ground, asserting the importance of the topic from the get-go (...*severely undermined classical physics...*) and providing the reader a sense of direction necessary for such a technical topic that requires a lot of Background. The narrative might be called "An Experiment": *M+M's shook physics, paved the way for Einstein. Here is what people used to think existed. Here is what M+M did to look. Here is what they found: Nothing!*

### 5. Prescription Errors — Skeletal Sketch

- (1) Eur: Rx in Latin, educ. Same in G, F.
    - BUT now easy to confuse abbrev.
    - Can be fatal. Ex: 2 babies.
  - (2) Cost Rx mistakes = hard to quant, but prevalent
    - Med prof, admin, pol should elim errors
  - (3) Some steps = agreed.
  - (4) Other steps harder. Need multi-prong.
- ← Point

Incidentally, Rx is an abbreviation for "prescription," probably originating from Latin. If you happen to encounter a passage on prescription drugs, feel free to use this abbreviation; otherwise, use it to locate a pharmacy when traveling abroad.



6. The Point is the last sentence of the second paragraph: *While mistakes will always happen in any human endeavor, medical professionals, hospital administrators, and policymakers should continually work to drive the prescription error rate to zero, taking simple corrective steps and also pushing for additional investments.* This is the strongest and most general claim made by the author.

7. What comes before the Point is a mixture of Background (e.g., the use of Latin on medieval prescriptions) and Support (e.g., the explanation of the fatal tragedies). After the Point is mostly Implications (various potential steps with pros and cons). The last two paragraphs could be interpreted as judgments on specific tactics, *given* that we all want to drive the error rate down to zero.

8. The structure is Point in Middle. The Point may be positioned in the middle because the author wants to set up the Point with Background and Support stories first, generating outrage about the infant deaths. Then he or she can assert the Point, which does not require much more subsequent support.