

# Approaching Exams Confidently



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Introduction to Medical Education at Iowa



## What do we have to do to answer test questions?

<i>To answer a test question, you need to...</i>	<i>This means you need...</i>	<i>So, this handout talks about...</i>
See and read the question text.	Visual recognition	Reading speed
Process the grammar and word meanings.	Linguistic interpretation	Difficult grammatical structures and vocabulary
Understand the question as a whole.	Reading comprehension Short & long-term memory	Reading speed Short-term memory Building mental models, inferring, predicting, paraphrasing, summarizing, distinguishing fact & opinion, determining main ideas & supporting details
		
Remember the meaning of the question while you look at the answers.	Reading comprehension Short & long-term memory	Reading speed Short-term memory Building mental models, inferring, predicting, paraphrasing, summarizing, distinguishing fact & opinion, determining main ideas & supporting details
		
Select the best answer.	Short & long-term memory Critical thinking skills (synthesizing, analyzing, applying information)	Short-term memory

### Inside this handout:

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# Reading Speed

## Practice Goals:

- Move your eyes faster.
- Recognize word shapes more quickly.
- Avoid reading every word.



Faster reading speed comes after physical practice to train your body, just like soccer goals.

## Test your speed!

There are websites you can visit to test your speed, such as <http://quizstop.com/askread2.htm> or <http://www.readingsoft.com>.

Keep in mind that these sites don't test comprehension! Also, they are trying to sell you speed reading programs! A good reading speed could be anywhere between 180 to 300 words per minute.

You can also check your speed when you read textbooks, articles, and novels. For those with math issues, this is how you do it:

First, estimate the number of words

on a page. Try counting the words in 3 lines, then dividing by 3 to get the average # of words per line. Count how many lines are on the page. Then, multiply the average # of words per line by the # of lines on the page. This is the average # of words per page.

Now that you know how many words are on a page, you can find out how many words you read. Keep track of how many minutes you read, and how many pages. Multiply the # of pages you read by how many words are on a typical page. This estimates how many words you read. Finally, divide this by how long you read. Now you have your reading rate in words per minute.

# Six Ways to Work towards Faster Reading

## Moving your eyes faster...

### 1. Skimming

Read a text as quickly as you can. Look for just the main idea and major details.

### 2. Scanning

Think of a word or phrase to look for. Time yourself and cross out all the examples on a page. Check how many errors you made. You could also make a list of questions to answer.

Ready to try it? How many times does the word "reading" appear on

this page?

### 3. Double-read

Select a paragraph or section of text. Read it twice, but moving your eyes more quickly. Did you understand as much as reading it slowly once?

## Recognizing word shapes & skipping words...

### 3. Word Finds

I'm not kidding. Try these online: <http://www.medword.com/MedGames>

### 3. Half-text

Cover the top or bottom half of a line of text and then try to read it.

Can you read this?

### 3. Blackout!

Pick a text. Mark out every 5-10 words. Set it aside and try to read it in a couple days.

Can you recognize these after I some of out?

开卷有益

"Reading is always beneficial."

—Chinese proverb

# Some Interesting Reading Facts

- Readers may not automatically transfer their reading skills to new languages they learn or to new kinds of reading tasks.
- Reading speed depends on the material and how much detail you want to remember. The more you want to keep in your head, the slower you'll read!



Bilingualism brings cognitive flexibility, though it may slow your reading!

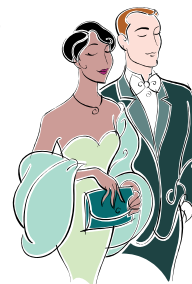
- Reading word-for-word (or too slowly) taxes your short-term memory.
- Segalowitz, Paulsen, and Komoda (1991) found that even very skilled bilingual readers can read 30% slower in the second language they acquired. Others have found that bilingual children read better.

- Most people read more slowly on a computer screen than on paper. (Remember those computer based exams? There are more to come!)
- Everyone reads faster when the ends of lines coincide with the ends of meaningful phrases. The possible speed gain, though, has been given up due to the extra cost of publishing books like this.

# Handling Difficult Grammatical Structures

The formal language in test questions is often difficult to understand because of the complex grammar. Many ideas are combined into just one sentence, and long sentences

take much longer to mentally process. Sometimes people with grammar trouble can't even recognize all the meaning possibilities.



Formal language is language dressed up for certain kinds of writing. It has an appropriate time & place, just like tuxes & gowns.



## So what are some difficult grammatical structures?

Structure	Key Details	Example	Easier-to-read Sentence
<b>Passive verbs</b>	The person doing the action is often hidden. There are more words than in active verb phrases. The order of items make these difficult to understand quickly.	<i>The <u>patient is connected</u> to a spirometer containing a known concentration of helium.</i>	<u>A DOCTOR CONNECTS THE PATIENT TO A SPIROMETER.</u>
<b>Deeply embedded questions</b>	The question is not the main clause of the sentence. It takes more processing to determine what needs to be answered. It helps to make the question its own clause.	<i>The part of the vascular system that is affected in this disorder is derived from <u>which of the following embryologic structures?</u></i>	<u>WHAT IS THE DISORDER? WHAT PART OF THE VASCULAR SYSTEM IS AFFECTED BY IT? WHAT EMBRYOLOGIC STRUCTURE MAKES THIS PART?</u>
<b>Adjective clauses</b>	These clauses describe nouns. They add detail, but can cause bad readings of sentence meanings. You need processing time to figure out how the noun & clause relate.	<i>A 36-year-old woman is hospitalized for treatment of <u>a stomach ulcer that has been getting progressively worse over several months.</u></i>	<u>A DOCTOR HOSPITALIZES SOME WOMAN. SHE HAS A STOMACH ULCER. THE ULCER HAS BEEN GETTING WORSE FOR MONTHS.</u>
<b>Adverb clauses &amp; sentence connectors</b>	These answer when, why, or how something happened. They add an extra clause to the sentence.	<i><u>When the bacteria begin growing,</u> she isolates individual colonies &amp; tests each one for the ability to grow on a minimal medium.</i>	<u>THE BACTERIA START TO GROW. SHE ISOLATES COLONIES. SHE TESTS COLONIES. SHE LOOKS TO SEE WHAT GROWS.</u>
<b>Noun clauses</b>	These are used in place of nouns. They can be replaced by <i>it</i> or <i>this</i> . They add an extra clause.	<i><u>Which of the following organisms is the most likely cause of this patient's symptoms?</u></i>	<u>SOME NAMES OF ORGANISMS FOLLOW. THIS ONE IS THE MOST LIKELY CAUSE OF SYMPTOMS. (THE MOST LIKELY CAUSE IS <u>THIS</u>.)</u>
<b>Introductory prepositional phrases</b>	Prepositions don't have much inherent meaning. You have to look for it elsewhere, and process one more relationship to the main meaning of the sentence.	<i><u>In one case,</u> she finds that a 2-nucleotide segment of DNA has been deleted.</i>	<u>SHE FINDS <u>ONE CASE</u> WHEN SOMETHING DELETED A DNA SEGMENT.</u>
<b>Mid-position adverbs &amp; Split infinitives</b>	These can cause confusion because they split the verb phrase.	<i><u>Which of the following antibodies <u>will likely be found?</u></u></i>	<u>PROBABLY WE ARE GOING TO FIND THIS ANTIBODY.</u>

# Steps for Simplifying Complex Grammar

Simplifying complex sentences as you read is one way to increase your reading comprehension. Let's try to simplify this example:

"A SCIENTIST EXPOSES A CULTURE OF BACTERIUM WITH MINIMAL NUTRITIONAL REQUIREMENTS TO A CHEMICAL MUTAGEN, THEN STREAKS OUT THE BACTERIA ON PLATES FILLED WITH A COMPLEX MEDIUM SUPPLEMENTED WITH ALL NECESSARY NUTRIENTS."

## Split sentences into pieces.

First, we'll break up the sentence into pieces with just one subject-verb combination. The trick to this is knowing that helping verbs (such as forms of have or be) can be omitted, and subjects may not be repeated. Our example can be split into five clauses—three with omitted verbs, and four with understood subjects. (The subjects below are underlined, and the verbs in italics.)

- A scientist *exposes* a culture of bacterium to a chemical mutagen
- (the culture of bacterium *has*) minimal nutritional requirements
- then (the scientist) *streaks out* the bacteria on plates
- (the plates *were*) *filled* with a complex medium
- (this medium *was*) *supplemented* with all necessary nutrients

## Make passive verbs into active verbs.

The next step we should take is to make passive verbs active. Passive verbs can take longer to process due to the order of the important elements. Active sentences are easier to read. Here is an active sentence:

- Someone ate the last cookie.

This is its passive counterpart:

- The last cookie was eaten by someone.

One advantage of passives is that you don't have to say who did what. So, another option for our little sentence is:

- The last cookie was eaten.

Passive verbs are extremely common in formal writing. In our long example, there are two passive verbs to make active. Here are the active versions:

- (the scientist) *filled* (the plates) with a complex medium
- (the scientist) *supplemented* (this medium) with all necessary nutrients

## Put the pieces in chronological order.

The next step is to put the ideas in an order that makes sense to you. Sometimes having ideas shown in the order they happened can make them easier to remember, and part of reading comprehension is remembering what you read later. When sentences are long, ideas are usually presented out of order. So, in what order do the events of our long sentence actually take place? One piece is just description and not an action. Where would it make sense to put the description?

This is one of many possible orders:

1. there are some bacteria with limited nutritional needs
2. a researcher exposes it to a mutagen
3. this person supplements a medium with nutrients
4. this person fills plates with the medium
5. this person streaks the bacteria on the plates

This all seems very complicated, but in your head the process won't take that long (especially after practice splitting and combining sentences). You can decide for yourself if the work is worth it. Which is easier to

read, our first sentence, or this one?

A CULTURE OF BACTERIUM HAS MINIMAL NUTRITIONAL REQUIREMENTS. FIRST, A SCIENTIST EXPOSES THE BACTERIA TO A CHEMICAL MUTAGEN. SECOND, THE SCIENTIST SUPPLEMENTS A COMPLEX MEDIUM WITH ALL THE NECESSARY NUTRIENTS. THIRD, THE SCIENTIST FILLS PLATES WITH THIS MEDIUM. THEN THE SCIENTIST STREAKS OUT THE BACTERIA ON THE PLATES.

But, we can't stop now! There are many ways to simplify grammar. Two more good ways are:

## Move adverbs out of verb phrases.

This is a minor change, but sometimes it helps to just put the pieces of the verb back together. In this example, the adverb "likely" splits the two pieces of the verb phrase:

"WHICH ARTERY WAS LIKELY INVOLVED?"

Do you think moving the adverb makes it any easier to understand?

- Which artery most likely was involved?

## Pull out embedded questions.

Sometimes the actual question appears as the third or fourth clause in

a sentence. Pulling these out to make single clause questions can an important way to simplify grammar. If you don't know what you're being asked, how can you pick an answer? In this example, the question is the third clause:

"THE PHYSICIAN SUSPECTS A DISEASE THAT IS CHARACTERIZED BY AN ABNORMALITY OF WHICH OF THE FOLLOWING BIOCHEMICAL FUNCTIONS?"

Is the version below easier to read?

- The physician suspects a disease.
- An abnormal biochemical function characterizes the disease.
- What is this biochemical function?



Understanding long sentences is like the opposite of putting puzzles together. You may have to split sentences apart to make the overall picture more clear.

## Some Example Questions to Practice with

A 36-year old woman is hospitalized for treatment of a stomach ulcer that has been getting progressively worse over several months. Radiographic studies reveal the site of involvement to be along the greater curvature, approximately 4 cm away from the pyloric sphincter. That night, the ulcer perforates, and there is considerable intra-abdominal bleeding. Surgery reveals that the ulcer has eroded through the stomach wall and has damaged the artery supplying the involved region of the stomach. Which artery was likely involved?

Left gastric

Left gastroepiploic

Right gastric

Right gastroepiploic

Short gastric

On physical examination, the upper body of a 7-year-old-boy appears much more developed than his lower body. Blood pressure in the upper extremities exceeds that of the lower extremities. On cardiac examination, there is a midsystolic murmur over the anterior chest and back. The child's lower extremities are cold, and femoral pulses are absent. The part of the vascular system that is affected in this disorder is derived from which of the following embryologic structures?

Bulbus cordis

Ductus arteriosus

Left horn of the sinus venosus

Right common cardinal vein

Right horn of the sinus venosus

Third, fourth, and sixth aortic arches

A 42-year-old woman complains of a burning pain in the upper middle region of her abdomen. The pain usually occurs about 2 hours after a meal and frequently awakens her at night. Antacids can usually relieve the pain within a few minutes. An x-ray film reveals a typical duodenal ulcer identified as a discrete crater in the proximal portion of the duodenal bulb. Because the woman does not have a history of chronic use of aspirin or other nonsteroidal anti-inflammatory drugs (NSAIDs), the bacterium *Helicobacter pylori* is assumed to be the major factor in the etiology of the ulcer. Which of the following is likely to be normal in this woman?

Basal acid output

Fasting serum gastrin

Gastrin response to a meal

Maximal acid output

Parietal cell mass

Pepsin secretion

# Problematical? Grueling? Fractious? Challenging!

## Vocabulary

Students who get into medical school obviously have excellent vocabularies. So, what is the issue?

Whenever someone starts a new discipline, it takes experience and time to understand the new uses for familiar words. For example, how long have you had a meaning associated with the word “history?” Is that meaning the same one used in medicine? What is the difference between what “history” means in example #1 versus #3 ?

1. I took the patients history.
2. I interviewed the patient.
3. I studied history in school.
4. I studied interviewing.



Dictionaries don't help with word meanings as much as examples.

The best way to tell what word uses you have trouble with is to ask yourself:

- Which uses make you slow down when you are reading?
- Are there any word uses that cause you to re-read a sentence to get its meaning?
- Did you miss a textbook, class, or test question because of the meaning you had for a particular word?

Once you know what new word uses can be a problem for you, you can work on a solution. One good way to learn new word uses is to keep a list of example sentences with your own or someone else's version of the meaning included. So, if I am having trouble with what “appear” means in my medical texts, I would make a

list like this:

- “The upper-body of a 7-year-old boy appears much more developed than his lower body.” (It looks bigger. maybe the doctor doesn't want to say with 100% certainty that it is more developed)
- “He is conscious but appears quite agitated.” (maybe the doctor doesn't know what the patient is really like, but in his or her opinion, whatever this person is doing counts as agitated--even if the patient might not say that)
- “The baby appears sad and miserable, but visually tracks the physician.” (maybe the body language for sad and miserable is defined differently in the baby's world than in the doctor's? maybe there is no way for the doctor to absolutely know if a baby is miserable?)

From these examples, can you say how “appear” is used in medical texts?

## Other Kinds of Challenging Words

### Expressions used specifically in formal language.

These are often made up of many words, but you can't build the meaning from the meaning of the individual words. Examples:

- which of the following, despite the fact that, in order that

### Words that connect ideas and clauses.

These words are commonly used, but some versions only show up in formal written language. Having to relate two ideas take more processing time. Examples:

- however, in contrast, on the contrary, in spite of, therefore, thereby, in order to, so that, further, furthermore, moreover, additionally

### Short, common words with changing meanings.

Examples:

- a, an, the, this, that, those, in, on, as, for, with, never, every, each, any...

These seem like very easy words, but you actually use a whole section of text to determine what they mean at any particular time, and the meaning may not be the same the next time they are used.

### Words describing probability, qualification, strength of claim, or generalization.

Is your opinion of what is “likely” the same as the writer's?



Sometimes phrases' meanings don't come from a sum of their parts.

Examples:

- pervasive, persistent, appear, seem, often, is associated with...

### Synonyms with very subtle meaning differences.

There are a lot of ways to “say” things. You can:

- state, mention, declare, decry, avow, claim, respond, complain, maintain, describe, tell...

Some words are close in meaning, but not exactly the same. They are used in slightly different situations. “Big” and “large” are close in meaning, but a “big shirt” and a “large shirt” are not the same.

# Reading Comprehension Skills

## Tips for Reading & Answering Test Questions

- Prepare yourself before you read each question. Why are you taking this test? What is the course subject? What knowledge do you need to display? Knowledge of basic science? Diagnostic skills? How to choose medication?
- Don't skip details or skim the question. For some questions, every detail is needed to choose the answer. It is better to read it all and discard unnecessary details than to miss something and choose the wrong answer.
- Don't read the answers or the last sentence before you read the rest of the question. Very few people can do this consistently and benefit from it. Most

who try this tactic end up skipping details when they skim the rest of the question. Then, they choose the wrong answer because they missed something.

- More than one answer might be plausible, but you need to pick the *best* answer. Eliminate the choices that you know are not possible, then pick from the rest.
- If you really don't know an answer, just pick something and move on. Don't go back to a question and change your answer unless you have a feeling like "Eureka! Suddenly the answer is clear!"
- If a question is negative, like "which of the following is not a disease," make the question positive. Ask yourself, "which of these **IS** a disease?" Mark off the answers that fit that question. What-

ever you didn't mark is your answer.



Just say no to negative questions. Make them positive in your head.

## Mental Models

Reading comprehension is basically making sense of what you read, and then being able to remember it. Saying that we "build mental models" is a fancy way of saying that we keep ideas and not the exact wording in our heads after we read something.

One way to keep the ideas is to picture in your head what the question is describing. What do you see when you read this sentence?

- "A 42-year-old woman complains of a burning pain in the upper middle region of her abdomen."

As you read, do you picture what a 42-year-old woman looks like? How does her face show she is feeling pain? Where is she touching to show the doctor the area of the pain?

Keep in mind that different people rely more heavily on some senses than others. If you are a visual

learner, then a picture or movie in your head will work for you. If you rely more on listening to learn and remember, you might want to hear the woman talking, or tell yourself a paraphrased version of the story in your head. How could you summarize or re-state this sentence?

- "An African child develops massive unilateral enlargement of his lower face in the vicinity of the mandible."

You might tell yourself something like:

"Okay, so this kid's jaw is way swollen, but only on one side."

Notice that in this paraphrase, the grammar is simplified and less formal vocabulary is used. Does this seem familiar?

*A picture is worth a thousand words.*

Other tricks are to ask yourself as you read:

- Why is this detail important?
- Does this change what I know already from this question?

If you go back to the first example, maybe you decide that it is not abnormal for a 42-

year-old woman to have pain in her abdomen. So, you think this is probably a common problem. If in the next sentence you find out she has an ulcer, does this change the situation? Is this still a common problem, or something rare? This helps because when you look at the answers, you can already discount anything that is related to an uncommon condition. You want to try to predict the answer before you get to them!

**INTRODUCTION TO MEDICAL EDUCATION AT IOWA**

**APPROACHING EXAMS CONFIDENTLY  
JUNE 20, 2007  
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## Improving Your Short-Term Memory

The long-standing belief is that humans can hold seven plus or minus two items in their short term memory. The trick to keeping more is to find some way to group the items you want to remember. It's like packing a suitcase: You can carry seven shirts, or you can put the shirts and a whole lot more in seven suitcases.

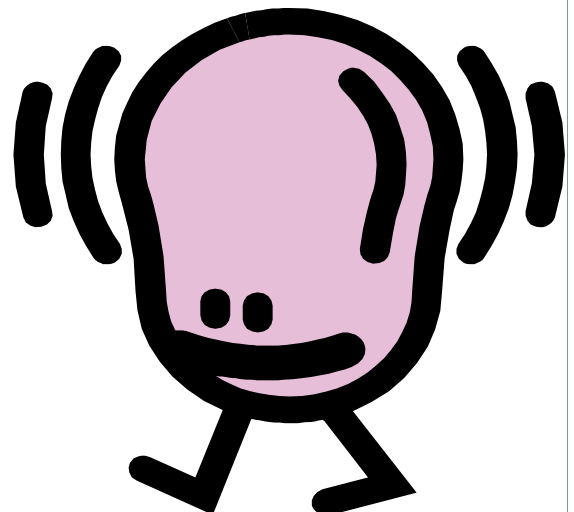
Want to work on your short term memory? These websites can give you some practice or ideas:

**Braingle's number or letter test**

[http://www.braingle.com/mind/test\\_numbers.php](http://www.braingle.com/mind/test_numbers.php)

**Neuroscience for Kids' Memory Experiments**

<http://faculty.washington.edu/chudler/chmemory.html>



Train your brain!!!