Prof's Questions and ***My Questions***

Suggestions for Using the ThinkSheet

Professor _____

Read the professor:

Consider these:

- *How your professor leads discussions*
- *What he/she expects you to know*
- *What she/he expects from you in papers, in discussions,*
- *The types of questions he/she asks in class, on tests, on quizzes*
- *What kinds of things he/she emphasizes*
- *What you know about his/her style of teaching and testing*

Page #	PROF'S QUESTIONS
Page where you asked the questions	*As you read, use what you know about the professor to predict the questions you think he or she will ask.* *List these questions here along with the page where you thought of a question.*

Page #	MY QUESTIONS
Page where you asked the questions	*As you read, be very curious. List your own questions and the page where a question occurs to you.* *Consider these:* • *What don't I understand?* • *What does this make me wonder about?* • *If I were to teach this, what more would I want to know?* • *What are five more interesting questions I could ask about this part?* *Other important questions about any part of a text:* • *Why is this part important for understanding the topic?* • *What does it contribute?* • *Why did the author include it?* • *See pages 73 and 74 to stimulate more thought-filled questions.*

Name _____ Date____ Section ____ Text or Chapter _____

Prof's Questions and *My Questions*

ThinkSheet for Ask Questions

Professor _____

Read the professor:

Page #	PROF'S QUESTIONS

Page #	MY QUESTIONS

Record ***Prof's Questions*** **and** ***My Questions*** on your Reading Log on the DURING line. Complete the right-hand column, reflecting on how these questions helped you construct meaning from this text.

Name_____ Date___ Section __ Text or Chapter Ch. 17 The Periodic Table

Reading Purpose(s) Explain (1) how the periodic table is organized and (2) why the elements are grouped as they are—the logic behind the table

Prof's Questions and *My Questions*

ThinkSheet for Ask Questions

Professor Dr. Shaw, Physical Science Professor

Read the Professor:

Tells stories about scientists & development of ideas.

Likes analogies.

Wants to address our questions. Starts class with "Your hardest question, please" -and means it.

Values explaining "facts" more than only stating them.

His favorite question is "Why."

He told us what he wants us to gain from this chapter - and I made that my purpose. See above.

Page	*PROF'S QUESTIONS*
p. 204	At the atomic level, what is the difference between chemistry and physics?
p. 205	How is "periodically" used differently in this chapter than in general language use?
p. 205	What is the underlying principle responsible for the pattern of the periodic table?
P206	Which scientists in the 18th-19th centuries determined (and how) the Law of Constant Composition?
p.208	Why are "combining ratios" used to explain the Periodic Table?
p.209	Can an element be unstable and still last thousands/millions of years?
p.211	What characteristics of the fluorine atom make it the most reactive? How is "reactive" defined in chemistry?
p.212	Is a proton a proton no matter what, not matter the element? An electron and electron no matter what? That is, are the differences in the elements a difference of number of particles rather than differences in the particles themselves?
p.213	Why do some of the orbital energy rows seem out of order? (Fig. 17.11) e.g., 4s in fourth row?

Page	*MY QUESTIONS*
	(as stimulated by the Question Starters Chart on p. 73)
	FACT:
p.209	Does electricity travel along a metal wire, not inside it? a slippery slide rather than a pipe?
P.210	Why are the actinide series of elements separated from the rest of the table?
p.210	What makes an atom have greater volume than another?
p.212	What do the superscripts mean in Figure 17.10?
	PROBING:
p.213	How do electrons influence each other? Why in these ways?
p.214	I absolutely do NOT understand the first full paragraph on this page -thought I understood, now I'm all confused again. What is it I do not understand? (seems if I could understand and explain this paragraph I would understand the essence of this chapter.)
End	What is the logic behind how the Periodic Table is organized? Can I point to any element and explain why it is in that column and in that row?
	FEELING/ATTITUDE/ EXPERIENCE:
End	In my high school chemistry class, I now realize, I learned the Periodic Table without understanding. How and why has my thinking changed concerning the Table?
	CONNECTING/EXTENDING:
End	In what ways is every aspect of these three elements different from the other two: lithium, arsenic, and neptunium?
End	What kinds of problems have been solved because scientists understood the logic of the Periodic Table? That is, what can a chemist do understanding every element's place that he/she could not do without this understanding?

Question Starters Chart[1]

TYPE OF QUESTIONS, (Connections to Principles in the Framework), Explanations,
Question Starters, Especially useful for these types of texts though good for all texts.

FACTUAL: (Synthesize Along the Way, Ask Questions, Review, Explain), ask questions to clarify the information in the text and to be sure you have the knowledge base of key facts, definitions, principles, or rules.

Who...?
What...?
When...?
Where...?
How...?
How can I say....in a different way?
What is the central message of this part?
What evidence do I have for..?
How do I explain...?

Especially useful for information-dense texts (e.g., biology, economics) and you need to learn this information.

PROBING: (Ask Questions, Infer), ask questions that cause you to dig in the mud and pull out the meaning. Go beyond a surface understanding.

What can I conclude from...?
What is the importance of...?
Why did the author include...?
What patterns do I see?
What complex issues are involved?
What do I predict will...?
What is missing or wrong or incomplete?
How could I organize my thoughts about....?
What are the symbols and what do they mean?
Where is the author coming from concerning....?
What are the parts and how do they connect to the whole?

Especially useful for science and for texts posing arguments (e.g., essays, social sciences, philosophy)

FEELING/ATTITUDE/EXPERIENCE: (Ask Questions, Mark the Text), ask questions that make you realize your beliefs, trace the source of your thinking, bring to conscious awareness your background experience and knowledge, and face your underlying assumptions.

What do I believe about...?
What are my reasons for...?
What are my experiences with...?
How and why has my thinking changed concerning...?
What happens if I act on my belief about...?
How did I come to believe...?
What captures my attention about....and why?

Especially useful of literature and opinion texts (i.e., essays, political issues, current events)

CONNECTING/EXTENDING: (Ask Questions, Mark the Text), ask questions to see conflicts, implications, consequences, and perspectives that move you beyond the text and push you to explore new paths.

How does...connect to...?
What if...?
Is this true? How can I prove...?
How can I apply...to....?
Why does....matter?
How would someone else look at ....?
In what ways are...and...the same? Different?
If...is true, what else must be true?
What contradicts....?
What kinds of problems could I solve with this information?

Especially useful for science, social science, and application texts

[1] These four types of questions come from Louise Durham, personal communication, 2000.

Bloom's Revised Taxonomy Adapted for Asking Questions about Text[1]

Higher thinking levels

Lower thinking levels

HIGHER TO LOWER LEVELS, Revised labels are bolded, Bloom's original labels in ( ).	Sample Actions	Sample Question Stems
CREATE (SYNTHESIZE) *Put parts together to form a coherent and functional whole or into a new structure or pattern; use the text as a starting point to generate new ideas and possibilities*	Compose Construct Create Discover Design Devise Formulate Generate Hypothesize Imagine Invent Plan Propose Produce Pull together Reorganize into a new pattern or structure Research Speculate	What questions need to be addressed to find out if …? What new uses for . . . could you design? Let your mind take this concept in as many directions as you can. What hypotheses can you suggest to explain. . .? to improve . . . ?
EVALUATE (EVALUATE) *Make judgments based on criteria and standards*	Argue Assess effectiveness & appropriateness Check Convince Critique Debate/Defend Detect inconsistencies or fallacies Evaluate Generate pros/cons Judge for internal & external consistency Justify Monitor Persuade Rate Support/refute Test	Why would you favor. . .? How would you defend or refute the author's position? Evaluate . . . in terms of __ and __. What inconsistencies or problems do you see in the author's argument? Are the stated and implied premises true?
ANALYZE (ANALYZE) *Break material into its parts, decide how the parts relate to each other and to the whole—to the overall structure or purpose*	Characterize Compare/Contrast Deconstruct author's purpose intent, point of view, bias Determine relevance & importance Differentiate Distinguish Examine Integrate Organize Outline structure Predict Relate	What are the most important parts? Why? How are … and … the same? Different? How does this part influence this part? What parts suggest the author's intentions and biases?
APPLY (APPLY) *Apply to a familiar and to an unfamiliar situation*	Choose Demonstrate Dramatize Execute Implement Solve Use in another situation	If you know A and B, how could you determine C? How could you demonstrate. . .? Using what you have learned, how can you solve this new problem?
UNDERSTAND (COMPREHEND) *Construct meaning from text*	Abstract Categorize Classify Conclude Connect Convert Describe Discuss Dramatize Exemplify Explain Express Generalize Illustrate Infer Interpret Interrogate Paraphrase Predict Report Represent Restate Review Sequence Summarize Translate	How do you explain the . . .? What are the author's main arguments? Can you illustrate . . . ? What examples can you generate for . . .? How does . . . connect with what you already know? What is your interpretation of . . . ?
REMEMBER (KNOW) *Retrieve knowledge from memory*	Define Find/Retrieve Identify Label/name List Locate Match Memorize Recall Recognize Record Remember Repeat Tell	What did the text say about. . .? How does the author define. . . ? List the three . . .? Who invented. . .?

[1] Adapted from Anderson & Krathwohl (2001), Bloom (1956), Manson & Clegg (1970), Pohl (2000), Sanders (1966).