

Name: _____

The Disappearing Spoon
Part 1 (Chapters 1-3)

Chapter 1: Geography is Destiny **He B Sb Tm O Ho**

1. **Pre-reading:** Before reading Chapter 1, write down ways that you think helium and oxygen are similar. How are they different from each other?
2. The author compares the periodic table to a map. Do you find this metaphor effective? Why or why not?
3. Which subatomic particle determines the reactivity of an element: proton, neutron, or electron?
4. If you go up or down by 1 on the pH scale, you have changed by a factor of _____. This is similar to the _____ scale, which measures the strength of an earthquake. So an acid with a pH of 3 is _____ times stronger than an acid with a pH of 6.
5. How did Gilbert Lewis change the definition of an acid?
6. Who was Maria Goeppert-Meyer? How did her work help explain why the elements helium, oxygen, and calcium are all very common?

Chapter 2: Near Twins and Black Sheep: The Genealogy of Elements C Si Ge

1. **Pre-reading:** Before reading answer the following question: Where can we find the elements carbon and silicon in everyday life? Give specific examples.
2. What properties of carbon make it such an appropriate element as the foundation for living things?
3. Silicon is used in _____, beating out the element _____.
4. Give two reasons why building life forms from silicon is much more challenging than using carbon.
5. Summarize the story of William Shockley, John Bardeen, and Walter Brattain in a paragraph. Which of the three was least deserving of the Nobel Prize?
6. Jack Kilby invented the _____, in order to get rid of a problem called the _____ of _____. What was this problem all about?

Chapter 3: The Galapagos of the Periodic Table As Ga Ce Y Yb Er Tb

1. **Pre-reading:** For some of the elements, it is easy to see where their symbol and name comes from. (ex: Einsteinium = Es). Others have an interesting origin. Find out, using the Internet, why lead has the symbol Pb. How is this related to the word plumber?
2. Summarize the story of Robert Bunsen. What did he invent (not the Bunsen burner)?

3. Why does Mendeleev get the credit for the periodic table? How does thinking about the elements of the table relate to pieces of a puzzle, especially with his accomplishments?
4. We rarely hear about the mistakes of geniuses, just their accolades. What were some mistakes that Mendeleev made?
5. A man named Antoine Lavoisier is often called the father of modern chemistry, helping push to make chemistry a more exact science. He also proved the Law of Conservation of Mass showing that matter is neither gained nor lost during a chemical reaction. What was at least one thing that Lavoisier was incorrect about? How did Lavoisier die?
6. Why is the little town named Ytterby, Sweden probably the most significant place related to the periodic table?

Summary: Write down 5 facts from Part 1 that you found interesting.

- 1.
- 2.
- 3.
- 4.
- 5.

Reflection: Write at least a 5 sentence paragraph about your reaction to the book thus far. Include evidence from the book to support your reaction.

