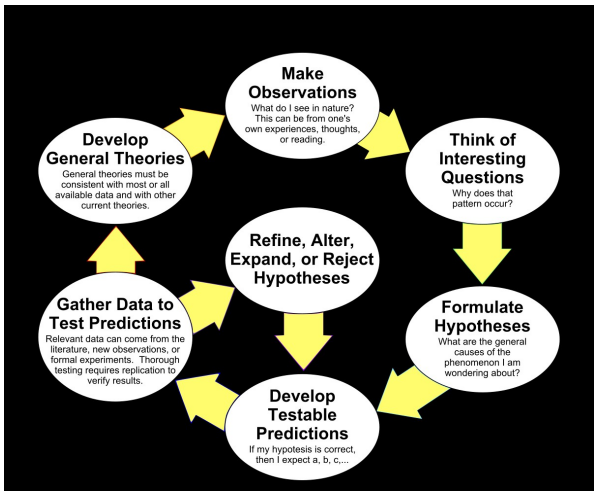

Box Six:

My phenomena is everyday life. We use the scientific method and science almost every day, even when you aren't aware. One example would be when you want to make breakfast in your house but you don't know what to make. You would think about the pros and cons of each food item and then you would choose based on the information you have. Another example is if you want to put down new carpet in your house. You might ask yourself How much money will I need to cover my whole house and with that question you could come to a hypothesis such as, if I spend 500 dollars on carpet, then I should be able to cover my whole house. Tasks like these happen everyday and we rarely notice that we are using science.

Box One:

- Key Questions

Question: What scientific attitudes help generate new ideas?

Answer: Curiosity, skepticism, open-mindedness, and creativity help scientists generate new ideas.

Question: Why is peer review important?

Answer: Publishing peer-reviewed articles in scientific journals allows researchers to share ideas and to test and evaluate each other's work.

Question: What is a scientific theory?

Answer: In science, the word theory applies to a well-tested explanation that unifies a broad range of observations and hypotheses and that enables scientists to make accurate predictions about new situations.

Question: What is the relationship between science and society?

Answer: Using science involves understanding its context in society and its limitations.

- Chapter Assessment

Review Key Concepts

1. List the attitudes that lead scientists to explore and discover.

Curiosity, skepticism, Open-mindedness, and creativity all lead scientists to explore and discover.

2. What does it mean to describe a scientist as skeptical? Why is skepticism an important quality in a scientist?

When you call a scientist skeptical, it means that they are always thinking about if something is right or makes sense, and that they always question their own thinking. This is important to a scientist because sometimes in science the smallest mistake can cause a lot of trouble, and if you are always going back to what you are working on and saying to yourself, "Is this good enough?" or, "Does this make sense" then you can find flaws and problems that you didn't notice before.

3. What is peer review?

Peer review, according to the chapter, is where scientific papers are reviewed by anonymous, independent experts.

4. An advertisement claims that studies of a new sports drink show it boosts energy. You discover that none of the study results have been peer reviewed. What would you tell consumers who are considering buying this product?

I would tell people who want to purchase this product to buy at your own risk because only one professional has looked over this study/experiment.

5. What is a scientific theory?

In science, the word theory applies to a well-tested explanation that unifies a broad range of observations and hypotheses and that enables scientists to make accurate predictions about new situations.

6. How does use of the word theory differ in science and in daily life?

In science the word theory means a well-tested explanation that unifies a broad range of observations and hypotheses and that enables scientists to make accurate predictions about new situations, but in daily life I think people use it as a guess about anything with no evidence.

7. How is the use of science related to its context in society?

Science develops technology, addresses social issues, informs policies, solves everyday problems, satisfies curiosity, and builds knowledge.

8. Describe some of the limitations of science.

13. High levels of radiation can cause cancerous tissues and destroy cells; careful use of radiation in turn can sterilize products and kill cancer cells.

14. Hydrogen can give up an electron to become a hydrogen ion (H+) or share an electron with another atom to complete its outer shell of two electrons.

15. The total number of protons and neutrons in the nucleus of an atom is called its mass number. Isotopes are identified by their mass numbers; for example, carbon-12, carbon-13, and carbon-14.

16. The physical and chemical properties of a compound are usually very different from those of the elements from which it is formed.

17. The formula for table salt, NaCl, indicates that the elements that make up table salt—sodium and chlorine—combine in a 1:1 ratio.

18. Sodium is a silver-colored metal that is soft enough to cut with a knife. It reacts explosively with cold water. Chlorine is a very reactive, poisonous, greenish gas that was used in battles during World War I. These are both examples of chemical compounds.
An atom that loses electrons becomes positively charged. An atom that gains electrons has a negative charge.

19. When atoms share two electrons, the bond is called a single covalent bond. Sometimes the atoms share four electrons and form a double bond. In a few cases, atoms can share six electrons, forming a triple bond.

20. The structure that results when atoms are joined together by covalent bonds is called a molecule, the smallest unit of most compounds.

21. The compound sodium chloride, table salt, is a white solid that dissolves easily in water, is not poisonous, and is essential for the survival of most living things.

Box Three: (11)

atom: basic unit of matter

nucleus: the center of the atom which holds the protons and neutrons together with strong forces

electron: negatively charged particles that move around in the space around the nucleus

element: a substance that is made up of only one type of atom

isotopes: atoms of the same element that have different numbers of neutrons

compound: a substance made up of two or more elements in definite proportions

ionic bond: formed when electrons transfer from one atom to another

ions: the result of an ionic bond