**Ch. 1 - The Nature of Science**

**A. Defining Science**

* **Pure Science**
  + research that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + has no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ use
* **Applied Science (Technology)**
  + the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_application of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PURE**

* human genetics
* polymer science
* atomic theory
* study of the human ear

**APPLIED**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Life Science**
  + the study of living \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Earth Science**
  + the study of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Physical Science**
  + the study of \_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + chemistry & physics

**B. Problem-Solving**

**1. Identify the problem.**

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. Plan a strategy.**

* + Look for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Break the problem into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Develop a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**3. Execute your plan.**

**4. Evaluate your results.**

* + Did you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the problem?
  + Is your answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

**Write the four steps for problem solving:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**C. Scientific Method**

* **Hypothesis** - \_\_\_\_\_\_\_\_\_\_\_prediction
* **Theory** - explanation of “why”
  + based on many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & experimental \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Scientific Law** - prediction of “what”
  + describes a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in nature

**Theories and laws are well-accepted by scientists, but...**

They are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when new information is discovered.

**Steps in Scientific Method**

**1.**

**2.**

**3.**

**4.**

**5.**

**Example:**

**1. Determine the problem.**

**2. Make a hypothesis.**

**3. Test your hypothesis.**

**4. Analyze the results.**

**5. Draw conclusions.**

**D. Experimental Design**

**Example:**

* **Single variable:**

* **Constants:**
* **Independent Variable:**

* **Dependent Variable:**