

Unit Three

Elements, Compound, Mixtures

For this self-directed unit, you will use Hebden pgs. 41-64 to produce a set of notes, and answer various questions related to the material. There will be three quizzes and two lab experiments to complete, and a test at the completion of the unit.

Tasks to complete:

- 1a. Make notes for and know the definition of **qualitative** and **quantitative**.
- 1b. Complete questions 1-3 on pg. 43.
- 2a. Define the following terms: **observation, interpretation, description, data, experiment, hypothesis, theory, law**.
- 2b. Read p. 41-42 (“Some Additional Comments about Hypotheses, Theories, and Laws”).
3. Make notes for and know the definitions of the following terms:
 - matter**
 - Chemistry**
 - substance**
 - physical property** (give two examples)
 - chemical property** (give two examples)
 - intensive property** (give three examples)
 - extensive property** (give three examples)
4. Complete questions 13-15 on pgs.44-45.
5. Share your ideas on the first four tasks with a classmate in order to clarify any confusing points.

Ask Mr. Quast for Quiz #1 (complete at a *different* desk than your own)

5. Sketch diagrams and write notes to describe the properties of **solids, liquids, and gases** as related to their molecule spacing (Kinetic Molecular Theory (KMT)). Copy the chart at the bottom of pg. 45 into your notes.
6. Read the box at the top of pg. 46 (NOT testable, but interesting...)
7. Define the following terms: **hardness, malleability, ductility, lustre, viscosity, diffusion, vapour, vapour pressure**.

8. Complete questions #16, 21-27, 29 and 31 on pgs. 47-49.

9. For this task, it may be helpful to work with a classmate. Write notes for, be able to define, and give one example for each of the following terms:

- | | |
|-------------------------------------|---------------------|
| -system | -homogeneous |
| -phase (distinguished by naked eye) | -heterogeneous |
| -element | -pure substance |
| -atom | -mixture |
| -compound | -mechanical mixture |
| -molecule | -solution |
| -ion (give <i>proper</i> examples) | |
| -particle | |

10. Copy and understand the chart on the top of pg. 50 into your notes.

11. Copy the chart from the middle of pg. 51 into your notes.

12. Give one example of each (see bottom of p. 50):

- liquid/solid solution
- liquid/liquid solution
- gas/liquid solution
- gas/gas solution
- solid/solid solution

13. Complete questions 33-39, 41-44 on pg. 52. Also, read pages 53-54 (top) as pre-lab for Separation Lab Experiment.

14. Complete **Separation Lab Experiment**.

15. Discuss questions with a classmate and make sure you have a clear picture of the definitions above before continuing. Ask Mr. Quast if clarification is required.

Ask Mr. Quast for Quiz #2 (complete at a *different* desk than your own)

16. Read section III.5 (pgs. 59-61)

17. Write notes for and be able to define **chemical change, physical change, melting temperature, freezing temperature, boiling temperature, condensation temperature**.

18. Copy and understand the heating-cooling diagram on the top of pg. 60. Be able to describe what is happening in each section of the curve. Pay special attention to what is happening on the **sloping** portions compared to the **level** portions of the graph.

19. Complete questions 59-63 on pg. 61.

20. Discuss ideas with a classmate.

Ask Mr. Quast for Quiz #3 (complete at a *different* desk than your own)

21. Read pg. 57 in Hebden as a pre-lab for Lab 2D (Thin Layer Chromatography).

22. Complete Lab 2D with a full write-up.

Unit Test