

Honors Chemistry

Summer Assignment – Chapter 1

Honors Chemistry is a fast-paced advanced chemistry course. It covers a lot of concepts very quickly, usually one unit every two weeks. We will start diving into new concepts right away rather than going over things you already know. The summer assignment is meant to be a **review** of chemistry concepts you have already mastered in Physical Science and to give you an idea of the math you should be comfortable doing as well as the time commitment for this class.

This assignment will be due **the second day of class** and will be your first homework grade. Please complete on lined notebook paper and **SHOW ALL WORK**.

Chapter 1: Introduction: Matter, Energy, and Measurement

Please complete the reading from the textbook, then complete the assigned questions from the **textbook that begin on p. 35**. Finally, you should answer the questions at the bottom of this document.

Topic	Reading	Textbook Questions
1.1-1.2 Classification of Matter	pp 4-11	1, 3, 14
1.3 Properties of Matter	pp 12-14	2, 5, 18, 19, 22-24
1.4 Energy	pp 15-16	4, 27-28
1.5-1.6 Units of Measurement and Uncertainty	pp 17-28	6, 8-11, 31, 32abcef, 34-36, 43, 45, 47-48, 50-52, 71-72
1.7 Dimensional Analysis	pp 18-33	53ab, 54a, 56, 58, 60a, 62, 69, 81

Chapter 1 Additional Questions – answer on a separate lined sheet of paper

1. Define the following terms:

- a) Matter
- b) Element
- c) Atoms
- d) Molecules

2. Draw a diagram of the molecular view of a solid, liquid, and gas. How do solids, liquids, and gases differ from one another?

3. Classify each of the following as an element, compound, homogeneous mixture, or heterogeneous mixture:

- a) Seawater
- b) helium gas
- c) sodium chloride (table salt)
- d) a bottle of soft drink
- e) milk shake
- f) air in a bottle
- g) concrete

4. Define the following terms:

- a) Intensive property
- b) Extensive property

Honors Chemistry

Summer Assignment – Chapter 1

5. Identify the following as physical (P) or chemical (C) properties:

- a) Oxygen is odorless and colorless
- b) Copper turns green when exposed to the environment
- c) A piece of metal is magnetic
- d) The density of water is 1.0 gram per cubic centimeter
- e) Diamonds are a very hard substance
- f) The tree is 8 meters high
- g) Sodium reacts very easily with other elements.
- h) The boiling point of water is 100 degrees C
- i) Oxygen is a gas

6. Round each of the following numbers to four significant figures. Write the answer in decimal form AND scientific notation.

- a) 300.235800
- b) 456,500
- c) 0.006543210
- d) 0.000957830
- e) - 0.0350

7. Carry out the following calculations as if they were calculations of experimental results and express each answer in the correct units with the correct number of significant figures.

- a) $5.6792\text{ m} + 0.6\text{ m} + 4.33\text{ m}$
- b) $3.70\text{ g} - 2.9133\text{ g}$
- c) $4.51\text{ cm} \times 3.6666\text{ cm}$

8. Perform the following conversions. Solve each problem using dimensional analysis, **SHOWING YOUR WORK!** Every number must have a unit and be expressed with proper significant figures.

- a) 50.0 m to mm
- b) 25 cm to km
- c) 400 mm to m
- d) 60 kg to mg
- e) 500 nm to km
- f) The average speed of helium at 25°C is 1255 m/s. Convert this speed to miles per hour (mph).
- g) A baker uses 1.5 tsp of vanilla extract in each cake. How much vanilla extract in liters should the baker order to make 800 cakes? (1 tsp = 5mL)
- h) What is the speed of a car in meters per second when it is moving at 100. km/h?
- i) There are 7.11×10^{24} molecules in 100.0 cm³ of a certain substance. What is the number of molecules in 2.24×10^4 cm³ of the substance?

9. Express the following quantities in scientific notation:

- a) 158,000 km
- b) 837100000 cm³
- c) 0.000008004 g/L

Honors Chemistry

Summer Assignment – Chapter 1

Chapter 2 Review (Optional)

Many students find chemical nomenclature to be tough to grasp, therefore you may choose to review this material during the summer months.

Chapter 2: Atoms, Molecules, and Ions

Please complete the reading from the textbook, then complete the assigned questions from the **textbook that begin on p. 79**

Topic	Reading	Textbook Questions
2.8 Naming Inorganic Compounds	pp 65-71	
2.9 Simple Organic Compounds	pp 71-73	69, 71, 73a-f, 74ab, 76cdf, 77, 80, 81, 83, 84, 86

This flowchart may be helpful as you begin to recognize patterns for naming chemicals.

