Chapter 1 and 2 Summary

CP/Honors Chemistry

Name: _____

Using Chapter 1 and 2 of your textbook and your notes, answer the following questions.

1. What type of chemistry is concerned with:
    a. Identifying the composition of materials.
    b. The relationships between energy and matter.
    c. The study of the processes occurring in living things.
2. Give an example of basic research, applied research, and technological development.

3. Describe the difference between mass and weight.

4. What is an atom?
5. How is an element different from a compound?

6. What is the difference between an extensive and an intensive property? Give an example of each.

7. Are the following physical or chemical changes?
    a. Melting butter
    b. Cooking an egg
    c. Boiling water
    d. Dissolving sugar in water
    e. Decomposing vegetables

8. Label the reactants and products in the chemical reaction below:

    Carbon + oxygen → carbon dioxide

9. Describe the difference between a homogeneous mixture and a heterogeneous mixture.

10. On the periodic table, what is a group? What is a period?

11. Which element is found in group 13, period 3?

12. Compare the properties of a metal and a nonmetal using the table below.

	Metals	Nonmetals
Appearance		
conductivity		
Response to being hit by a hammer		
Position on periodic table		

13. What is a metalloid? Where are they found on the periodic table?

14. What is a noble gas? Where are they found on the periodic table?

15. How many kilometers is equivalent to 45.5 meters?

16. How many milliliters is equivalent to 0.89 L?

17. Using dimensional analysis, how many seconds are in 4.00 days?

18. Identify which type of quantity each measurement represents. How many sig figs in each of the following numbers?
    a. 0.00340 g
    b. 5.9 L
    c. 80000 J
    d. 345 s

19. Describe the difference between precision and accuracy.

20. Solve the following problems. Express your answers to the proper number of sig figs.
    a. 9.0 g + 6.08 g =

    b. 4.5 g/3.22 mL =

    c. 5.75cm x 3.20 cm x 0.75 cm =

    d. 4.007 mL – 0.9 mL =

21. Express each of the following numbers in scientific notation:
    a. 0.00056

    b. 75,000,000

22. Describe the rule about how many digits you should record when using a measuring instrument.

SHORT ANSWER **Answer the following questions in the space provided.**

1. A horizontal row of elements in the periodic table is called a(n) _____.
2. The symbol for the element in Period 2, Group 13, is _____.
3. Elements that are good conductors of heat and electricity are _____.
4. Elements that are poor conductors of heat and electricity are _____.
5. A vertical column of elements in the periodic table is called a(n) _____.
6. The ability of a substance to be hammered or rolled into thin sheets is called _____.
7. Is an element that is soft and easy to cut cleanly with a knife likely to be a metal or a nonmetal? _____
8. The elements in Group 18, which are generally unreactive, are called _____.
9. At room temperature, most metals are _____.
10. Name three characteristics of most nonmetals.

    _____

    _____

11. Name three characteristics of metals.

    _____

    _____

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CHAPTER 2 REVIEW

Measurements and Calculations

MIXED REVIEW

SHORT ANSWER Answer the following questions in the space provided.

1. Match the description on the right to the most appropriate quantity on the left.

_____ $2\ m^3$	**(a)** mass of a small paper clip
_____ 0.5 g	**(b)** length of a small paper clip
_____ 0.5 kg	**(c)** length of a stretch limousine
_____ $600\ cm^2$	**(d)** volume of a refrigerator compartment
_____ 20 mm	**(e)** surface area of the cover of this workbook
	(f) mass of a jar of peanut butter

2. _____ A measured quantity is said to have good accuracy if

(a) it agrees closely with the accepted value.
(b) repeated measurements agree closely.
(c) it has a small number of significant figures.
(d) all digits in the value are significant.

3. A certain sample with a mass of 4.00 g is found to have a volume of 7.0 mL. To calculate the density of the sample, a student entered 4.00 ÷ 7.0 on a calculator. The calculator display shows the answer as 0.571429.

_____ **a.** Is the setup for calculating density correct?

_____ **b.** How many significant figures should the answer contain?

4. It was shown in the text that in a value such as 4000 g, the precision of the number is uncertain. The zeros may or may not be significant.

_____ **a.** Suppose that the mass was determined to be 4000 g. How many significant figures are present in this measurement?

_____ **b.** Suppose you are told that the mass lies somewhere between 3950 and 4050 g. Use scientific notation to report the value, showing an appropriate number of significant figures.

5. If you divide a sample's mass by its density, what are the resulting units?

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MIXED REVIEW continued

6. Three students were asked to determine the volume of a liquid by a method of their choosing. Each performed three trials. The table below shows the results. The actual volume of the liquid is 24.8 mL.

	Trial 1 (mL)	Trial 2 (mL)	Trial 3 (mL)
Student A	24.8	24.8	24.4
Student B	24.2	24.3	24.3
Student C	24.6	24.8	25.0

_____ a. Considering the average of all three trials, which student's measurements show the greatest accuracy?

_____ b. Which student's measurements show the greatest precision?

PROBLEMS Write the answer on the line to the left. Show all your work in the space provided.

7. _____ A single atom of platinum has a mass of 3.25×10^{-22} g. What is the mass of 6.0×10^{23} platinum atoms?

8. A sample thought to be pure lead occupies a volume of 15.0 mL and has a mass of 160.0 g.

_____ a. Determine its density.

_____ b. Is the sample pure lead? (Refer to **Table 4** on page 38 of the text.)

_____ c. Determine the percentage error, based on the accepted value for the density of lead.