Science 9 Unit 3 Worksheet

Chapter 2, Part 1.

1. _____ is anything that has _____ and _____. It includes all _____, _____, and _____. Scientists find it useful to classify matter according to its_____. Any matter can be classified as a pure substance or a _____. The five different types of matter are:

2. Changes to substances where no new substance is produced are called _____. During some changes, new substances may result and these are called _____. If one or more new substances are produced and they have different _____ to the starting materials then a chemical change has occurred.

3. Chemical changes may involve energy; _____ or _____ may be given off. Most chemical changes are _____ easily _____. Review Table 2.1 in the textbook.
   What clues do you suggest to tell the difference between physical and chemical changes?

4. There are many kinds of _____. Some are explosive, whiles others may be quite slow like the formation of_____. The substance you start of with is called the _____, and the material you end up with is called the _____. The products have properties that are different to the _____ of the reactants.

5. Scientists use _____ to show the reactants and products of chemical reactions. Read the first *Instant Practice* and try the questions by yourself. Do the second set of *Instant Practice* and write your answers in the space below:

6. Chemical reactions go on all around you in some of the most simple tasks that we take for granted. Rusting is an example of _____ where metal is eaten away by such reactions. Corrosion is a common problem in life. From bridge construction, _____, and to the making of _____. Especially for _____ whose metal parts would easily be corroded if they are in fresh or _____ water.

7. Salt water and fresh water corrosion can be easily stopped by fastening _____ to a ship or boat. The metal reacts more _____ than the motor or propellor parts in the water. Both _____ and _____ are common example of reactive strips. You can slow corrosion down by using certain types of _____ or primers.

8. Some metals like _____ produce a protective covering as they corrode. The metal combines with oxygen from the air and produces _____ which sticks to the surface. It does poorly in salt water though. Iron is a product which is _____ by rusting.
9. Another common chemical reaction is burning, this is also called _____. Here, the reactants and oxygen produce _____. Air is only about _____ oxygen. If substances were to burn in pure oxygen, they would burn much more _____.

Part 2.

10. Read from 2.3 on page 33-35 of the text book. When considering the mass of reactants and products, you must also take into account the mass of any _____ as well as the mass of _____ and _____. Scientists agree that mass is neither _____ or _____. This conclusion started what we know as _____.

11. One general statement that sums up the conclusions of many experiments is the _____ of _____ of mass. It states that: In a chemical reaction, _____ _____ is always _____.

12. What factors must be considered in order to demonstrate the law of conservation of mass?

13. Can you think of other common household products that are the result of chemical reactions?

14. Turn to page 40 of your text book and answer questions C6, C7, and C8 for review and practice.

Chapter 3, Part 3.

15. Read page 42 of the text book and try Activity 3A, questions a, b, & c for your self.

16. Matter is made up of tiny particles called _____. English scientist, _____, suggested that each _____ had its own type of atom and that _____ are made up of different combinations of different kinds of _____.

17. Dalton's symbols were widely accepted, but improved upon by _____. He suggested that the symbols used to represent elements use the _____ of their name in _____ or the first letter (capitalized) and another letter (small) from the name.

18. Explain why choosing Latin names for elements was a logical thing to do?

19. Some English names of certain elements are very close to their names in Latin. Others can be very different and _____ easy to recognize; IE _____ whose symbol is _____. Review Table 3.4 to see some of the English and Latin element names of common elements.

20. There are about _____ elements and although each is different from the next, they can be _____ according to their _____. This makes naming the _____ they form much easier.

21. Elements with certain properties are considered as _____. What properties do they have?

22. _____ are elements that do not have the characteristics noted above. Metal elements tend to be grouped together on the _____ of the periodic table. All of the non-metal elements, except _____, are grouped on the _____ of the metals.

23. Often times, elements exhibit the properties of either group. _____ is a gas, but when it forms a compound it behaves just as a metal would. _____ has the properties of a typical metal, but sometimes acts like a _____ element. Both _____ and _____ have metallic and non-metallic properties.

Part 4.

24. The combination of symbols representing a particular _____ is called _____ _____. The chemical formula for water is _____. This formula tells us that the compound is made up of _____ and _____. It also tells us the _____ numbers of atoms of each that are present in the compound.

25. The formula H_2O tells us that in water there are _____ atoms of hydrogen for each atom of _____. Another example includes table salt. NaCL is made up of _____ atom of sodium for every _____ of chlorine.

26. What do the following formulas tell us about what they contain? Calcium Chloride and Aluminum chloride:

27. The system of chemical formulas is used for all _____, even those having more than two elements. List some examples of chemical compounds by writing their formulas below:

28. When atoms join together they form larger particles called a _____. Compare the formulas for water and hydrogen peroxide, carbon dioxide and monoxide? Write them below:

29. The atoms of some elements may join with atom like themselves, this creates a _____ of the same element. One example of this is _____ and is written as _____. List three examples of such molecules: _____.

Part 5.

30. There are _____ of chemical compound, each with _____ names. It is the name which tells you what _____ are in it, from just a few to many of them.

31. The name of a compound does not give the _____ of the compound. This is apparent if you compare calcium _____ with the chemical formula _____. Here you can see that this compound is made of two _____ atoms and one _____.

32. How do scientists know what number of an element's atoms will commonly combine with other atoms of other elements? The ability of an element to combine is called _____. Scientists have given a _____ to the combining capacity of each element. List several examples of combining capacity between common elements:

33. If you know the combining capacity of an element, then you can _____ the chemical _____ of compounds that contain only two elements. Predict the combining capacity of sodium and bromine to create sodium bromide, and also try calcium oxide below:

34. If the combining capacities of the two elements are _____, then the numbers of atoms are also different. For example, _____ has a combining capacity of _____, and chlorine has a capacity of _____. So, in calcium chloride, one atom of calcium combines with _____ atoms of chlorine. The chemical formula for calcium chloride is _____.

35. In a similar way, describe the composition of aluminum oxide:

36. Some _____ have a different combining capacity in different _____. Their different combining capacities are shown by using Roman numerals. Give 4 examples of these metals and their combining capacity below:

37. Do the *Instant practice* questions 1 and 2 found on page 56 of your text book in the space below:

38. Scientists have found that there are _____ of atoms that act together as if they were a _____ atom. Some of these act like _____ elements and can combine with _____ to form compounds. List some examples in the space below:

39. The total _____ of the products is always _____ to the total mass of the _____. In a chemical reaction, the atoms are _____, but the total _____ of atoms is the same before and after the reaction takes place. In addition, the number of atoms of each element on the _____ side of the _____ is the same as the number of atoms on the _____ side. Atoms are not _____ or _____!

40. Turn to page 58 of your text book and complete questions 1 to 5 in *Review 3.4* below: