

Name _____

Chapter 3: Elements and the Periodic Table

1. Matter is made of about _____ different elements that have a wide variety of _____.
2. In 1869, one Russian scientist recognized a hidden pattern in the elements. His name was _____.
3. One of Mendeleev's first observations was that some elements have similar _____ and _____ properties.
4. The _____ of an element is the average mass of one atom of the element.
5. Mendeleev noticed that _____ appeared when the elements were arranged in order of increasing _____.
6. The word "periodic" means a regular, _____ pattern.
7. In the modern periodic table, the _____ of the elements repeat in each row, or period of the table.
8. Deep within every atom is a core called a _____.
9. The model of the atom used today shows the nucleus as containing smaller particles called _____ and _____.
10. Outside the nucleus are other particles, called _____.
11. Because atoms are so small, they cannot be measured with everyday units of mass. For this reason, scientists have created the _____ or (amu).
12. An element's _____, the number of protons in its nucleus is a unique property that identifies that element.
13. The square of the periodic table usually includes the elements _____, chemical symbol, _____ and atomic mass.

14. Every _____ for an element usually contains either one or two letters.

15. An element's properties can be predicted from its _____ in the periodic table.

16. The main body of the periodic table is arranged into _____ vertical columns, and _____ horizontal rows. The elements in a column are called a _____.

17. Each horizontal row across the table is called a _____.

18. Electrons that are involved in transfer or sharing are called _____.

19. The elements in each group of the periodic table have the same number and _____ of valence electrons.

Section 2

20. Chemists classify an element as a metal based on physical properties such as hardness, _____, malleability, and _____.

21. A _____ material is one that can be pounded into shapes.

22. A ductile material is one that can be _____ out, or drawn into a long wire.

23. Most metals are called good _____ because they transmit heat and electricity easily.

24. Several metals are attracted to magnets and can be made into magnets. Thus, iron (Fe), cobalt (Co), and nickel (Ni) are described as _____.

25. Metals show a wide range of _____ properties.

26. The ease and speed with which an element combines, or reacts, with other elements and compounds is called its _____.

27. A mixture of metals is called an _____.

28. The metals in a group, or family, have similar properties, and these family properties change _____ as you move across the table.

29. The metals in Group 1, from lithium to francium, are called _____ metals. These metals are so reactive that they are _____ found uncombined in nature. In other words, they are never found as elements but only in _____.

30. Group 2 of the periodic table contains the _____ earth metals. While not as reactive as the metals in Group 1, these elements are _____ reactive than most metals.

31. The elements in Groups 3-12 are called the _____ metals. The transition metals form a _____ between the very reactive metals on the left side of the periodic table, and the less reactive metals and other elements on the _____ side.

32. Groups 13 through 16 of the periodic table include metals, non metals, and _____.

33. The elements at the bottom of the periodic table are called the _____ and the _____.

Section 3

34. _____ are the elements that lack most of the properties of metals. There are _____ nonmetals, each located to the _____ of the zigzag line in the periodic table.

35. In general, the physical properties of nonmetals are _____ to those that characterize the metals.

36. Many nonmetals even form molecules of two identical atoms, which are called _____.

37. The Carbon family is also known as Group _____.

38. Group 15 is called the _____ family.

39. Group 16 is called the _____ family.

40. Group 17, the Halogen family, contains _____, _____, _____, _____ and _____.

41. Name one fact for Noble gases

42. Hydrogen is the _____ element.

43. On the border between the metals and the nonmetals are _____ elements called _____.

44. The _____ have some of the characteristics of metals and some of the characteristics of nonmetals.

45. The most useful property of the metalloids is their:

46. Semiconductors are :

Section 4

47. In the _____ state of matter, atoms are stripped of their electrons and the nuclei are packed close together.

48. What is nuclear fusion?

49. A _____ is a tremendous explosion that breaks apart a massive star, producing temperatures up to one _____ degrees Celsius.