

Unit 4: The Periodic Table

Name: _____
Text Questions from Corwin

4.4

1. List five properties of metals.
2. What is the difference between something being malleable and it being ductile?
3. List three properties of nonmetals.
4. Solid nonmetals, such as _____ and _____, have a _____ appearance. They _____ into a _____ if hammered. Eleven nonmetals occur naturally in the _____ state.
5. What is a semimetal, or metalloid?
6. In the semiconductor industry, the semimetal silicon is used in the making of what two things?
7. On the periodic table, where are the metals and nonmetals, relative to each other?
8. List the names and symbols of the eight semimetals mentioned in the text.
9. With the exception of the element _____, all of the metals are in the _____ state at 25°C.
10. List the symbols for the...
 - ...five nonmetals that are solid at 25°C
 - ...one nonmetal that is liquid at 25°C
 - ...eleven nonmetals that are gases at 25°C

6.1

11. In the 1860s, Mendeleev proposed that the properties of the elements _____ at regular intervals when they are arranged according to...
12. Today, Mendeleev is regarded as...
13. Mendeleev had the insight to predict what?
14. Why were the gases on the far right side of the periodic table originally called the inert gases?

15. Today, the “inert” gases are known as...

6.2

16. According to Moseley, the elements should NOT be arranged according to _____ but rather according to...

17. What does the periodic law state?

6.3

18. With regard to the periodic table, what is the difference between a group and a period?

19. In the periodic table, there are ____ periods and ____ groups.

20. Although there has been historical disagreement about how to number the groups, today IUPAC recommends simply numbering the groups using...

21. What are the names given to the following groups of elements?

Group 1:

Group 17:

Group 2:

Group 18:

22. The _____ elements (also called the main-group elements) are found on the far _____ and _____ sides of the periodic table. The _____ elements are found in the _____ of the table, while the _____ elements are found _____ the main portion of the table.

23. The inner transition elements include, firstly, those of the _____ series (so named because they follow the element _____). These are considered to be a part of _____ 6. The elements of the _____ series (so named because they follow the element _____) are also inner transition elements and are a part of _____ 7.

24. Elements 93 and above are the results of what?

25. Elements 93 and above have isotopes with lifetimes that last for...

26. What are the transuranium elements?

6.4

27. What is meant by the term “atomic radius”?

28. What happens to the atomic radius of the atoms as we go up a group of elements from bottom to top?

29. How do we explain the trend you stated in Q28?

30. What happens to the atomic radius of the atoms as we go from left to right with a period?

31. Because the number of protons increases as we go from left to right across a period, the nuclear charge _____. This has the effect of _____ the electrons _____ the nucleus and _____ the size of the atom.

32. As we move from left to right metallic character of the elements _____. As we move up a group, metallic character _____.

6.5

33. How did Mendeleev design the periodic table?

34. By understanding the organization of elements in the periodic table, it is possible to do WHAT?

6.6

35. Groups 1 and 2 are collectively called the ____ block. Groups 13 through 18 are called the ____ block. Groups 3 through 12 are called the ____ block. The inner transition elements comprise the ____ block.?

6.7

36. What is significant about valence electrons?

37. The number of valence electrons is equal to the total number of electrons in...

38. In the IUPAC designations for group numbers, the last digit of the numbers of the main-group elements indicates what?

39. Why is the maximum number of valence electrons equal to 8?

6.9

40. The elements that easily lose electrons are the _____, which undergo chemical reactions by...

41. Metals become _____ charged after _____ electrons because...

42. What is an ion?

43. A. Define ionization energy.

B. Write the equation for the ionization energy of sodium.

44. Why do the noble gases have such high ionization energies?

45. Ionization energy _____ going up a group of elements and generally _____ from left to right across a period.

6.10

46. When metals and nonmetals react, what – specifically – happens with regard to both?

47. Metals become _____ ions and nonmetals become _____ ions.

48. What does it mean to say that two or more ions are isoelectronic?

49. From which sublevel do the transition metals first lose electrons?

50. In core notation, the noble gas symbol represents what?