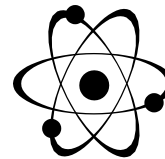


The Periodic Table and Periodic Law



Practice for Content Mastery

Use each of the terms below just once to complete the passage. Some may not be used.

Atomic mass	atomic number	elements	accepted	Dmitri Mendelieev
Properties	Henry Moseley	eight	protons	periodic law

The first periodic table is mostly credited to (1) _____. In his table, the elements were arranged according to increasing (2) _____. One important result of this table was that the existence and properties of undiscovered (3) _____ could be predicted.

The elements in the modern periodic table are arranged according to increasing (4) _____, as a result of the work of (5) _____. This arrangement is based on number of (6) _____ in the nucleus of an atom of the element. The modern form of the periodic table results in the (7) _____, which states that when elements are arranged according to increasing atomic number, there is a periodic repetition of their chemical and physical (8) _____.

Use the information on the left taken from the periodic table to complete the table on the right.

7
N
Nitrogen
14.007
$1s^22s^22p^3$

Atomic mass	9.
Atomic Number	10.
Electron Configuration	11.
Chemical Name	12.
Chemical Symbol	13.

For each item in Column A, write the letter of the matching item in Column B:

Column A

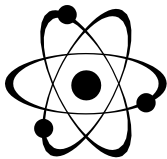
- _____ 14) A column on the periodic table
- _____ 15) A row on the periodic table
- _____ 16) Group B elements
- _____ 17) Elements that are shiny and conduct electricity

Column B

- a. metals
- b. group
- c. period
- d. Transition elements

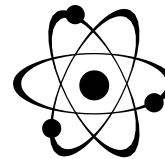
In the space at the left, write *true* if the statement is true; if the statement is false, change the italicized word or phrase to make it true.

- _____ 18) There are *two* main classifications of elements.
- _____ 19) More than three-fourths of the elements in the periodic table are *nonmetals*.
- _____ 20) Group 1A elements (except for hydrogen) are known as the *alkali metals*.
- _____ 21) *Group 3A* elements are the alkaline earth metals.
- _____ 22) Group 7A elements are highly reactive nonmetals known as *halogens*.
- _____ 23) Group 8A elements are very unreactive elements known as *transition elements*.
- _____ 24) Metalloids have properties of both metals and *inner transition metals*.



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Atomic mass	atomic number	elements	accepted	Dmitri Mendelieev
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Column A

- _____ 14) A column on the periodic table
 _____ 15) A row on the periodic table
 _____ 16) Group B elements
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Column B

- a. metals
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 _____ 24) Metalloids have properties of both metals and *inner transition metals*.

Match each element in Column A with the element in Column B that has the most similar properties.

Column A

- _____ 25) Arsenic (As)
- _____ 26) Bromine (Br)
- _____ 27) Cadmium (Cd)
- _____ 28) Gallium (Ga)
- _____ 29) Germanium (Ge)
- _____ 30) Iridium (Ir)
- _____ 31) Magnesium (Mg)
- _____ 32) Neon (Ne)
- _____ 33) Nickel (Ni)
- _____ 34) Osmium (Os)
- _____ 35) Sodium (Na)
- _____ 36) Tellurium (Te)
- _____ 37) Tungsten (W)
- _____ 38) Yttrium (Y)
- _____ 39) Zirconium (Zr)

Column B

- a. Boron (B)
- b. Cesium (Cs)
- c. Chromium (Cr)
- d. Cobalt (Co)
- e. Hafnium (Hf)
- f. Iodine
- g. Iron (Fe)
- h. Nitrogen (N)
- i. Platinum (Pt)
- j. Scandium (Sc)
- k. Silicon (Si)
- l. Strontium (Sr)
- m. Sulfur (S)
- n. Zinc (Zn)
- o. Xenon (Xe)

- 40) Why do sodium and potassium have similar chemical properties?

- 41) How is the energy level of an element's valence electrons related to its period on the periodic table? Give an example.

- 42) Into how many blocks is the periodic table divided?

- 43) What groups of elements does the s-block contain?

- 44) Why does the s-block portion of the periodic table span two groups?

- 45) What groups of elements does the p-block contain?

- 46) Why are members of group 8A virtually unreactive?

- 47) How many d-block elements are there?

- 48) What groups of elements does the d-block contain?

- 49) Why does the f-block portion of the periodic table span 14 groups?

Match each element in Column A with the element in Column B that has the most similar properties.

Column A

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- _____ 26) Bromine (Br)
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- _____ 36) Tellurium (Te)
- _____ 37) Tungsten (W)
- _____ 38) Yttrium (Y)
- _____ 39) Zirconium (Zr)

Column B

- a. Boron (B)
- b. Cesium (Cs)
- c. Chromium (Cr)
- d. Cobalt (Co)
- e. Hafnium (Hf)
- f. Iodine
- g. Iron (Fe)
- h. Nitrogen (N)
- i. Platinum (Pt)
- j. Scandium (Sc)
- k. Silicon (Si)
- l. Strontium (Sr)
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- 40) Why do sodium and potassium have similar chemical properties?

- 41) How is the energy level of an element's valence electrons related to its period on the periodic table? Give an example.

- 50) Into how many blocks is the periodic table divided?

- 51) What groups of elements does the s-block contain?

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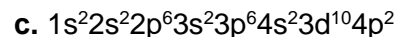
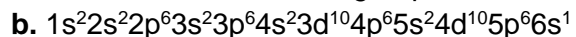
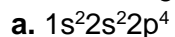
- 56) What groups of elements does the d-block contain?

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58) What is the electron configuration of the element in period 3, group 6A?

51) Write the electron configurations for the elements in periods 2-4 of group 2A.

52) Determine the group, period, valence electrons and group name of the elements below:



53) Write the electron configuration of the element fitting each of the following descriptions.

a. Group 8A element in the third period.

c. Group 4A element in the fourth period.

b. Halogen in the second period.

d. Group 1A element in the fourth period

54) Atomic radii cannot be measured directly because the electron cloud surrounding the nucleus does not have a clearly defined: a. Charge b. Mass c. Outer edge d. Probability

55) Describe the trend of atomic radii for both groups and periods of the periodic table.

56) The general trend in the radius of an atom moving down a group is partially accounted for by the:

a. Decrease in the mass of the nucleus

b. Increase in the charge of the nucleus

c. Fewer number of filled orbitals

d. Shielding of the outer electrons by inner e's

57) A(n) _____ is an atom, or bonded group of atoms, that has a positive or negative charge.

a. Halogen

b. Ion

c. Isotope

d. Molecule

58) An atom becomes negatively charged by

a. Gaining an electron

b. Gaining a proton

c. Losing an electron

d. Losing a neutron

59) Rank the following atoms in order of decreasing radii.

a. Al, Na, P, S

b. Al, Ga, In

c. As, Ge, Ga d. Br, Ca, Cl, K

60) Rank the following atoms in order of decreasing electronegativity.

a. Na, Li, K

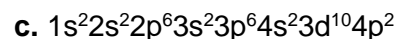
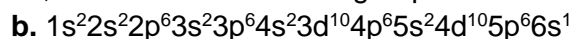
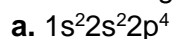
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c. As, Sn, S