

1 In the periodic table, the elements are arranged in _____.

- A alphabetical order
- B order of increasing atomic number
- C order of increasing metallic properties
- D order of increasing neutron content
- E reverse alphabetical order

2 Elements _____ exhibit similar physical and chemical properties.

- A with similar chemical symbols
- B with similar atomic masses
- C in the same period of the periodic table
- D on opposite sides of the periodic table
- E in the same group of the periodic table

3 The element _____ is the most similar to strontium in chemical and physical properties.

- A Li
- B At
- C Ru
- D Ca
- E Na

4 Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

- A H, Li
- B Cs, Ba
- C Ca, Si
- D Ga, Ge
- E C, O

5 Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

- A F, Br
- B C, N
- C Li, Ca
- D H, He
- E Si, As

6 Which one of the following is a nonmetal?

- A W
- B Sr
- C Os
- D Ir
- E S

7 Of the following, _____ contains the greatest number of electrons.

- A P^{3+}
- B P
- C P^{2-}
- D P^{3-}
- E P^{2+}

8 Which one of the following is most likely to lose electrons when forming an ion?

- A F
- B N
- C Cu
- D S
- E O

9 Which pair of elements below should be the most similar in chemical properties?

- A C and O
- B B and As
- C Ar and Ne
- D K and Kr
- E Cs and He

10 An element in the upper right corner of the periodic table _____.

- A is either a metal or metalloid
- B is definitely a metal
- C is either a metalloid or a non-metal
- D is definitely a non-metal
- E is definitely a metalloid

11 An element that appears in the lower left corner of the periodic table is _____.

- A either a metal or metalloid
- B definitely a metal
- C either a metalloid or a non-metal
- D definitely a non-metal
- E definitely a metalloid

12 Elements in the same group of the periodic table typically have _____.

- A similar mass numbers
- B similar physical properties only
- C similar chemical properties only
- D similar atomic masses
- E similar physical and chemical properties

13 Potassium is a _____
and chlorine is a _____.

- A metal, nonmetal
- B metal, metal
- C metal, metalloid
- D metalloid, nonmetal
- E nonmetal, metal

14 Lithium is a _____
and magnesium is a _____.

- A nonmetal, metal
- B nonmetal, nonmetal
- C metal, metal
- D metal, metalloid
- E metalloid, metalloid

15 _____ are found
uncombined, as
monatomic species in
nature.

- A Noble gases
- B Chalcogens
- C Alkali metals
- D Alkaline earth metals
- E Halogens

16 metals tend to _____
electrons and cations tend
to _____ electrons.

- A gain, gain
- B lose, lose
- C gain, gain
- D gain, gain
- E neither, they keep their electrons

17 Anions tend to have a _____
charge and
cations tend to have a
_____ charge.

- A positive, positive
- B negative, negative
- C positive, negative
- D negative, positive
- E neither, they are both neutral

18 Anions tend to be _____
and cations
tend to be _____.

- A metals, metals
- B nonmetals, nonmetals
- C metals, nonmetals
- D nonmetals, metals
- E metalloids, metalloids

19 Which species below is the nitride ion?

- A Na^+
- B NO^3
- C NO^2
- D NH^4+
- E N^{3-}

20 When a metal and a nonmetal react, the _____ tends to lose electrons and the _____ tends to gain electrons.

- A metal, metal
- B nonmetal, nonmetal
- C metal, nonmetal
- D nonmetal, metal
- E None of the above, these elements share electrons.

21 _____ typically form ions with a 2+ charge.

- A Alkaline earth metals
- B Halogens
- C Chalcogens
- D Alkali metals
- E Transition metals

22 Sodium forms an ion with a charge of _____.

- A 1+
- B 1-
- C 2+
- D 2-
- E 0

23 Aluminum forms an ion with a charge of _____.

- A 2+
- B 1-
- C 3+
- D 2-
- E 0

24 Calcium forms an ion with a charge of _____.

- A 1-
- B 2-
- C 1+
- D 2+
- E 0

25 Barium forms an ion with a charge of _____.

- A 1+
- B 2-
- C 3+
- D 3-
- E 2+

26 Bromine forms an ion with a charge of _____.

- A 2+
- B 3-
- C 1+
- D 3+
- E 1-

27 Fluorine forms an ion with a charge of _____.

- A 1-
- B 1+
- C 2+
- D 3+
- E 3-

28 Iodine forms an ion with a charge of _____.

- A 7-
- B 1+
- C 2-
- D 2+
- E 1-

29 Oxygen forms an ion with a charge of _____.

- A 2-
- B 2+
- C 3-
- D 3+
- E 6+

30 Sulfur forms an ion with a charge of _____.

- A 2+
- B 2-
- C 3+
- D 6-
- E 6+

31 How many electrons does the Al^{3+} ion possess?

- A 16
- B 10
- C 6
- D 0
- E 13

32 Predict the charge of the most stable ion of P?

- A 2+
- B 3-
- C 3+
- D 1-
- E 2-

33 Predict the charge of the most stable ion of S?

- A 3+
- B 1-
- C 6+
- D 2+
- E 2-

34 What group in the periodic table would the fictitious element X be found?

- A Alkaline earth metals
- B Halogens
- C Chalcogens
- D Alkali metals
- E Transition metals

35 Which of the following compounds would you expect to be ionic?

- A SF_6
- B H_2O
- C CO_2
- D NH_3
- E CaO

36 Which of the following compounds would you expect to be ionic?

- A H_2O
- B CO_2
- C $SrCl_2$
- D SO_2
- E H_2S

37 Which pair of elements is most likely to form an ionic compound with each other?

- A barium, chlorine
- B calcium, sodium
- C oxygen, fluorine
- D sulfur, carbon
- E nitrogen, hydrogen

38 Of the choices below, which one is not an ionic compound?

- A PCl_5
- B CrCl_6
- C RbCl
- D PbCl_2
- E NaCl

39 What is the formula of the compound formed between strontium ions and nitrogen ions?

- A SrN
- B Sr_3N_2
- C Sr_2N_3
- D SrN_2
- E SrN_5

40 Magnesium reacts with a certain element to form a compound with the general formula MgX . What would the most likely formula be for the compound formed between Lithium and element X?

- A Li_2X
- B LiX_2
- C Li_2X_3
- D Li_2X_2
- E LiX

41 The charge on the manganese in the salt $MnCl_3$ is _____.

- A 1+
- B 1-
- C 2+
- D 2-
- E 3+

42 Aluminum reacts with a certain nonmetallic element to form a compound with the general formula AlX . Element X is a diatomic gas at room temperature. Element X must be _____.

- A sulfur
- B fluorine
- C Bromine
- D nitrogen
- E oxygen

43 Predict the empirical formula of the ionic compound that forms from Calcium and fluorine.

- A CaF
- B Ca_2F
- C CaF_2
- D Ca_2F_3
- E Ca_3F_2

44 Predict the empirical formula of the ionic compound that forms from magnesium and fluorine.

- A Mg_2F_3
- B MgF
- C Mg_2F
- D Mg_3F_2
- E MgF_2

45 Predict the empirical formula of the ionic compound that forms from magnesium and oxygen.

- A Mg_2O
- B MgO
- C MgO_2
- D Mg_2O_2
- E Mg_3O_2

46 Predict the empirical formula of the ionic compound that forms from aluminum and oxygen.

- A AlO
- B Al₃O₂
- C Al₂O₃
- D AlO₂
- E Al₂O

47 The correct name for SrO is _____.

- A strontium oxide
- B strontium hydroxide
- C strontium peroxide
- D strontium monoxide
- E strontium dioxide

48 The correct name for K₂S is _____.

- A potassium sulfate
- B potassium disulfide
- C potassium bisulfide
- D potassium sulfide
- E dipotassium sulfate

49 The correct name for Al_2O_3 is _____.

- A aluminum oxide
- B dialuminum oxide
- C dialuminum trioxide
- D aluminum hydroxide
- E aluminum trioxide

50 The correct name for CaH_2 is _____.

- A hydrocalcium
- B calcium dihydride
- C calcium hydroxide
- D calcium dihydroxide
- E calcium hydride

51 The correct name of the compound Na_3N is _____.

- A sodium nitride
- B sodium azide
- C sodium trinitride
- D sodium(III) nitride
- E trisodium nitride

52 The ions Ca^{2+} and PO_4^{3-} form a salt with the formula _____.

- A CaPO_4
- B $\text{Ca}_2(\text{PO}_4)_3$
- C Ca_2PO_4
- D $\text{Ca}(\text{PO}_4)_2$
- E $\text{Ca}_3(\text{PO}_4)_2$

53 The correct formula of iron (III) bromide is _____.

- A FeBr_2
- B FeBr_3
- C FeBr
- D Fe_3Br_3
- E Fe_3Br

54 Magnesium and oxygen form an ionic compound with the formula _____.

- A MgO
- B Mg_2O
- C MgO_2
- D Mg_2O_2
- E Mg_2O_3

55 The formula of ammonium carbonate is _____.

- A $(\text{NH}_4)_2\text{CO}_3$
- B NH_4CO_2
- C $(\text{NH}_3)_2\text{CO}_4$
- D $(\text{NH}_3)_2\text{CO}_3$
- E $\text{N}_2(\text{CO}_3)_3$

56 The correct name for $\text{Mg}(\text{ClO}_3)_2$ is _____.

- A magnesium chlorate
- B manganese chlorate
- C magnesium chloroxide
- D magnesium perchlorate
- E manganese perchlorate

57 What is the correct formula for ammonium sulfide?

- A NH_4SO_3
- B $(\text{NH}_4)_2\text{SO}_4$
- C $(\text{NH}_4)_2\text{S}$
- D NH_3S
- E N_2S_3

58 Which formula/name pair is incorrect?

- A $\text{Mn}(\text{NO}_2)_2$ manganese(II) nitrite
- B $\text{Mg}(\text{NO}_3)_2$ magnesium nitrate
- C $\text{Mn}(\text{NO}_3)_2$ manganese(II) nitrate
- D Mg_3N_2 magnesium nitrite
- E $\text{Mg}(\text{MnO}_4)_2$ magnesium permanganate

59 Which formula/name pair is incorrect?

- A FeSO_4 iron(II) sulfate
- B $\text{Fe}_2(\text{SO}_3)_3$ iron(III) sulfite
- C FeS iron(II) sulfide
- D FeSO_3 iron(II) sulfite
- E $\text{Fe}_2(\text{SO}_4)_3$ iron(III) sulfide

60 Which one of the following compounds is chromium (III) oxide?

- A Cr_2O_3
- B CrO_3
- C Cr_3O_2
- D Cr_3O
- E Cr_2O_4

61 Which one of the following compounds is copper(I) chloride?

- A CuCl
- B CuCl₂
- C Cu₂Cl
- D Cu₂Cl₃
- E Cu₃Cl₂

62 The correct name for MgF₂ is _____.

- A manganese difluoride
- B magnesium difluoride
- C monomagnesium difluoride
- D manganese bifluoride
- E magnesium fluoride

63 Element M reacts with fluorine to form an ionic compound with the formula MF₃. The M-ion has 18 electrons. Element M is _____.

- A P
- B Sc
- C Ar
- D Ca
- E Cr

64 When calcium reacts with sulfur the compound formed is _____.

- A Ca_2S_2
- B Ca_3S_2
- C CaS
- D CaS_2
- E Ca_2S_3

65 Chromium and chlorine form an ionic compound whose formula is CrCl_3 . The name of this compound is _____.

- A chromium chlorine
- B chromium(III) chloride
- C monochromium trichloride
- D chromium(III) trichloride
- E chromic trichloride

66 The formula for aluminum hydroxide is _____.

- A AlOH
- B Al_2OH
- C $\text{Al}_2(\text{OH})_3$
- D $\text{Al}(\text{OH})_3$
- E Al_2O_3

67 The name of the ionic compound $(\text{NH}_4)_3\text{PO}_4$ is _____.

- A ammonium phosphate
- B tetrammonium phosphate
- C nitrogen hydrogen phosphate
- D ammonia phosphide
- E triammonium phosphate

68 Which metal is capable of forming more than one cation?

- A Li
- B Ba
- C Sr
- D Al
- E Sn

69 The correct name for $\text{Cu}(\text{CN})_2$ is _____.

- A Copper (I) cyanide
- B Copper cyanate
- C Copper carbonate
- D Copper(II) cyanide
- E Copper (I) nitride

70 The correct name for Na_2O_2 is _____.

- A sodium oxide
- B sodium dioxide
- C disodium oxide
- D sodium peroxide
- E disodium dioxide

71 Barium reacts with a polyatomic ion to form a compound with the general formula $\text{Ba}_3(\text{X})_2$. What would be the most likely formula for the compound formed between sodium and the polyatomic ion X?

- A NaX
- B Na_2X
- C Na_2X_2
- D Na_3X
- E Na_3X_2

72 Aluminum reacts with a certain nonmetallic element to form a compound with the general formula Al_2X_3 . Element X must be from Group _____ of the Periodic Table of Elements.

- A 3A (13)
- B 4A (14)
- C 5A (15)
- D 6A (16)
- E 7A (17)

73 The formula for a salt is XBr . The X-ion in this salt has 46 electrons. The metal X is _____.

- A Ag
- B Pd
- C Cd
- D Cu
- E Cs

74 The charge on the iron ion in the salt Fe_2O_3 is _____.

- A +1
- B +2
- C +3
- D -5
- E -6

75 Which metal is not required to have its charge specified in the names of ionic compounds it forms?

- A Mn
- B Fe
- C Cu
- D Ca
- E Pb


