

Bonding Worksheets –

You may write on all pages of the worksheets. Fill in all missing information for each table.

Why Atoms Combine

1. What two things does a formula tell you about a compound?
1) _____ 2) _____
2. What does a subscript number written after an element symbol tell you?
3. What characteristic of the noble gases makes them so unreactive?
4. An atom is chemically stable when its _____ is filled with electrons.
5. During the formation of a compound, what causes the attractions to form between atoms?
6. Through the process in #5, atoms become more like which elements?

7. A force that holds together the atoms in a substance is called a(n)
_____.
8. What is the primary reason why elements form compounds?

Kinds of Chemical Bonds

9. Atoms that have a charge are called _____.
10. When an atom loses electrons, it becomes _____ charged. When an atom gains electrons, it becomes _____ charged.
11. The attraction between oppositely charged ions in a compound is a(n)
_____.
12. Neutral particles formed as a result of electron sharing are called _____.
The attractive force between electron-sharing atoms is a(n) _____.
13. What causes a polar molecule to have positive and negative ends?
14. Why do nonpolar molecules not have oppositely charged ends?
15. Ionic bonds usually form between a _____ and a _____.
Covalent bonds usually form between _____ atoms.

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IONIC COMPOUND FORMATION

Use the information given to complete the table at the bottom. The first has been done for you.

1. Potassium chloride is the primary ingredient in “lite salt,” designed for people on low sodium diets.
2. CaSO_4 is a component of plaster.
3. A substance composed of Ca^{2+} and PO_4^{3-} ions is found in some brands of phosphorus containing fertilizer. This substance is also a major component of bones and teeth.
4. Ammonium nitrate, a rich source of nitrogen, is often used in fertilizer mixtures.
5. Iron (III) chloride finds use in some water purification processes.
6. $\text{Al}_2(\text{SO}_4)_3$ is another chemical used to purify water in some cities.
7. Baking soda is an ionic substance composed of sodium ions and hydrogen carbonate ions.
8. Chemists know milk of magnesia as magnesium hydroxide.
9. A compound composed of Fe^{3+} and O^{2-} is a principal component of rust.
10. Limestone and marble are both forms of the substance calcium carbonate.

	Cation	Anion	Formula	Name
1.	K^{1+}	Cl^{1-}	KCl	potassium chloride
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Draw (1) energy level diagrams and (2) electron dot diagrams for the following elements on your own paper:

11. fluorine
12. magnesium
13. potassium
14. krypton
15. phosphorus

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	CATION	ANION	FORMULA	COMPOUND NAME
	Write the charge on the cation & anion before writing the formula			
16	Mg	NO₃		
17	NH₄	PO₄		
18	Ba	Cl		
19	Zn	S		
20	Sr	HCO₃		
21	Cd	S		
22	NH₄	SO₄		
23	H	CO₃		
24	Na	CrO₄		
25	K	HCO₃		
26	Cs	C₂H₃O₂		
27			Ca(NO₃)₂	
28			Na₂SO₄	
29			PbCl₄	
30			KOH	
31			MnI₇	
32			HgCl₂	
33			(NH₄)₂SO₄	
34			CuSO₄	
35			FeI₃	
36				Titanium(IV) cyanide
37				Lead(II) oxide
38				Calcium hydroxide
39				Magnesium phosphate
40				Silver nitrate
42				
43				
44				
45				

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Part A – Molecular Names

Write names for the molecular compounds.

46. CO_2 _____

47. N_2O _____

48. SO_3 _____

49. NO _____

50. CS_2 _____

51. PBr_5 _____

52. N_2O _____

53. PCl_3 _____

PART B – MOLECULAR FORMULAS

Write formulas for the molecular compounds

54. carbon tetrachloride _____

55. nitrogen trifluoride _____

56. silicon dioxide _____

57. arsenic pentabromide _____

58. oxygen difluoride _____

59. diphosphorous pentoxide _____

60. carbon monoxide _____

61. sulfur hexafluoride _____