Naming Ionic Compounds – Answer Key

Give the name of the following ionic compounds:

Name

1)	Na ₂ CO ₃	sodium carbonate
2)	NaOH	sodium hydroxide
3)	MgBr ₂	magnesium bromide
4)	KCI	potassium chloride
5)	FeCl ₂	iron (II) chloride
6)	FeCl ₃	iron (III) chloride
7)	$Zn(OH)_2$	zinc hydroxide
8)	Be ₂ SO ₄	beryllium sulfate
9)	CrF ₂	chromium (II) fluoride
10)	Al_2S_3	aluminum sulfide
11)	PbO	lead (II) oxide
12)	Li ₃ PO ₄	lithium phosphate
13)	Til ₄	titanium (IV) iodide
14)	Co ₃ N ₂	cobalt (II) nitride
15)	Mg_3P_2	magnesium phosphide
16)	Ga(NO ₂) ₃	gallium nitrite
17)	Ag ₂ SO ₃	silver sulfite
18)	NH₄OH	ammonium hydroxide
19)	AI(CN) ₃	aluminum cyanide
20)	Be(CH ₃ CO	O) ₂ beryllium acetate

For the following compounds, give the formulas:

		Formula
22)	sodium phosphide	Na ₃ PO ₄
23)	magnesium nitrate	$Mg(NO_3)_2$
24)	lead (II) sulfite	PbSO ₃
25)	calcium phosphate	Ca ₃ (PO ₄) ₃
26)	ammonium sulfate	(NH ₄) ₂ SO ₄
27)	silver cyanide	AgCN
28)	aluminum sulfide	Al ₂ S ₃
29)	beryllium chloride	BeCl ₂
30)	copper (I) arsenide	Cu ₃ As
31)	iron (III) oxide	Fe ₂ O ₃
32)	gallium nitride	GaN
33)	iron (II) bromide	FeBr ₂
34)	vanadium (V) phosphate	V ₃ (PO ₄) ₅
35)	calcium oxide	CaO
36)	magnesium acetate	Mg(CH ₃ COO) ₂
37)	aluminum sulfate	Al ₂ (SO ₄) ₃
38)	copper (I) carbonate	Cu ₂ CO ₃
39)	barium oxide	ВаО
40)	ammonium sulfite	(NH ₄) ₂ SO ₃
41)	silver bromide	AgBr
42)	lead (IV) nitrite	Pb(NO ₂) ₄

Naming Covalent Compounds Solutions

Write the formulas for the following covalent compounds:

- 1) antimony tribromide **SbBr**₃
- 2) hexaboron silicide **B**₆**Si**
- 3) chlorine dioxide CIO₂
- 4) hydrogen iodide HI
- 5) iodine pentafluoride **IF**₅
- 6) dinitrogen trioxide N₂O₃
- 7) ammonia **NH**₃
- 8) phosphorus triiodide PI₃

Write the names for the following covalent compounds:

- 9) P_4S_5 tetraphosphorus pentasulfide
- 10) O₂ oxygen
- 11) SeF₆ selenium hexafluoride
- 12) Si₂Br₆ disilicon hexafluoride
- 13) SCl₄ sulfur tetrachloride
- 14) CH₄ methane, carbon tetrahydride
- 15) B₂Si diboron silicide
- 16) NF₃ nitrogen trifluoride

hydrogen bromide HBr ammonia NH_3

CO₂ carbon dioxide

dinitrogen pentoxide N₂O₅

 P_2O_3 diphosphorus trioxide HF hydrogen fluoride H $_2S$ hydrogen sulfide HCI hydrogen chloride CO carbon monoxide NO nitrogen monoxide SF $_6$ sulfur hexafluoride

sulfur trioxide SO₃ tetraphosphorus decoxide P_4O_{10} disulfur dichloride S_2Cl_2 boron trifluoride B_2F_3 carbon tetrachloride CCI₄ iodine monochloride ICI sulfur trioxide SO_3 hydrogen sulfide H_2S carbon tetrachloride CCI₄

H₂Se hydrogen selenide
CS₂ carbon disulfide
NO₂ nitrogen dioxide

PCI₅ phosphorus pentachloride

sulfur dioxide SO₂

CO₂ carbon dioxide

HF hydrogen fluoride

NO₂ nitrogen dioxide

 $\begin{array}{lll} \mbox{dinitrogen pentoxide} & N_2O_5 \\ \mbox{carbon disulfide} & CS_2 \\ \mbox{hydrogen fluoride} & HF \\ \mbox{diphosphorus trioxide} & P_2O_3 \end{array}$

P₄O₁₀ tetraphosphorus decoxide

Naming Chemical Compounds - Answers

Name the following *ionic* compounds:

1) NaBr **sodium bromide**

2) CaO calcium oxide

3) Li₂S **lithium sulfide**

4) MgBr₂ magnesium bromide

5) Be(OH)₂ beryllium hydroxide

Write the formulas for the following *ionic* compounds:

6) potassium iodide KI

7) magnesium oxide MgO

8) aluminum chloride AICI₃

9) sodium nitrate NaNO₃

10) calcium carbonate CaCO₃

11) lithium sulfate Li₂SO₄

12) beryllium phosphide Be₃P₂

13) magnesium hydroxide Mg(OH)₂

14) sodium phosphate Na₃PO₄

15) aluminum carbonate Al₂(CO₃)₃

16) calcium chloride **CaCl**₂

17) sodium cyanide NaCN

18) aluminum oxide Al_2O_3

19) magnesium acetate $Mg(C_2H_3O_2)_2$

20) ammonium chloride NH₄CI

Write the names of the following covalent compounds:

21)	SO_3	sulfur trioxide

- 22) N₂S dinitrogen sulfide
- 23) PH₃ phosphorus trihydride
- 24) BF₃ boron trifluoride
- 25) P₂Br₄ diphosphorus tetrabromide
- 26) CO carbon monoxide
- 27) SiO₂ silicon dioxide
- 28) SF₆ sulfur hexafluoride
- 29) NH_3 ammonia
- 30) NO₂ nitrogen dioxide

Write the formulas of the following *covalent* compounds:

31)	nitrogen trichloride	NCI ₃
\mathcal{I}	minogen incinonae	INCI

- 32) boron carbide BC
- 33) dinitrogen trioxide N_2O_3
- 34) phosphorus pentafluoride **PF**₅
- 35) methane CH₄
- 36) sulfur dibromide SBr₂
- 37) diboron tetrahydride B₂H₄
- 38) oxygen difluoride **OF**₂
- 39) carbon disulfide CS₂
- 40) nitrogen monoxide **NO**

Naming Binary Compounds

Name: _____

Identify the type of binary compound and then write the correct name for the chemical formulas listed below.

1.	KF	potassium fluoride
	1 7 1	potassiam macriae

- 2. PbO₂ lead (IV) oxide
- 3. MgF₂ magnesium fluoride
- 4. S₂Cl₂ disulfur dichloride
- 5. N_2O_3 dinitrogen trioxide
- 6. FeF₃ iron (III) fluoride
- 7. SnF_4 tin (IV) fluoride
- 8. K₂O potassium oxide
- 9. CCl₄ carbon tetrachloride
- 10. Hg₂O mercury (I) oxide
- 11. MgO magnesium oxide
- 12. CO carbon monoxide
- 13. H₂O dihydrogen monoxide, water
- 14. FeO iron (II) oxide
- 15. NaCl sodium chloride
- 16. SO₃ sulfur trioxide
- 17. BaO barium oxide
- 18. NH₃ nitrogen trihydride, ammonia
- 19. CO₂ carbon dioxide
- 20. NO nitrogen monoxide

Naming Binary Compounds

Name: _____

Identify the type of binary compound and then write the correct chemical formula for the compound named in each of the following examples.

1.	dinitrogen	pentoxide	N_2O_5

- 2. iron (III) chloride Fel₃
- 3. barium sulfide BaS
- 4. carbon monoxide CO
- 5. carbon tetrachloride CCl₄
- 6. tin (IV) oxide SnO₂
- 7. aluminum phosphide AlP
- 8. lead (II) nitride Pb₃N₂
- 9. sodium iodide NaI
- 10. lithium chloride LiCl
- 11. xenon tetrafluoride XeF₄
- 12. potassium sulfide K_2S
- 13. mercury (II) phosphide Hg₃P₂
- 14. gallium hydride GaH₃
- 15. copper (I) oxide Cu₂O
- 16. silicon dioxide SiO₂
- 17. cobalt (III) phosphide CoP
- 18. silver chloride AgCl
- 19. aluminum bromide AlBr₃
- 20. selenium hexafluoride SeF₆

Naming Mixed Ionic and Covalent - Answers

Name the following compounds. Remember, they may be either ionic or covalent compounds, so make sure you use the right naming method!

1)	NaF	sodium fluoride
2)	NF ₃	nitrogen trifluoride
3)	Li ₂ O	lithium oxide
4)	Al_2S_3	aluminum sulfide
5)	MgSO ₄	magnesium sulfate
6)	SiH ₄	silicon tetrahydride
7)	KNO ₃	potassium nitrate
8)	P_2O_5	diphosphorus pentoxide
9)	CH ₄	methane
10)	Ca(OH) ₂	calcium hydroxide

Write the formulas for the following compounds. Remember, they may be either ionic or covalent compounds, so make sure you use the right method!

11)	lithium chloride	LiCI
12)	nitrogen trichloride	NCI ₃
13)	sodium oxide	Na₂O
14)	dinitrogen trioxide	N_2O_3
15)	ammonia	NH ₃
16)	diboron dihydride	B_2H_2
17)	potassium phosphide	K ₃ P
18)	oxygen difluoride	OF ₂
19)	magnesium nitrate	Mg(NO ₃) ₂
20)	aluminum carbonate	Al ₂ (CO ₃) ₃

Counting Atoms Sheet - Answers

Name each of the following chemical compounds .

calcium fluoride	CaF ₂	1)
beryllium hydroxide	Be(OH) ₂	2)
nitrogen dioxide	NO_2	3)
aluminum sulfate	$Al_2(SO_4)_3$	4)
ammonium nitrate	NH_4NO_3	5)
disulfur difluoride	S_2F_2	6)
sodium carbonate	Na ₂ CO ₃	7)
carbon tetrahydride	CH ₄	8)

Write the formulas for each of the following chemical compounds.

9)	phosphorus trichloride	PCI ₃
10)	magnesium hydroxide	Mg(OH) ₂
11)	potassium phosphate	K ₃ PO ₄
12)	diphosphorus tetrabromide	P_2Br_4
13)	ammonia	NH ₃
14)	germanium phosphate	Ge ₃ (PO ₄) ₄ ,
15)	ammonium sulfate	(NH ₄) ₂ SO ₄
16)	diphosphorus pentoxide	P_2O_5

Answers – Naming Chemical Compounds

Name the following chemical compounds:

1)	NaBr	sodium bromide
2)	$Ca(C_2H_3O_2)_2$	calcium acetate
3)	P_2O_5	diphosphorus pentoxide
4)	Ti(SO ₄) ₂	titanium(IV) sulfate
5)	FePO ₄	iron(III) phosphate
6)	K ₃ N	potassium nitride
7)	SO ₂	sulfur dioxide
8)	CuOH	copper(I) hydroxide
9)	$Zn(NO_2)_2$	zinc nitrite
10)	V_2S_3	vanadium(III) sulfide

Write the formulas for the following chemical compounds:

11)	silicon dioxide	SiO ₂
12)	nickel (III) sulfide	Ni ₂ S ₃
13)	manganese (II) phosphate	$Mn_3(PO_4)_2$
14)	silver acetate	$AgC_2H_3O_2$
15)	diboron tetrabromide	B ₂ Br ₄
16)	magnesium sulfate heptahydrate	MgSO ₄ · 7H₂O
17)	potassium carbonate	K ₂ CO ₃
18)	ammonium oxide	(NH ₄) ₂ O
19)	tin (IV) selenide	SnSe ₂
20)	carbon tetrachloride	CCI ₄

More Mixed Naming Fun! - Answers

Name these compounds. They may be either ionic or covalent.

1)	LiOH	lithium hydroxide
2)	PBr ₃	phosphorus tribromide
3)	Na ₂ SO ₄	sodium sulfate
4)	(NH ₄) ₂ S	ammonium sulfide
5)	CaCO ₃	calcium carbonate
6)	CF ₄	carbon tetrafluoride
7)	NaNO ₃	sodium nitrate
8)	P_2S_3	diphosphorus trisulfide
9)	$AI(NO_3)_3$	aluminum nitrate

 $Mg(OH)_2$

10)

Write the formulas for the following compounds. Remember, they may be either ionic or covalent compounds, so make sure you use the right method!

magnesium hydroxide

11)	potassium oxide	K₂O
12)	phosphorus tribromide	PBr ₃
13)	calcium hydroxide	Ca(OH)₂
14)	dinitrogen sulfide	N ₂ S
15)	carbon monoxide	СО
16)	diboron tetrahydride	B_2H_4
17)	phosphorus pentabromide	PBr ₅
18)	sulfur dichloride	SCI ₂
19)	sodium carbonate	Na ₂ CO ₃
20)	aluminum acetate	$AI(C_2H_3O_2)_3$

Hydrates Homework Sheet

1) What is a hydrate?

A HYDRATE IS AN IONIC COMPOUND THAT HAS WATER TRAPPED INSIDE THE STRUCTURE OF THE COMPOUND. THIS WATER IS PHYSICALLY TRAPPED NOT CHEMICALLY BONDED.

- 2) Define the following terms as they relate to hydrates:
 - ❖ Anhydrate: A HYDRATE THAT HAS HAD ALL WATER REMOVED.
 - ❖ Dehydration: THE PROCESS OF REMOVING WATER USING HEAT.
- 3) Write the compound name for the following formulas:

a)	Na_2SO_4	10H ₂ O	sodium sulfate decahydrate

e) NaCl0₄ · H₂0 sodium perchlorate monohydrate

4) Write the formulas for the following compounds:

a)	zinc sul	phate	heptahyd	irate	ZnSO ₄	$_{4}$ $^{\prime\prime}/H_{2}O$
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e) sodium sulphate decahydrate Na₂SO₄ · 10H₂O

Write the correct formula for the named compound.

1. zinc sulphate heptahydrate	ZnSO ₄ ● 7H ₂ O
2. copper (I) sulphite monohydrate	$Cu_2SO_3 \bullet 1H_2O$
3. cobalt (II) fluoride tetrahydrate	$CoF_2 \bullet 4H_20$
4. lithium nitrate trihydrate	$LiNO_3 \bullet 3H_20$
5. sodium sulphate decahydrate	$Na_2SO_4 \bullet 10H_20$
6. calcium nitrate trihydrate	$Ca(NO_3)_2 \bullet 3H_20$
7. calcium sulphate hexahydrate	CaSO ₄ •6H ₂ 0
8. sodium phosphate tetrahydrate	$Na_3PO_4 \bullet 4H_2O$
9. aluminum hypochlorite octahydrate	$Al(ClO)_3 \bullet 8H_2O$
10. cesium carbonate dihydrate	$Cs_2CO_2 \bullet 2H_2O$

Write the correct name for the formula shown.

1. Na ₂ SO ₄ • 10H ₂ O	sodium sulfate decahydrate
2. LiNO ₃ •3H ₂ 0	lithium nitrate trihydrate
3. Cu ₂ SO _{3 • 3H₂0}	copper (I) sulfite trihydrate
4. Ca(N0 ₃) ₂ • 2H ₂ 0	calcium nitrate dihydrate
5. NaCl0 ₄ •H ₂ 0	sodium perchlorate monohydrate
6. MgS0 ₄ • 7H ₂ 0	magnesium sulfate heptahydrate
7. $Cs_2CO_2 \bullet 2H_2O$	cesium carbonite dihydrate
8. ZnS0 ₄ • 7 H ₂ 0	zinc sulfate heptahydrate
9. Na ₃ P0 ₃ • 4H ₂ 0	sodium phosphite tetrahydrate
10. Ni(N0 ₃) ₂ • 6H ₂ 0	nickel (II) nitrate hexahydrate