Naming Mixed Ionic and Covalent Compounds

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

1) NaF _____

2) NF_3 _____

3) Li_2O _____

4) Al_2S_3 _____

5) $MgSO_4$ _____

6) SiH_4 _____

7) KNO_3 _____

8) P_2O_5 _____

9) CH_4 _____

10) $Ca(OH)_2$ _____

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 _____

12) nitrogen trichloride _____

13) sodium oxide _____

14) dinitrogen trioxide _____

15) ammonia _____

16) diboron dihydride _____

17) potassium phosphide _____

18) oxygen difluoride _____

19) magnesium nitrate _____

20) aluminum carbonate _____

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_2O **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 **$LiCl$**

12) nitrogen trichloride **NCl_3**

13) sodium oxide **Na_2O**

14) dinitrogen trioxide **N_2O_3**

15) ammonia **NH_3**

16) diboron dihydride **B_2H_2**

17) potassium phosphide **K_3P**

18) oxygen difluoride **OF_2**

19) magnesium nitrate **$Mg(NO_3)_2$**

20) aluminum carbonate **$Al_2(CO_3)_3$**

Word Equations

Write the word equations below as chemical equations and balance:

1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.

2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.

3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.

4) Potassium metal and chlorine gas combine to form potassium chloride.

5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.

6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.

7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.

8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.

Word Equations – Answer Key

1) Zinc and lead (II) nitrate react to form zinc nitrate and lead.

$$Zn + Pb(NO_3)_2 \rightarrow Zn(NO_3)_2 + Pb$$

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2) Aluminum bromide and chlorine gas react to form aluminum chloride and bromine gas.

$$2\ AlBr_3 + 3\ Cl_2 \rightarrow 2\ AlCl_3 + 3\ Br_2$$

---

3) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.

$$2\ Na_3PO_4 + 3\ CaCl_2 \rightarrow 6\ NaCl + Ca_3(PO_4)_2$$

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4) Potassium metal and chlorine gas combine to form potassium chloride.

$$2\ K + Cl_2 \rightarrow 2\ KCl$$

---

5) Aluminum and hydrochloric acid react to form aluminum chloride and hydrogen gas.

$$2\ Al + 6\ HCl \rightarrow 3\ H_2 + 2\ AlCl_3$$

---

6) Calcium hydroxide and phosphoric acid react to form calcium phosphate and water.

$$3\ Ca(OH)_2 + 2\ H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 6\ H_2O$$

---

7) Copper and sulfuric acid react to form copper (II) sulfate and water and sulfur dioxide.

$$Cu + 2\ H_2SO_4 \rightarrow CuSO_4 + 2\ H_2O + SO_2$$

---

8) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.

$$2\ H_2 + 2\ NO \rightarrow 2\ H_2O + N_2$$

Balancing Chemical Equations

Balance the equations below:

1) ____ N_2 + ____ H_2 → ____ NH_3

2) ____ $KClO_3$ → ____ KCl + ____ O_2

3) ____ NaCl + ____ F_2 → ____ NaF + ____ Cl_2

4) ____ H_2 + ____ O_2 → ____ H_2O

5) ____ $Pb(OH)_2$ + ____ HCl → ____ H_2O + ____ $PbCl_2$

6) ____ $AlBr_3$ + ____ K_2SO_4 → ____ KBr + ____ $Al_2(SO_4)_3$

7) ____ CH_4 + ____ O_2 → ____ CO_2 + ____ H_2O

8) ____ C_3H_8 + ____ O_2 → ____ CO_2 + ____ H_2O

9) ____ C_8H_{18} + ____ O_2 → ____ CO_2 + ____ H_2O

10) ____ $FeCl_3$ + ____ NaOH → ____ $Fe(OH)_3$ + ____NaCl

11) ____ P + ____O_2 → ____P_2O_5

12) ____ Na + ____ H_2O → ____ NaOH + ____H_2

13) ____ Ag_2O → ____ Ag + ____O_2

14) ____ S_8 + ____O_2 → ____ SO_3

15) ____ CO_2 + ____ H_2O → ____ $C_6H_{12}O_6$ + ____O_2

16) ____ K + ____ MgBr → ____ KBr + ____ Mg

17) ____ HCl + ____ $CaCO_3$ → ____ $CaCl_2$ + ____H_2O + ____ CO_2

18) ____ HNO_3 + ____ $NaHCO_3$ → ____ $NaNO_3$ + ____ H_2O + ____ CO_2

19) ____ H_2O + ____ O_2 → ____ H_2O_2

20) ____ NaBr + ____ CaF_2 → ____ NaF + ____ $CaBr_2$

21) ____ H_2SO_4 + ____ $NaNO_2$ → ____ HNO_2 + ____ Na_2SO_4

Balancing Chemical Equations – Answer Key

Balance the equations below:

1) $1\ N_2 + 3\ H_2 \rightarrow 2\ NH_3$

2) $2\ KClO_3 \rightarrow 2\ KCl + 3\ O_2$

3) $2\ NaCl + 1\ F_2 \rightarrow 2\ NaF + 1\ Cl_2$

4) $2\ H_2 + 1\ O_2 \rightarrow 2\ H_2O$

5) $1\ Pb(OH)_2 + 2\ HCl \rightarrow 2\ H_2O + 1\ PbCl_2$

6) $2\ AlBr_3 + 3\ K_2SO_4 \rightarrow 6\ KBr + 1\ Al_2(SO_4)_3$

7) $1\ CH_4 + 2\ O_2 \rightarrow 1\ CO_2 + 2\ H_2O$

8) $1\ C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$

9) $2\ C_8H_{18} + 25\ O_2 \rightarrow 16\ CO_2 + 18\ H_2O$

10) $1\ FeCl_3 + 3\ NaOH \rightarrow 1\ Fe(OH)_3 + 3\ NaCl$

11) $4\ P + 5\ O_2 \rightarrow 2\ P_2O_5$

12) $2\ Na + 2\ H_2O \rightarrow 2\ NaOH + 1\ H_2$

13) $2\ Ag_2O \rightarrow 4\ Ag + 1\ O_2$

14) $1\ S_8 + 12\ O_2 \rightarrow 8\ SO_3$

15) $6\ CO_2 + 6\ H_2O \rightarrow 1\ C_6H_{12}O_6 + 6\ O_2$

16) $1\ K + 1\ MgBr \rightarrow 1\ KBr + 1\ Mg$

17) $2\ HCl + 1\ CaCO_3 \rightarrow 1\ CaCl_2 + 1\ H_2O + 1\ CO_2$

18) $1\ HNO_3 + 1\ NaHCO_3 \rightarrow 1\ NaNO_3 + 1\ H_2O + 1\ CO_2$

19) $2\ H_2O + 1\ O_2 \rightarrow 2\ H_2O_2$

20) $2\ NaBr + 1\ CaF_2 \rightarrow 2\ NaF + 1\ CaBr_2$

21) $1\ H_2SO_4 + 2\ NaNO_2 \rightarrow 2\ HNO_2 + 1\ Na_2SO_4$

Another Balancing Equations Sheet!

Balance these equations!

1) _____ $AlBr_3$ + _____ K → _____ KBr + _____ Al

2) _____ FeO + _____ PdF_2 → _____ FeF_2 + _____ PdO

3) _____ P_4 + _____ Br_2 → _____ PBr_3

4) _____ LiCl + _____ Br_2 → _____ LiBr + _____ Cl_2

5) _____ $PbBr_2$ + _____ HCl → _____ HBr + _____ $PbCl_2$

6) _____ $CoBr_3$ + _____ $CaSO_4$ → _____ $CaBr_2$ + _____ $Co_2(SO_4)_3$

7) _____ Na_3P + _____ CaF_2 → _____ NaF + _____ Ca_3P_2

8) _____ Mn + _____ HI → _____ H_2 + _____ MnI_3

9) _____ Li_3PO_4 + _____ NaBr → _____ Na_3PO_4 + _____ LiBr

10) _____ CaF_2 + _____ Li_2SO_4 → _____ $CaSO_4$ + _____ LiF

11) _____ HBr + _____ $Mg(OH)_2$ → _____ $MgBr_2$ + _____ H_2O

12) _____ $LiNO_3$ + _____ $CaBr_2$ → _____ $Ca(NO_3)_2$ + _____ LiBr

13) _____ $AgNO_3$ + _____ Li → _____ $LiNO_3$ + _____ Ag

14) _____ $Si(OH)_4$ + _____ NaBr → _____ $SiBr_4$ + _____ NaOH

15) _____ NaCN + _____ $CuCO_3$ → _____ Na_2CO_3 + _____ $Cu(CN)_2$

Balancing Equations Worksheet

1) ____ Na_3PO_4 + ____ KOH → ____ NaOH + ____ K_3PO_4

2) ____ MgF_2 + ____ Li_2CO_3 → ____ $MgCO_3$ + ____ LiF

3) ____ P_4 + ____ O_2 → ____ P_2O_3

4) ____ $RbNO_3$ + ____ BeF_2 → ____ $Be(NO_3)_2$ + ____ RbF

5) ____ $AgNO_3$ + ____ Cu → ____ $Cu(NO_3)_2$ + ____ Ag

6) ____ CF_4 + ____ Br_2 → ____ CBr_4 + ____ F_2

7) ____ HCN + ____ $CuSO_4$ → ____ H_2SO_4 + ____ $Cu(CN)_2$

8) ____ GaF_3 + ____ Cs → ____ CsF + ____ Ga

9) ____ BaS + ____ PtF_2 → ____ BaF_2 + ____ PtS

10) ____ N_2 + ____ H_2 → ____ NH_3

11) ____ NaF + ____ Br_2 → ____ NaBr + ____ F_2

12) ____ $Pb(OH)_2$ + ____ HCl → ____ H_2O + ____ $PbCl_2$

13) ____ $AlBr_3$ + ____ K_2SO_4 → ____ KBr + ____ $Al_2(SO_4)_3$

14) ____ CH_4 + ____ O_2 → ____ CO_2 + ____ H_2O

15) ____ Na_3PO_4 + ____ $CaCl_2$ → ____ NaCl + ____ $Ca_3(PO_4)_2$

16) ____ K + ____ Cl_2 → ____ KCl

17) ____ Al + ____ HCl → ____ H_2 + ____ $AlCl_3$

18) ____ N_2 + ____ F_2 → ____ NF_3

19) ____ SO_2 + ____ Li_2Se → ____ SSe_2 + ____ Li_2O

20) ____ NH_3 + ____ H_2SO_4 → ____ $(NH_4)_2SO_4$

Another Balancing Equations Sheet! – Answers

Balance these equations!

Note to students: Whenever balancing an equation, it is acceptable to leave spaces blank instead of writing "1' – in chemistry, they mean the same thing.

1) **1** $AlBr_3$ + **3** K → **3** KBr + **1** Al

2) **1** FeO + **1** PdF_2 → **1** FeF_2 + **1** PdO

3) **1** P_4 + **6** Br_2 → **4** PBr_3

4) **2** LiCl + **1** Br_2 → **2** LiBr + **1** Cl_2

5) **1** $PbBr_2$ + **2** HCl → **2** HBr + **1** $PbCl_2$

6) **2** $CoBr_3$ + **3** $CaSO_4$ → **3** $CaBr_2$ + **1** $Co_2(SO_4)_3$

7) **2** Na_3P + **3** CaF_2 → **6** NaF + **1** Ca_3P_2

8) **2** Mn + **6** HI → **3** H_2 + **2** MnI_3

9) **1** Li_3PO_4 + **3** NaBr → **1** Na_3PO_4 + **3** LiBr

10) **1** CaF_2 + **1** Li_2SO_4 → **1** $CaSO_4$ + **2** LiF

11) **2** HBr + **1** $Mg(OH)_2$ → **1** $MgBr_2$ + **2** H_2O

12) **2** $LiNO_3$ + **1** $CaBr_2$ → **1** $Ca(NO_3)_2$ + **2** LiBr

13) **1** $AgNO_3$ + **1** Li → **1** $LiNO_3$ + **1** Ag

14) **1** $Si(OH)_4$ + **4** NaBr → **1** $SiBr_4$ + **4** NaOH

15) **2** NaCN + **1** $CuCO_3$ → **1** Na_2CO_3 + **1** $Cu(CN)_2$

Balancing Equations Worksheet – Answers

Note to students: It is acceptable to leave spaces blank when balancing equations – blank spaces are interpreted as containing the number "1".

1) **1** Na_3PO_4 + **3** KOH → **3** NaOH + **1** K_3PO_4

2) **1** MgF_2 + **1** Li_2CO_3 → **1** $MgCO_3$ + **2** LiF

3) **1** P_4 + **3** O_2 → **2** P_2O_3

4) **2** $RbNO_3$ + **1** BeF_2 → **1** $Be(NO_3)_2$ + **2** RbF

5) **2** $AgNO_3$ + **1** Cu → **1** $Cu(NO_3)_2$ + **2** Ag

6) **1** CF_4 + **2** Br_2 → **1** CBr_4 + **2** F_2

7) **2** HCN + **1** $CuSO_4$ → **1** H_2SO_4 + **1** $Cu(CN)_2$

8) **1** GaF_3 + **3** Cs → **3** CsF + **1** Ga

9) **1** BaS + **1** PtF_2 → **1** BaF_2 + **1** PtS

10) **1** N_2 + **3** H_2 → **2** NH_3

11) **2** NaF + **1** Br_2 → **2** NaBr + **1** F_2

12) **1** $Pb(OH)_2$ + **2** HCl → **2** H_2O + **1** $PbCl_2$

13) **2** $AlBr_3$ + **3** K_2SO_4 → **6** KBr + **1** $Al_2(SO_4)_3$

14) **1** CH_4 + **2** O_2 → **1** CO_2 + **2** H_2O

15) **2** Na_3PO_4 + **3** $CaCl_2$ → **6** NaCl + **1** $Ca_3(PO_4)_2$

16) **2** K + **1** Cl_2 → **2** KCl

17) **2** Al + **6** HCl → **3** H_2 + **2** $AlCl_3$

18) **1** N_2 + **3** F_2 → **2** NF_3

19) **1** SO_2 + **2** Li_2Se → **1** SSe_2 + **2** Li_2O

20) **2** NH_3 + **1** H_2SO_4 → **1** $(NH_4)_2SO_4$