Unit Conversions Worksheet

1) How many inches are there in 45.6 cm? (There are 2.54 cm in 1 inch)

2) How many centimeters are there in 1.23×10^{-6} kilometers?

3) How many hours are there in 34.5 years?

4) How many inches are there in 355 millimeters?

5) How many milliliters are in a cubic meter? (There are 1,000 L in 1 m^3)

6) How many miles are there in 3.44×10^{8} inches? There are 0.61 miles in 1 km).

SI Units and Unit Conversions Practice Worksheet

Answers are provided on the second sheet. Please try to do the worksheet without referring to them, because you'll be expected to know this stuff the first day of school!

1) Name the SI units for distance, mass, and temperature.

2) Define the following SI unit prefixes: a) kilo

b) centi

c) mega

d) deci

3) How many kilometers are there in 3.34×10^5 cm?

4) How many inches are there in 62 centimeters? There are 2.54 centimeters in 1 inch.

5) How many kilometers are there in 34 inches?

6) How hot is 450^0 C in Kelvin?

Molar Mass Practice Worksheet

Find the molar masses of the following compounds:

1) $NaBr$

2) $PbSO_4$

3) $Ca(OH)_2$

4) Na_3PO_4

5) $(NH_4)_2CO_3$

6) $C_6H_{12}O_6$

7) $Fe_3(PO_4)_2$

8) $(NH_4)_2S$

9) $Zn(C_2H_3O_2)_2$

10) AgF

Mole Calculation Practice Worksheet

Answer the following questions:

1) How many moles are in 25 grams of water?

2) How many grams are in 4.5 moles of Li_2O?

3) How many molecules are in 23 moles of oxygen?

4) How many moles are in 3.4×10^{23} molecules of H_2SO_4?

5) How many molecules are in 25 grams of NH_3?

6) How many grams are in 8.2×10^{22} molecules of N_2I_6?

Moles, Molecules, and Grams Worksheet

1) How many molecules are there in 24 grams of FeF_3?

2) How many molecules are there in 450 grams of Na_2SO_4?

3) How many grams are there in 2.3×10^{24} atoms of silver?

4) How many grams are there in 7.4×10^{23} molecules of $AgNO_3$?

5) How many grams are there in 7.5×10^{23} molecules of H_2SO_4?

6) How many molecules are there in 122 grams of $Cu(NO_3)_2$?

7) How many grams are there in 9.4×10^{25} molecules of H_2?

8) How many molecules are there in 230 grams of $CoCl_2$?

Moles, Molecules, and Grams Worksheet

9) How many molecules are there in 2.3 grams of NH_4SO_2?

10) How many grams are there in 3.3×10^{23} molecules of N_2I_6?

11) How many molecules are there in 200 grams of CCl_4?

12) How many grams are there in 1×10^{24} molecules of BCl_3?

13) How many grams are there in 4.5×10^{22} molecules of $Ba(NO_2)_2$?

14) How many molecules are there in 9.34 grams of LiCl?

15) How many grams do 4.3×10^{21} molecules of UF_6 weigh?

16) How many molecules are there in 230 grams of NH_4OH?

Percent Composition Worksheet

Find the percent compositions of all of the elements in the following compounds:

1) $CuBr_2$

Cu: _____

Br: _____

---

2) NaOH

Na: _____

O: _____

H: _____

---

3) $(NH_4)_2S$

N: _____

H: _____

S: _____

---

4) N_2S_2

N: _____

S: _____

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 Equations Practice Worksheet

Balance the following equations:

1) ___ $NaNO_3$ + ___ PbO → ___ $Pb(NO_3)_2$ + ___ Na_2O

2) ___ AgI + ___ $Fe_2(CO_3)_3$ → ___ FeI_3 + ___ Ag_2CO_3

3) ___ $C_2H_4O_2$ + ___ O_2 → ___ CO_2 + ___ H_2O

4) ___ $ZnSO_4$ + ___ Li_2CO_3 → ___ $ZnCO_3$ + ___ Li_2SO_4

5) ___ V_2O_5 + ___ CaS → ___ CaO + ___ V_2S_5

6) ___ $Mn(NO_2)_2$ + ___ $BeCl_2$ → ___ $Be(NO_2)_2$ + ___ $MnCl_2$

7) ___ AgBr + ___ $GaPO_4$ → ___ Ag_3PO_4 + ___ $GaBr_3$

8) ___ H_2SO_4 + ___ $B(OH)_3$ → __ $B_2(SO_4)_3$ + ___ H_2O

9) ___ S_8 + ___ O_2 → ___ SO_2

10) ___ Fe + ___ $AgNO_3$ → ___ $Fe(NO_3)_2$ + ___ Ag

Types of Reactions Worksheet

Balance the following equations and indicate the type of reaction taking place:

1) ____ NaBr + ____ H_3PO_4 → ____ Na_3PO_4 + ____ HBr

Type of reaction: _____

2) ____ $Ca(OH)_2$ + ____ $Al_2(SO_4)_3$ → ____ $CaSO_4$ + ____ $Al(OH)_3$

Type of reaction: _____

3) ____ Mg + ____ Fe_2O_3 → ____ Fe + ____ MgO

Type of reaction: _____

4) ____ C_2H_4 + ____ O_2 → ____ CO_2 + ____ H_2O

Type of reaction: _____

5) ____ $PbSO_4$ → ____ $PbSO_3$ + ____ O_2

Type of reaction: _____

6) ____ NH_3 + ____ I_2 → ____ N_2I_6 + ____ H_2

Type of reaction: _____

7) ____ H_2O + ____ SO_3 → ____ H_2SO_4

Type of reaction: _____

8) ____ H_2SO_4 + ____ NH_4OH → ____ H_2O + ____ $(NH_4)_2SO_4$

Type of reaction: _____

Solubility Rules Worksheet

1. Classify each of the substances as being soluble or insoluble in water.

   a. potassium bromide – **soluble**
   b. lead (II) carbonate – **insoluble**
   c. barium sulfate
   d. zinc hydroxide
   e. sodium acetate
   f. silver iodide
   g. cadmium (II) sulfide
   h. zinc carbonate
   i. silver acetate
   j. copper (II) sulfide
   k. $Mg_3(PO_4)_2$
   l. KOH
   m. $NiCl_2$
   n. NH_4OH
   o. Hg_2SO_4
   p. PbI_2

2. Identify the two new products which form if the solutions, as suggested by the following table, were mixed. CIRCLE the names of the compounds which would precipitate from the solutions, which are not soluble and would make a solid.

	KBr	Na_2CO_3	CaS	NH_4OH
$AgNO_3$	**AgBr** + KNO_3			
$BaCl_2$				
$Al(NO_3)_3$				
$CuSO_4$				

Precipitation Reactions

Write balanced equations. Predict what the products will be. If a product is soluble write (aq) after it. If a product is NOT soluble, write (s) after it. All reactants listed below are soluble (that's why they are called solutions). Write (aq) after each reactant.
Note: gas (g), liquid (l), solid (s), aqueous (aq)

1. Solutions of lead nitrate and potassium chloride are mixed.

   $Pb(NO_3)_{2(aq)} + 2\ KCl_{(aq)} \rightarrow PbCl_{2(s)} + 2\ KNO_{3(aq)}$

2. Solutions of sodium sulfate and calcium bromide are mixed.

3. Solutions of aluminum acetate and lithium hydroxide are mixed.

4. Solutions of iron(III) sulfate and sodium sulfide are mixed.

5. Solutions of aluminum sulfate and calcium hydroxide are mixed.

6. Solutions of potassium chromate and lead acetate are mixed.

7. Solutions of silver nitrate and ammonium sulfide are mixed.

Naming Ionic Compounds Practice Worksheet

Name the following ionic compounds:

1) NH_4Cl _____

2) $Fe(NO_3)_3$ _____

3) $TiBr_3$ _____

4) Cu_3P _____

5) $SnSe_2$ _____

6) GaAs _____

7) $Pb(SO_4)_2$ _____

8) $Be(HCO_3)_2$ _____

9) $Mn_2(SO_3)_3$ _____

10) $Al(CN)_3$ _____

Write the formulas for the following compounds:

11) chromium (VI) phosphate _____

12) vanadium (IV) carbonate _____

13) tin (II) nitrite _____

14) cobalt (III) oxide _____

15) titanium (II) acetate _____

16) vanadium (V) sulfide _____

17) chromium (III) hydroxide _____

18) lithium iodide_____

19) lead (II) nitride _____

20 silver bromide _____

Lots of Ionic Naming Practice Problems

Name the following ionic compounds:

1) $NaBr$ _____

2) $Sc(OH)_3$ _____

3) $V_2(SO_4)_3$ _____

4) NH_4F _____

5) $CaCO_3$ _____

6) $NiPO_4$ _____

7) Li_2SO_3 _____

8) Zn_3P_2 _____

9) $Sr(C_2H_3O_2)_2$ _____

10) Cu_2O _____

11) Ag_3PO_4 _____

12) $YClO_3$ _____

13) SnS_2 _____

14) $Ti(CN)_4$ _____

15) $KMnO_4$ _____

16) Pb_3N_2 _____

17) $CoCO_3$ _____

18) $CdSO_3$ _____

19) $Cu(NO_2)_2$ _____

20) $Fe(HCO_3)_2$ _____

Lots of Ionic Naming Practice Problems

Write the formulas for the following ionic compounds:

21) lithium acetate _____

22) iron (II) phosphate _____

23) titanium (II) selenide _____

24) calcium bromide _____

25) gallium chloride _____

26) sodium hydride _____

27) beryllium hydroxide _____

28) zinc carbonate _____

29) manganese (VII) arsenide _____

30) copper (II) chlorate _____

31) cobalt (III) chromate _____

32) ammonium oxide _____

33) potassium hydroxide _____

34) lead (IV) sulfate _____

35) silver cyanide _____

36) vanadium (V) nitride _____

37) strontium acetate _____

38) molybdenum sulfate _____

39) platinum (II) sulfide _____

40) ammonium sulfate _____

Compound Names and Formulas

For the list on the left, name the compound. For the list on the right, give the chemical formula that corresponds to the name

Name		Formula	
1)	NaF	13)	potassium fluoride
2)	K_2CO_3	14)	ammonium sulfate
3)	$MgCl_2$	15)	magnesium iodide
4)	$Be(OH)_2$	16)	copper (II) sulfite
5)	SrS	17)	aluminum phosphate
6)	Cu_2S	18)	lead (II) nitrite
7)	ZnI_2	19)	cobalt (II) selenide
8)	$Ca_3(PO_4)_2$	20)	silver cyanide
9)	NH_4I	21)	copper (II) bicarbonate
10)	$Mn(NO_3)_3$	22)	iron (II) oxide
11)	$FePO_4$	23)	lithium cyanide
12)	$CoCO_3$	24)	lead (IV) sulfite

Naming Covalent Compounds Worksheet

Write the formulas for the following covalent compounds:

1) antimony tribromide _____

2) hexaboron silicide _____

3) chlorine dioxide _____

4) hydrogen iodide _____

5) iodine pentafluoride _____

6) dinitrogen trioxide _____

7) ammonia _____

8) phosphorus triiodide _____

Write the names for the following covalent compounds:

9) P_4S_5 _____

10) O_2 _____

11) SeF_6 _____

12) Si_2Br_6 _____

13) SCl_4 _____

14) CH_4 _____

15) B_2Si _____

16) NF_3 _____

Naming compounds and molar masses

Answers are provided on the second sheet. Please try to do the worksheet without referring to them, because you'll be expected to know this stuff the first day of school!

Name each of the following chemical compounds and list their molar masses to the nearest g/mol:

1) $AgNO_3$

2) $PbSO_4$

3) N_2O_3

4) $CoCl_2 \cdot 4\ H_2O$

5) NH_3

6) PBr_3

7) B_2F_6

8) $Sn(CO_3)_2$

Write the formulas of each of the following chemical compounds and list their molar masses to the nearest g/mol:

9) lithium acetate

10) copper (I) oxide

11) ammonium phosphate

12) vanadium (V) cyanide

13) nitrogen tribromide

14) iron (II) fluoride tetrahydrate

15) sulfur hexachloride

16) platinum (IV) hydroxide

Word Equations Worksheet

Write the word equations for each of the following chemical reactions:

1) When dissolved beryllium chloride reacts with dissolved silver nitrate in water, aqueous beryllium nitrate and silver chloride powder are made.

2) When isopropanol (C_3H_8O) burns in oxygen, carbon dioxide, water, and heat are produced.

3) When dissolved sodium hydroxide reacts with sulfuric acid (H_2SO_4), aqueous sodium sulfate, water, and heat are formed.

4) When fluorine gas is put into contact with calcium metal at high temperatures, calcium fluoride powder is created in an exothermic reaction.

5) When sodium metal reacts with iron (II) chloride, iron metal and sodium chloride are formed.