DIATOMICS H, N, O, F, Cl, Br, I

Worksheet: Word Equations **Name** _____

Substitute symbols and formulas for words, then balance each equation.

1. sodium chloride + lead (II) nitrate → lead (II) chloride + sodium nitrate

$NaCl + Pb(NO_3)_2 \rightarrow PbCl_2 + NaNO_3$

2. iron + chlorine → iron (III) chloride

$Fe + Cl_2 \rightarrow FeCl_3$

3. barium + water → barium hydroxide + hydrogen

$Ba + H_2O \rightarrow BaOH + H_2$

4. When chlorine gas reacts with methane, carbon tetrachloride and hydrogen chloride are produced.

$Cl_2 + CH_4 \rightarrow CCl_4 + HCl$

5. When sodium oxide is added to water, sodium hydroxide is produced.

$Na_2O + H_2O \rightarrow NaOH$

6. In a blast furnace, iron (III) oxide and carbon monoxide gas produce carbon dioxide gas and iron.

$Fe_2O_3 + CO \rightarrow CO_2 + Fe$

7. Iodine crystals react with chlorine gas to produce iodine trichloride.

$I_2 + Cl_2 \rightarrow ICl_3$

DIATOMICS = ____ "GAS"
Pg 224

(M) (44)

(D) 4. (2)KNO_3 → (2)KNO_2 + O_2

POTASSIUM NITRATE DECOMPOSES TO POTASSIUM NITRITE & OXYGEN GAS

(SR) 5. (3)O_2 + CS_2 → CO_2 + (2)SO_2

OXYGEN GAS MIXED W/ CARBON DISULFIDE PRODUCES CARBON DIOXIDE & SULFUR DIOXIDE

(D) 6. (2)$KClO_3$ → (2)KCl + (3)O_2

POTASSIUM CHLORATE DECOMPOSES

(DR) 7. (3)BaF_2 + (2)K_3PO_4 → $Ba_3(PO_4)_2$ + (6)KF

(DR) 8. H_2SO_4 + $Mg(NO_3)_2$ → $MgSO_4$ + (2)HNO_3

(SR) 9. (2)Al + (3)H_2SO_4 → $Al_2(SO_4)_3$ + (3)H_2

(SR) 10. WO_3 + (3)H_2 → W + (3)H_2O

Chemical Reactions

Name _____

1. Watch the video and then complete the chart.

Type of Reaction	Definition	★ Equation
Synthesis	COMBINE 2 SMALL THINGS TO CREATE 1 LARGE PRODUCT	A + B → AB
Decomposition		AB → A + B
Single Replacement		AX + B → BX + A
Double Replacement		AX + BY → AY + BX

Colors: A = Red, B = Blue, C = Green, D = Yellow

2. Use colored pencils to circle the common atoms or compounds in each equation to help you determine the type of reaction it illustrates. Use the code below to classify each reaction.

(S) = Synthesis (D) = Decomposition (SR) = Single Replacement (DR) = Double Replacement

S $P + O_2 \rightarrow P_4O_{10}$

S $Mg + O_2 \rightarrow MgO$

D $HgO \rightarrow Hg + O_2$

D $Al_2O_3 \rightarrow Al + O_2$

SR $Cl_2 + NaBr \rightarrow NaCl + Br_2$
A BX BA X

S $H_2 + N_2 \rightarrow NH_3$

S $Na + Br_2 \rightarrow NaBr$
M D AB

DR $CuCl_2 + H_2S \rightarrow CuS + HCl$

SR $HgO + Cl_2 \rightarrow HgCl + O_2$

S $C + H_2 \rightarrow CH_4$

D $KClO_3 \rightarrow KCl + O_2$

S $S_8 + F_2 \rightarrow SF_6$

DR $BaCl_2 + Na_2SO_4 \rightarrow NaCl + BaSO_4$

Balancing Chemical Equations

1. Write down the different types of atoms there are in each COMPOUND.
2. Write down the number of each different ATOM in each COMPOUND. } ATOM INVENTORY

CO C: 1 O: 1	$(AsO_3)_2$ As: 2 O: 6
P_2O_5 P: 2 O: 5	$(PO_4)_3$ P: 3 O: 12
CH_3COO	$(C_2O_4)_5$ C: O:
NH_4	$(CO_3)_3N_2$ C: O: N:
Ca_3N_2	$(NH_4)_2O$ N: H: O:

1. The law of CONSERVATION states that: MATTER CANNOT BE CREATED OR DESTROYED

2. This is the reason for BALANCE EQTNS.

Steps to balancing equations ★

1. Determine the number of atoms for each ELEMENT. (atom inventory)
2. Pick an ELEMENT that is not equal on BOTH sides of the equation.
3. Add a COEFFICIENT in front of the formula with that element and adjust your inventory.
4. Continue adding or changing coefficients to get the SAME number of atoms of each element on each side.

REACTANTS → PRODUCT

$\boxed{2}Mg + \boxed{\ }O_2 \rightarrow \boxed{2}MgO$

Mg = 2 | Mg = 2

O = 2 | O = 2

$\boxed{1}N_2 + \boxed{3}H_2 \rightarrow \boxed{2}NH_3$

N = | N =

H = | H =

★ $\boxed{2}Ca + \boxed{1}O_2 \rightarrow \boxed{2}CaO$

Ca = 1 | Ca = 1

O = 2 | O = 1

$\boxed{2}Cu_2O + \boxed{1}C \rightarrow \boxed{4}Cu + \boxed{1}CO_2$

Cu = 2 4 | Cu = 4

O = 2 | O = 2

C = 1 | C = 1

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1. $①H_2 + ①Br_2 \rightarrow ②HBr$

   H_2: +1 $\quad Br_2$: -1

2. $②CO + ①O_2 \rightarrow ②CO_2$

3. CHLORATE = ClO_3^-

   $②KClO_3 \rightarrow ②KCl + ③O_2$

Pg 282 #4-6 | Zn = +2

4. $FeCl_3 + NaOH \rightarrow Fe(OH)_3 + NaCl$

5. $CS_2 + O_2 \rightarrow CO_2 + SO_2$

6. $Zn + H_2SO_4 \rightarrow H_2 + ZnSO_4$

   $ZnSO_4$: +2 $\quad$ -2

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① ID TYPE OF RXN
- Synthesis
- Decomposition
- Single/Double replacement
- Combustion

QUIZ topics

② Balance EQTNS

③ Write Chem EQTNS

HW

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