Worksheet	
Redox	Reactions

Name	
Period	

1. What is a redox reaction?

2. Can oxidation occur without reduction? Explain.

(14 44 44);

3. Why would a nail corrode more quickly in saltwater than in distilled water?

4. a. What is the oxidation number of any atom in the elemental state?

b. What is the oxidation number of any monatomic ion?

c. What is the sum of the oxidation numbers in a neutral compound equal?

d. What is the sum of the oxidation numbers in a polyatomic ion equal?

5. Determine the oxidation number of phosphorous in each substance.

a. P₄O₈

c. P₄O₆

e. PO₃³-

b. P

d. H₃PO₄

f. PO_4^{3-}

6. Determine the oxidation numbers of each element in each of the following compounds.

a. S_2O_3

e. KCl

b. Cl₂

f. He

c. CO₃²-

g. NO₂

d. NO₃

h. H₃N

7. If a substance is "reduced" does it gain or lose electrons?______ If a substance is "oxidized" does it gain or lose electrons?______

8. Distinguish between an oxidizing agent and a reducing agent.

9. Use the changes in oxidation numbers to identify which atom is oxidized and which is reduced. Then, determine which reactant is the oxidizing agent and which is the reducing agent. (Show your work.) Remember: You note to reach changes in oxidation outpoers.

a. $H_2 + Cl_2 \rightarrow 2 HCl$

Oxidized Oxidizing Agent

Reduced ______Reducing Agent

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cha c	inge in	>
ζ,	+3	1
	10	
4	3	
7		

Oxidized	Reduced	
Oxidizing Agent	Reducing Agent	

c.
$$2 \text{ Li} + \text{ F}_2 \rightarrow 2 \text{ LiF}$$

b. $2 O_2 + N_2 \rightarrow 2 NO_2$

d.
$$3 H_2 S + 2 HNO_3 \rightarrow 3 S + 2 NO + 4 H_2 O$$

e.
$$2 \text{ PbSO}_4 + 2 \text{ H}_2\text{O} \rightarrow \text{Pb} + \text{PbO}_2 + 2 \text{ H}_2\text{SO}_4$$
 {\(\tau \text{Ricky} \)

Oxidized	Reduced	
Oxidizing Agent	Reducing Agent	

f.
$$2 \text{ Na} + \text{Br}_2 \rightarrow 2 \text{ NaBr}$$

g.
$$S + Cl_2 \rightarrow SCl_3$$

h.
$$Mg + Cu(NO_3)_2 \rightarrow Mg(NO_3)_2 + Cu$$

Oxidized	Reduced	
Oxidizing Agent	Reducing Agent	

10. Write the oxidation number above each element. Then, determine if each equation represents a redox reaction (circle yes or no).



a.
$$2 \text{ KClO}_3 \rightarrow 2 \text{ KCl} + 3 \text{ O}_2$$
 yes / no

b.
$$BaCl_2 + 2 KIO_3 \rightarrow Ba(IO_3)_2 + 2 KCl$$
 yes / no

c.
$$HCl + NaOH \rightarrow H_2O + NaCl$$
 yes/no

d.
$$Mg + Br_2 \rightarrow MgBr_2$$
 yes / no

e.
$$NH_4NO_3 \rightarrow N_2 + H_2O$$
 $(R_1(ky))$ yes/no

Looking @ reactions in #10, what type of reaction is not redox?

Works	heet
Redox	Reactions

			1	-anation	
1	What 1	s a	redox	reaction	•

	a detien	occur without reduction?	Explain.
2.	Can oxidation	occur without reduction.	Lipidia

one substance must gain e- as the other loses.



Why would a nail corrode more quickly in saltwater than in distilled water? salt water is an electrolyte + better at conducting

0.9	Sall Marie	
	electricity.	
4.	a. What is the oxidation number of any atom in the elemental state?	C

b. What is the oxidation number of any monatomic ion?

c. What is the sum of the oxidation numbers in a neutral compound equal?

d. What is the sum of the oxidation numbers in a polyatomic ion equal?

5. Determine the oxidation number of <u>phosphorous</u> in each substance.

e.
$$PO_3^{3}$$

6. Determine the oxidation numbers of each element in each of the following compounds.

$$6 = +3$$
 $0 = -2$

$$\mathscr{D}$$

7. If a substance is "reduced" does it gain or lose electrons? "oxidized" does it gain or lose electrons? 056

If a substance is

8. Distinguish between an oxidizing agent and a reducing agent.

forces exidation to occur

forus reduction to occur (it is oxidized)

9. Use the changes in oxidation numbers to identify which atom is oxidized and which is reduced. Then, determine which reactant is the oxidizing agent and which is the reducing agent. (Show your work.) Remember Goxidation nimocis.

Oxidized Oxidizing Agent Reduced Reducing Agent

b.
$$2 O_2 + N_2 \rightarrow 2 NO_2$$

Oxidized Oxidizing Agent N₂

Reduced Reducing Agent

c.
$$2 \operatorname{Li} + \operatorname{F}_2 \rightarrow 2 \operatorname{LiF}$$

Oxidized Oxidizing Agent hi Fa

Reduced Reducing Agent F

d.
$$3 H_2 S + 2 HNO_3 \rightarrow 3 S + 2 NO + 4 H_2 O$$

Oxidized Oxidizing Agent _ HNO3-

Reduced Reducing Agent Has

e.
$$2 \text{ PbSO}_4 + 2 \text{ H}_2 \text{O} \rightarrow \text{Pb} + \text{PbO}_2 + 2 \text{ H}_2 \text{SO}_4$$

Oxidized Oxidizing Agent Pb+2
Pb504

Reduced Reducing Agent P6504

f.
$$2 \text{ Na} + \text{Br}_2 \rightarrow 2 \text{ NaBr}$$

Oxidized Oxidizing Agent Na Brz

Reduced
Reducing Agent

Br

g.
$$S + Cl_2 \rightarrow SCl_3$$

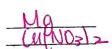
Oxidized Oxidizing Agent



Reduced Reducing Agent <u>C1</u> ________

h.
$$Mg + Cu(NO_3)_2 \rightarrow Mg(NO_3)_2 + Cu$$

Oxidized Oxidizing Agent



Reduced Reducing Agent _Cu+2 _Mg___

10. Write the oxidation number above each element. Then, determine if each equation represents a redox reaction (circle yes or no).



a.
$$2 \text{ KCIO}_3 \rightarrow 2 \text{ KCI} + 3 \text{ O}_2$$

b.
$$BaCl_2 + 2 KIO_3 \rightarrow Ba(IO_3)_2 + 2 KCl$$

c.
$$HCl + NaOH \rightarrow H_2O + NaCl$$

d.
$$Mg + Br_2 \rightarrow MgBr_2$$

e.
$$NH_4NO_3 \rightarrow N_2 + H_2O$$

*Identify Type of Reaction. What can you infer?