

Worksheet

Redox Reactions

Name _____
Period _____

1. What is a redox reaction?
2. Can oxidation occur without reduction? Explain.
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? _____

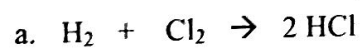
5. Determine the oxidation number of phosphorous in each substance.
a. P_4O_8 _____ c. P_4O_6 _____ e. PO_3^{3-} _____
b. P _____ d. H_3PO_4 _____ f. PO_4^{3-} _____

6. Determine the oxidation numbers of each element in each of the following compounds.
a. S_2O_3 _____ e. KCl _____
b. Cl_2 _____ f. He _____
c. CO_3^{2-} _____ g. NO_2 _____
d. NO_3 _____ h. H_3N _____

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 have to track changes in oxidation numbers.



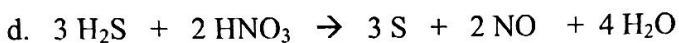
Oxidized _____ Reduced _____
Oxidizing Agent _____ Reducing Agent _____



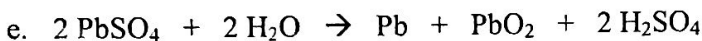
Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____



Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____



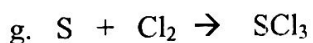
Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____



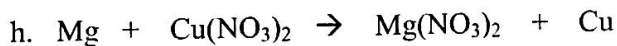
Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____



Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____

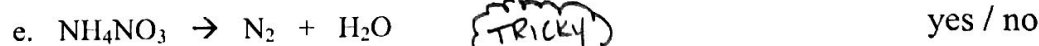
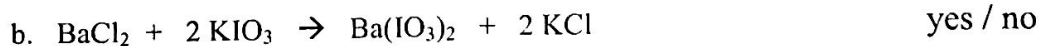
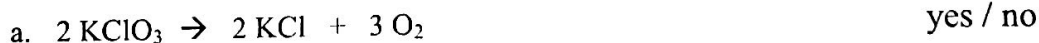


Oxidized _____ Reduced _____
 Oxidizing Agent _____ Reducing Agent _____



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).



Change in Ox #



(TRICKY)

Remember:
 In order to be redox
 e- must be
 lost + gained

TRICKY

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

Worksheet Redox Reactions

Name Key
Period _____

1. What is a redox reaction?

2. Can oxidation occur without reduction? Explain.

No one substance must gain e^- as the other loses.

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

salt water is an electrolyte + better at conducting electricity.

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

\emptyset
charge

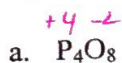
b. What is the oxidation number of any monatomic ion?

\emptyset
charge

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?

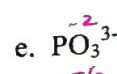
5. Determine the oxidation number of phosphorous in each substance.



+4



+3



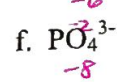
+3



0



+5



+5

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



S = +3 ; O = -2



K = +1 ; Cl = -1



\emptyset



\emptyset



C = +4 ; O = -2



N = +4 ; O = -2



N = +6 ; O = -2



H = +1 ; N = -3

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

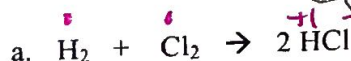
8. Distinguish between an oxidizing agent and a reducing agent.

forces oxidation to occur (it is reduced)

forces 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: oxidation numbers change in redox reactions.

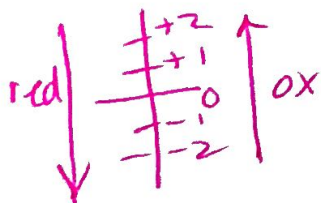


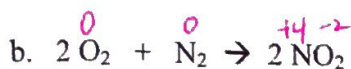
Oxidized
Oxidizing Agent

H
 Cl_2

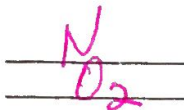
Reduced
Reducing Agent

Cl
 H_2

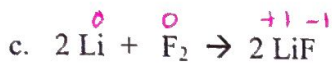
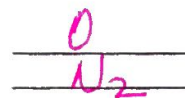




Oxidized
Oxidizing Agent



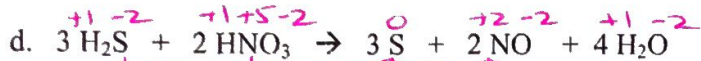
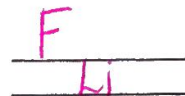
Reduced
Reducing Agent



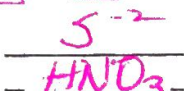
Oxidized
Oxidizing Agent



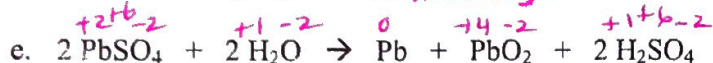
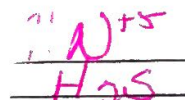
Reduced
Reducing Agent



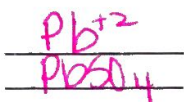
Oxidized
Oxidizing Agent



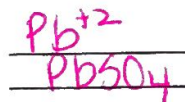
Reduced
Reducing Agent



Oxidized
Oxidizing Agent



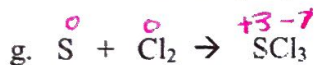
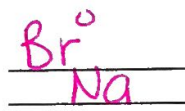
Reduced
Reducing Agent



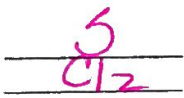
Oxidized
Oxidizing Agent



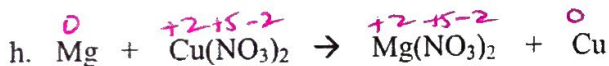
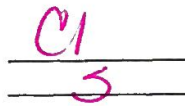
Reduced
Reducing Agent



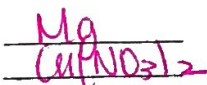
Oxidized
Oxidizing Agent



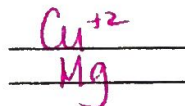
Reduced
Reducing Agent



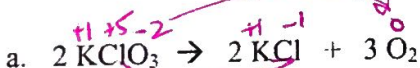
Oxidized
Oxidizing Agent



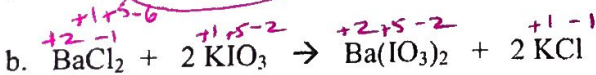
Reduced
Reducing Agent



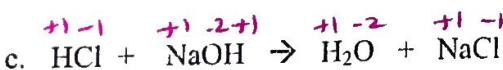
10. Write the oxidation number above each element. Then, determine if each equation represents a redox reaction (circle yes or no).



yes/no



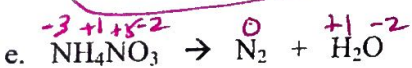
yes/no



yes/no



yes/no



yes/no

Remember:
In order to
be redox
e⁻ must be
lost + gained

* Identify Type of Reaction.
What can you infer?