Demo**:** burning Mg in O_2, called an "oxidation" reaction

Why? $2\ Mg + O_2 \rightarrow 2\ MgO$

Burning Mg in Cl_2 is also an "oxidation" reaction.

How so?

Aim: What is the meaning of oxidation?

1) Looking at valence e^-

Mg → **O_2**
metal , loses e^- — nonmetal, gains e^-

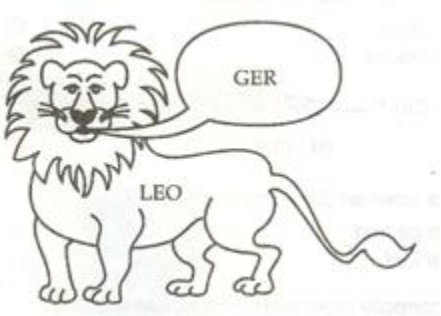
Mg → **Cl_2**
"same story"

a) Therefore, **oxidation** is the **loss** of e^-.

b) On the other hand, **reduction** is the **gain** of e^-

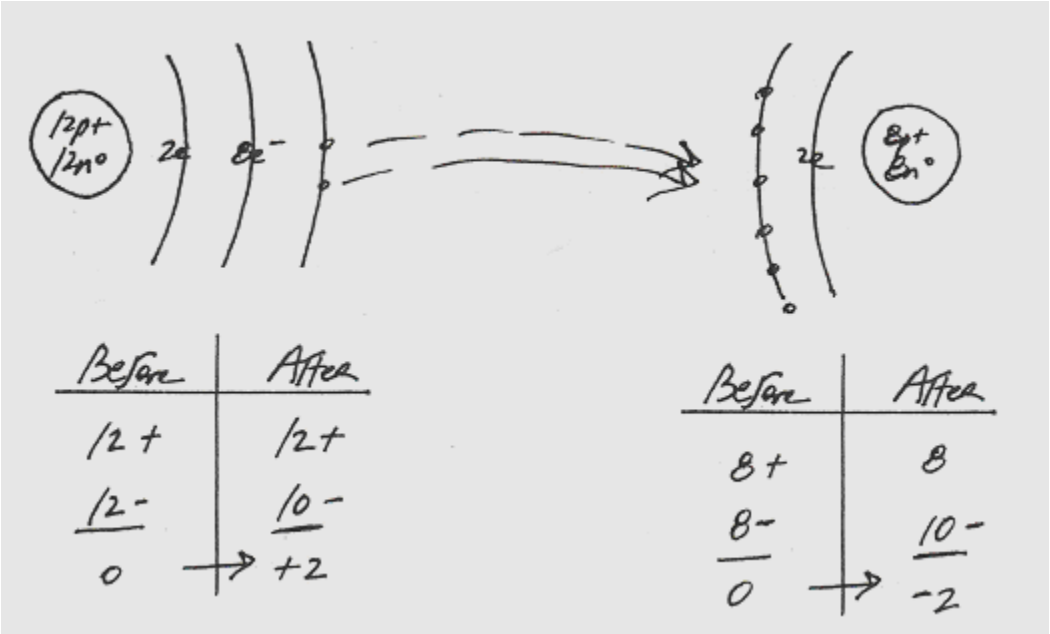
c) Altogether, it's called a **Redox** reaction.

d) We say "Mg got oxidized, while O_2 got reduced".



Remember: **L.E.O. the lion says, G.E.R.**

2) What happens to the charges of the atoms?



Due to oxidation the charge (oxidation #) **increases**. Due to reduction, the charge (oxidation #) **decreases.**

3) How do we represent this with an equation?

$Mg \rightarrow Mg^{+2} + 2e^-$	$O + 2e^- \rightarrow O^{-2}$
Electrons **lost** are placed on the product side.	Electrons **gained** are placed on the reactant side.

These are called **"half reactions"**.

b) Check: atoms balance & charges balance.

In other words, Redox reactions **"conserve mass and charge."**

4) What do we call the agents?

Mg got oxidized, it's a **reducing** agent	**O** got reduced, it's an **oxidizing** agent

Remember: "The travel agent doesn't travel."

AGAIN, memorize this!

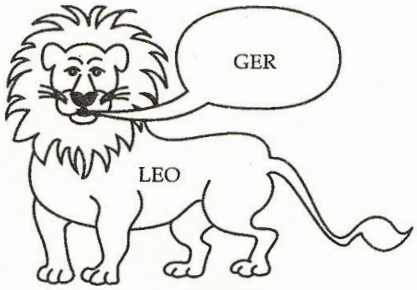
REDOX	
Reduction **G.E.R** **Oxidation # ↓** **Oxidizing Agent**	**Oxidation** **L.E.O** **Oxidation # ↑** **Reducing Agent**

SEE HANDOUT ON NEXT PAGE

TAKE ANOTHER LOOK

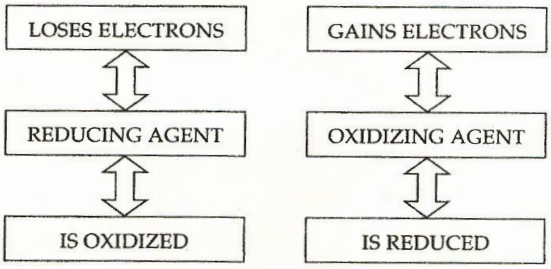
To remember what reactions involve losses and gains of electrons, think about this story. There once was a lion named **LEO**, which means Loss of Electrons is Oxidation. This king of the beasts was a little different from others. Instead of saying "roar," he said "**GER**", which means Gain of Electrons is Reduction. See Fig. 40-4.

Fig. 40-4



Look at Fig. 40-5. It shows the gain and loss of electrons by oxidizing agents and by reducing agents.

Fig. 40-5



Check Your Understanding

3. Use the terms *reducing agent*, *reduction*, and *substance oxidized* to complete the table comparing oxidation and reduction.

Loss of Electrons	Gain of Electrons
(a) oxidation	(a) _____
(b) _____	(b) oxidizing agent
(c) _____	(c) substance reduced