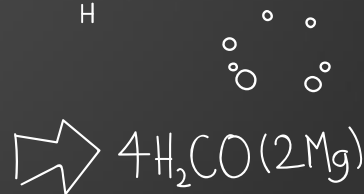
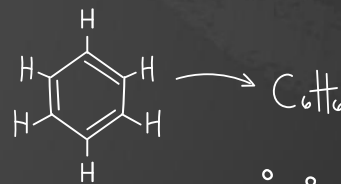
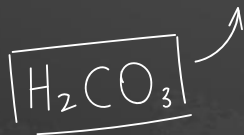
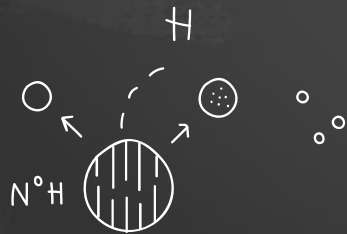
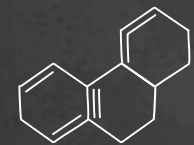




Chemistry - 101

Classes of chemical compounds

05/02/21



HW

4 g



Mw NaOH =

Mw H₂SO₄ =

Mw Na = 23

Mw O = 16

Mw S = 32

Mw H = 1

Oxides

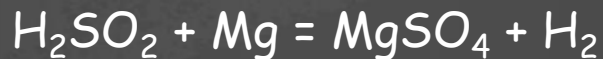
- Sulfur (IV) oxide SO_2
- Sulfur (VI) oxide SO_3
- Carbon (IV) oxide CO_2
- Calcium oxide CaO
- Iron (III) oxide Fe_2O_3
- Potassium oxide K_2O
- Magnesium oxide MgO

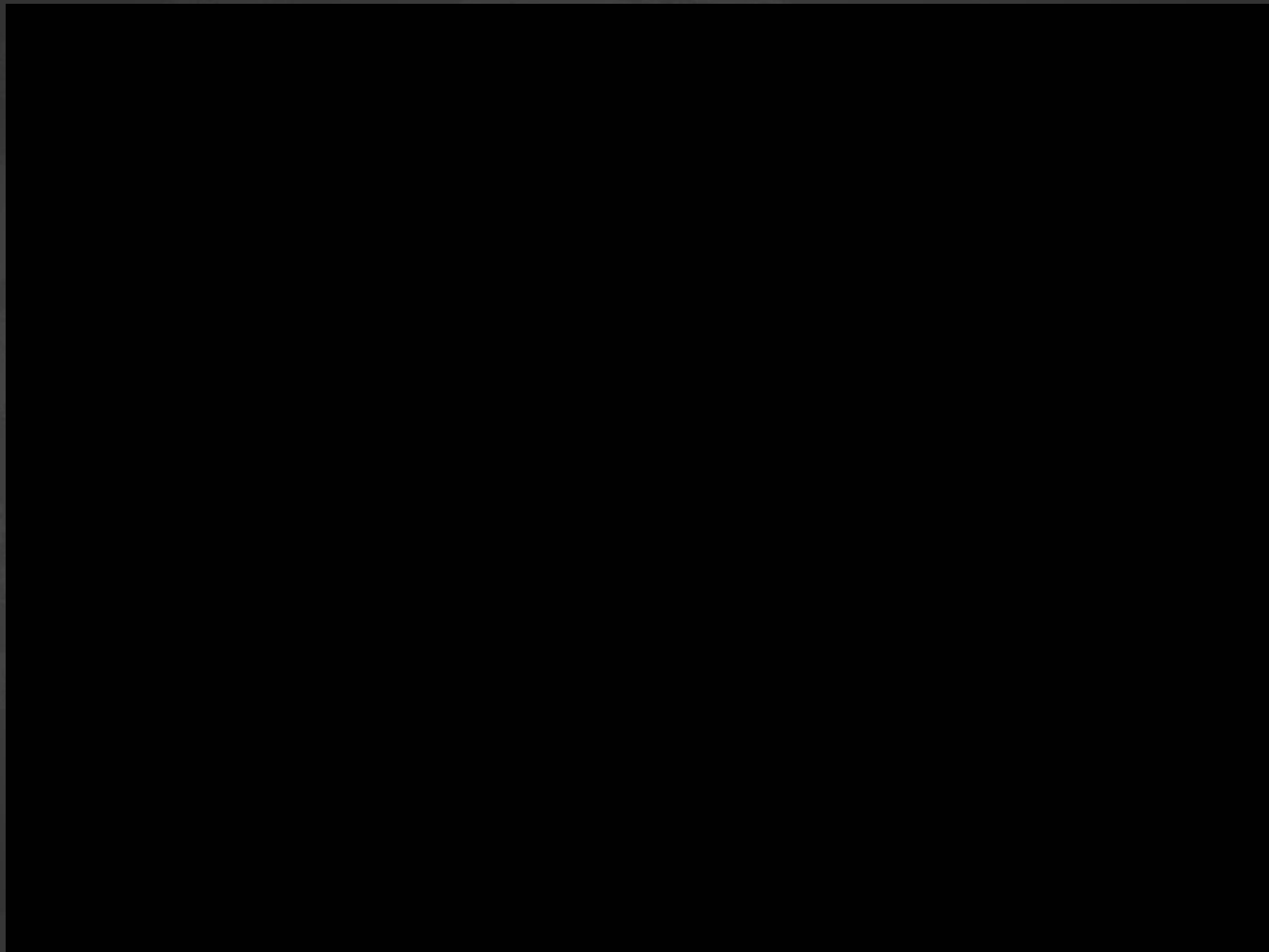
1	H Hydrogen 1.008	
2	Li Lithium 6.941	Be Beryllium 9.012
3	Na Sodium 22.990	Mg Magnesium 24.305
4	K Potassium 39.098	Ca Calcium 40.078
5	Rb Rubidium 85.468	Sr Strontium 87.62
6	Cs Cesium 132.905	Ba Barium 137.328
7	Fr Francium 223.020	Ra Radium 226.025

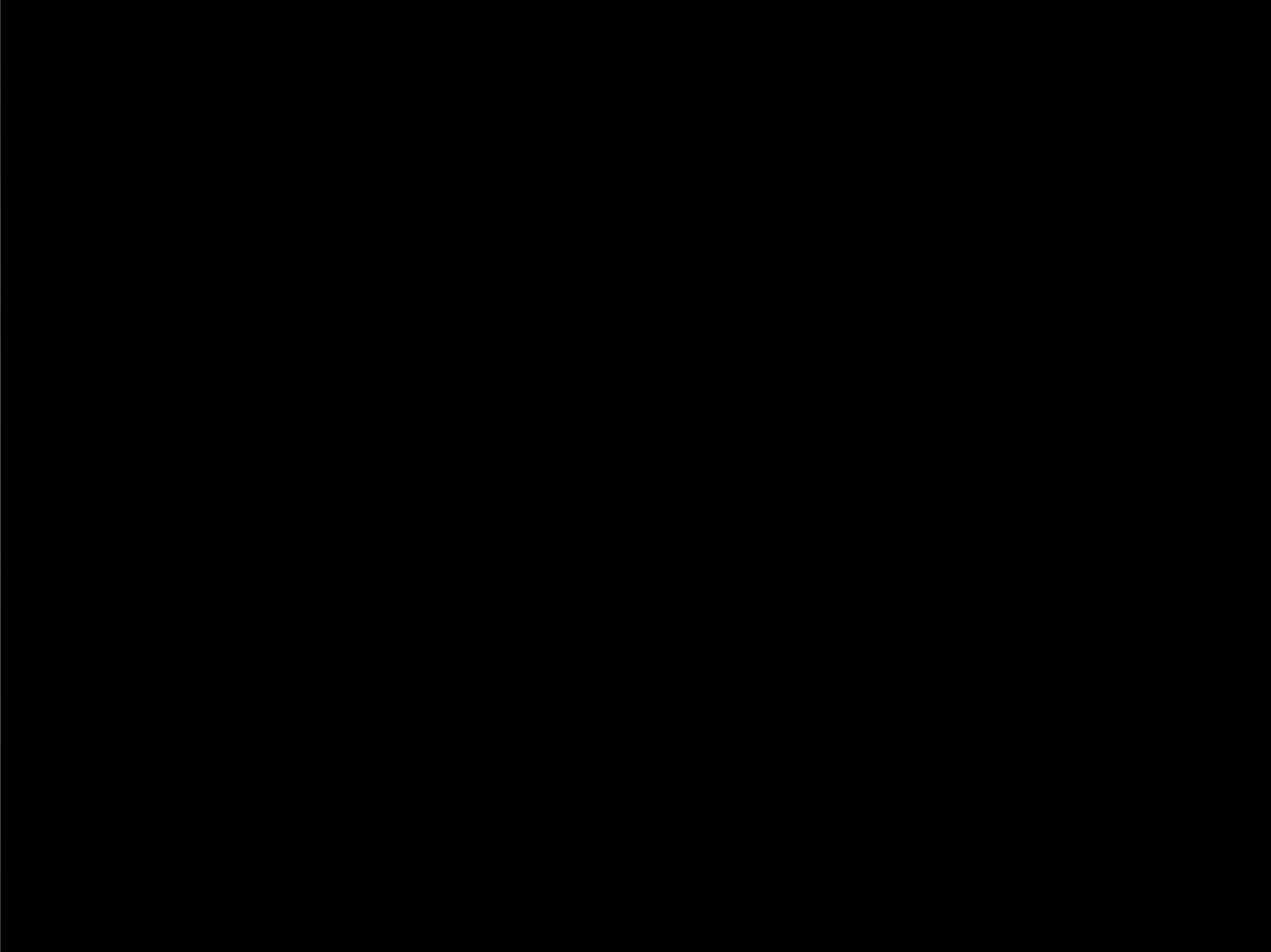
					18 He Helium 4.003
13 B Boron 10.811	14 C Carbon 12.011	15 N Nitrogen 14.007	16 O Oxygen 15.999	17 F Fluorine 18.998	10 Ne Neon 20.180
13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
31 Ga Gallium 69.723	32 Ge Germanium 72.631	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798
49 In Indium 114.818	50 Sn Tin 118.711	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.294
81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [208.982]	85 At Astatine 209.987	86 Rn Radon 222.018

Acids - a compound that has one or several hydrogen atoms and a conjugate base in its molecule

Acids can replace hydrogen atoms by metal atoms

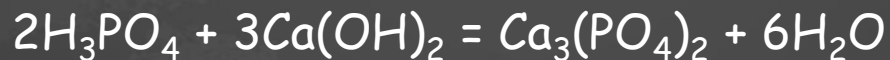
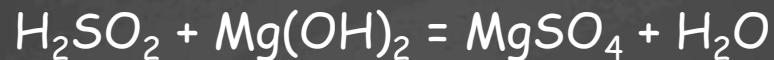






Reactions of acids

Acids react with bases forming salts and water
(neutralization reaction):



Types of acids

Acids with and without oxygen

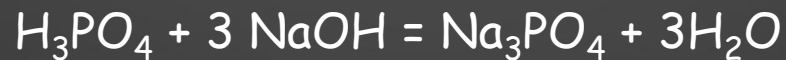
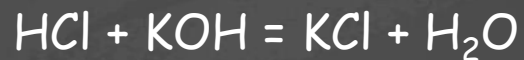
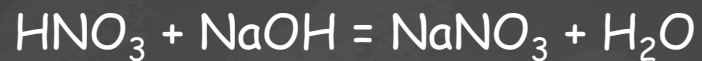
Oxyacids	Hydracids
H_2SO_4 - sulfuric acid	HF - hydrofluoric acid
H_2SO_3 - sulfurous acid	HCl - hydrochloric acid
HNO_3 - nitric acid	HBr - hydrobromic acid
H_3PO_4 - phosphoric acid	HI - hydroiodic acid
H_2CO_3 - carbonic acid	H_2S - hydrosulfuric acid

Types of acids

By the number of protons that they can dissociate into the solution:

Monoprotic (monobasic), diprotic (dibasic), triprotic (tribasic)

Oxyacids	Hydracids
H_2SO_4 - sulfuric acid	HF - hydrofluoric acid
H_2SO_3 - sulfurous acid	HCl - hydrochloric acid
HNO_3 - nitric acid	HBr - hydrobromic acid
H_3PO_4 - phosphoric acid	HI - hydroiodic acid
H_2CO_3 - carbonic acid	H_2S - hydrosulfuric acid



Acids reactions with basic oxides (neutralization reactions)




Acids reactions with metals

Not all metals react with acids - Metal should be sufficiently active
and acid should be sufficiently strong



Reactivity Series of Metals

These metals are more reactive than hydrogen	Potassium	K	(Most reactive metal)
	Sodium	Na	
	Calcium	Ca	
	Magnesium	Mg	
	Aluminium	Al	
	Zinc	Zn	
	Iron	Fe	
	Tin	Sn	
	Lead	Pb	
	[Hydrogen]	[H]	
These metals are less reactive than hydrogen	Copper	Cu	(Least reactive metal)
	Mercury	Hg	
	Silver	Ag	
	Gold	Au	

How to remember the Reactivity Series?

Please	Potassium	 Most reactive
Stop	Sodium	
Calling	Calcium	
Me	Magnesium	
A	Aluminium	
Careless	(Carbon)	
Zebra	Zinc	
Instead	Iron	
Try	Tin	
Learning	Lead	
How	(Hydrogen)	
Copper	Copper	Least reactive
Saves	Silver	
Gold	Gold	

Strong Acids



Hydrochloric
Acid



Nitric
Acid



Sulfuric
Acid



Hydrobromic
Acid



Hydroiodic
Acid

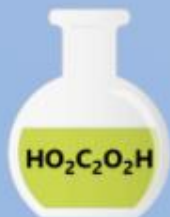


Perchloric
Acid

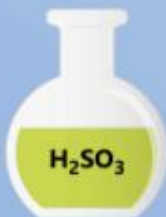


Chloric
Acid

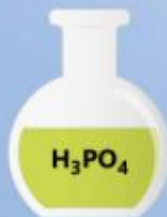
Weak Acids



Oxalic
Acid



Sulfurous
Acid



Phosphoric
Acid



Nitrous
Acid



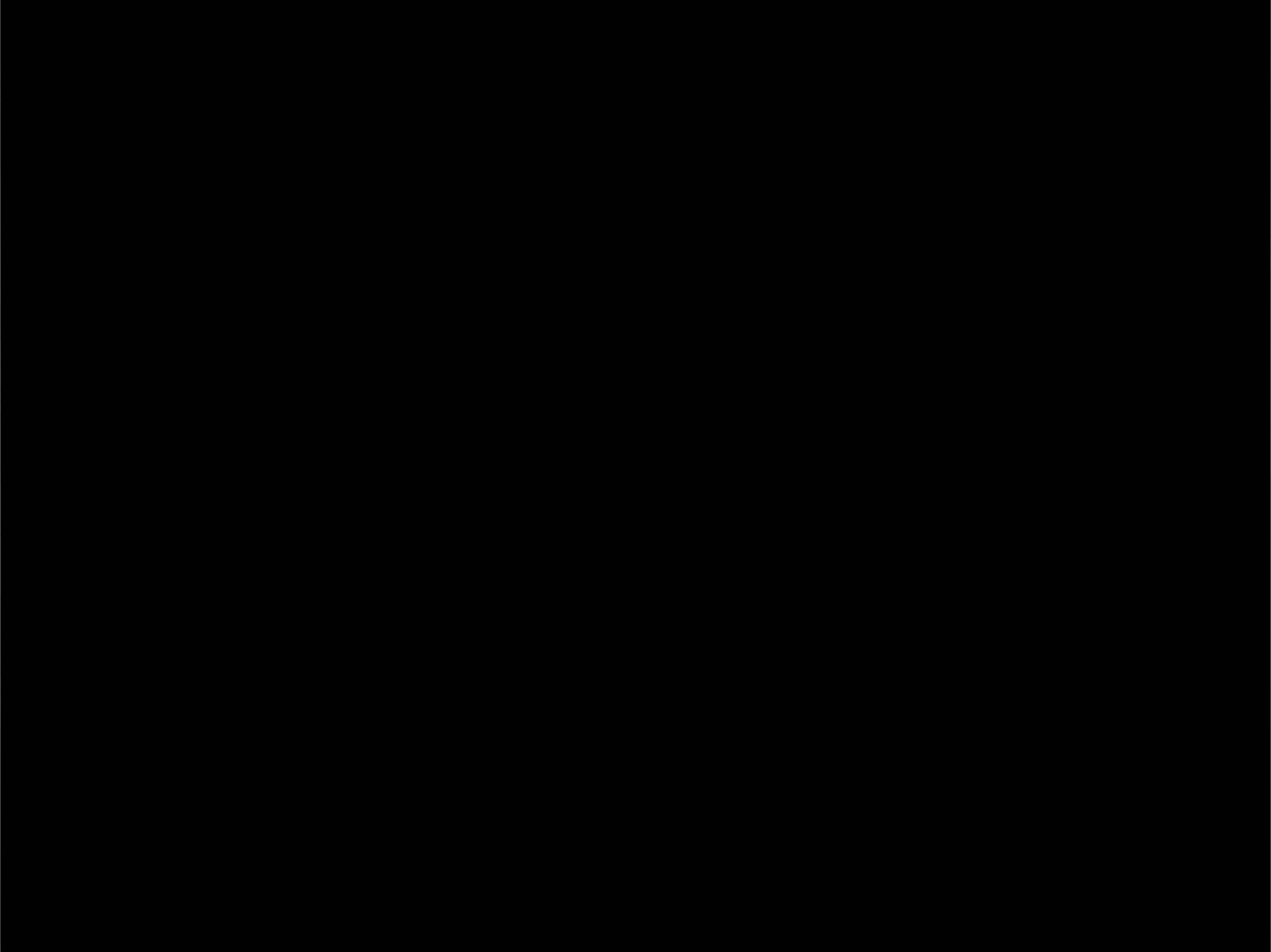
Benzoic
Acid



Acetic
Acid



Formic
Acid



This class uses the materials from the following books:

”

Manyuilov and Rodionov “Chemistry for children and adults”

Kuzmenko, Eremin, Popkov “Beginnings of chemistry”

<http://school-collection.edu.ru> (experiments)