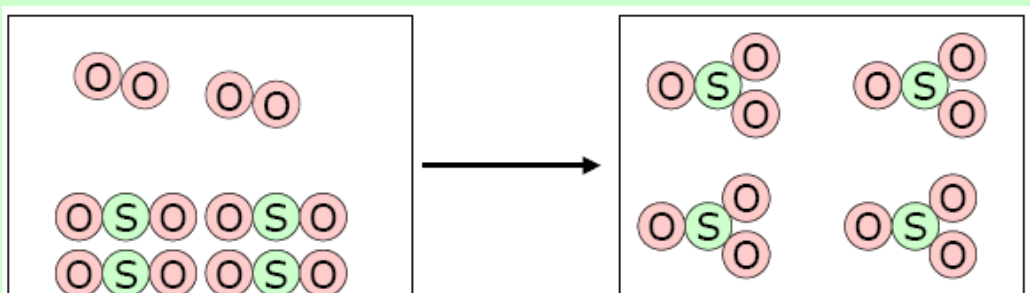
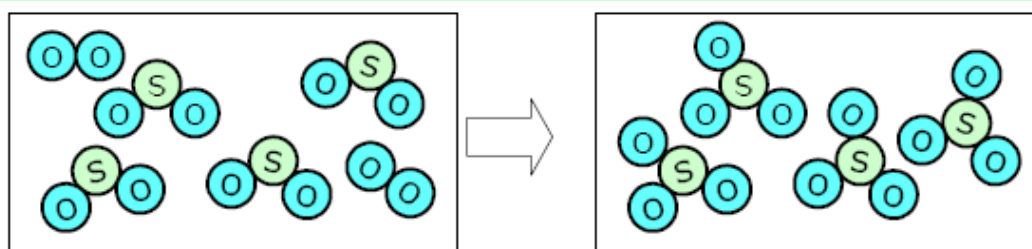


1 Classify the matter in these samples and determine the type of transformation (physical, chemical)



1st transformation

System on the left → Homogeneous mixture $\text{SO}_2(\text{g}) + \text{O}_2(\text{g})$

System on the right → Compound $\text{SO}_3(\text{g})$

Transformation → CHEMICAL CHANGE

2nd transformation

System on the left → Heterogeneous mixture $\text{SO}_2(\text{s}) + \text{O}_2(\text{g})$

System on the right → Compound $\text{SO}_3(\text{g})$

Transformation → CHEMICAL CHANGE

2 Determine all the missing information in this table:

2 Determine all the missing information in this table:								
X notation	N	A	number of...			electron configuration		Lewis
			p ⁺	n ⁰	e ⁻	orbital diagram		
²³ ₁₁ Na	11	23	11	12	11		Na	
³⁵ ₁₇ Cl	17	35	17	18	17		:Cl:	
²³ ₁₁ Na ⁺	11	23	11	12	10		Na ⁺	
³⁷ ₁₇ Cl ⁻	17	37	17	20	18		:Cl: ⁻	

3 Copper has two naturally occurring isotopes, ⁶³Cu (isotopic mass 62.9396 amu) and ⁶⁵Cu (isotopic mass of 64.9278 amu). If copper has an atomic mass of 63.546 amu, what is the percent abundance of each copper isotope?

$$\text{atomic mass} = 63.546 \text{ u} = \frac{62.9396 \text{ u } X + 64.9278 \text{ u } (100 - X)}{100} \rightarrow$$

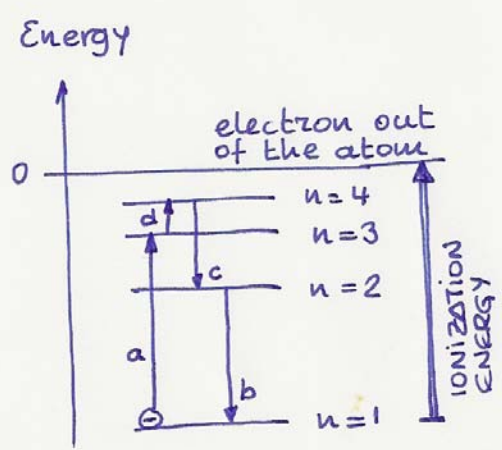
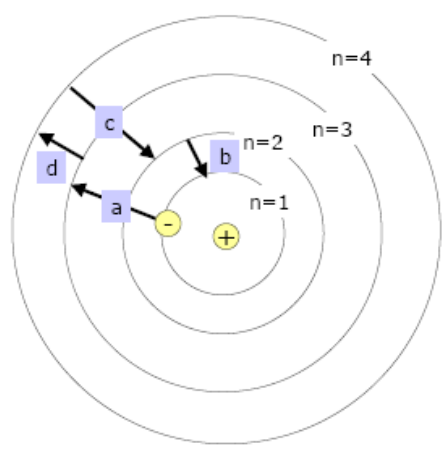
$$\rightarrow 63.546 \text{ u} = 0.629396 \text{ u } X + 64.9278 \text{ u} - 0.649278 \text{ u } X \rightarrow$$

$$\rightarrow 0.019882 X = 1.3818 \rightarrow X = \frac{1.3818}{0.019882} = 69.5$$

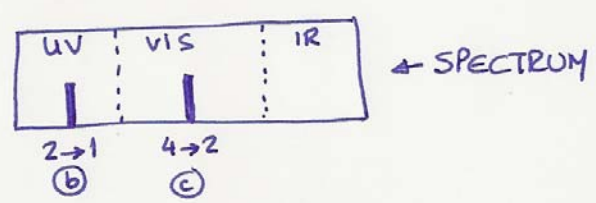
Abundance: ⁶³Cu ... 69.5 %

⁶⁵Cu ... 30.5 %

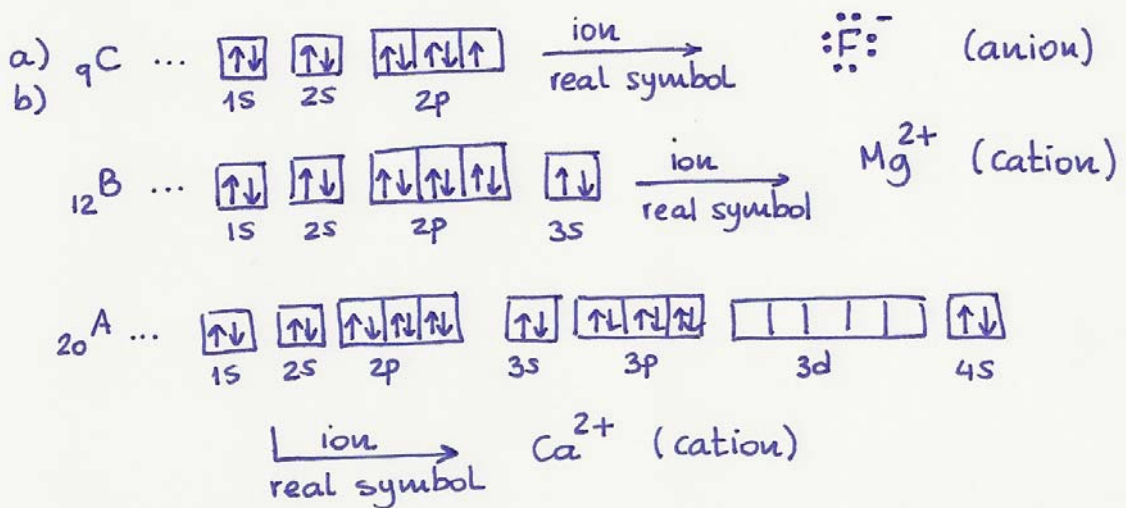
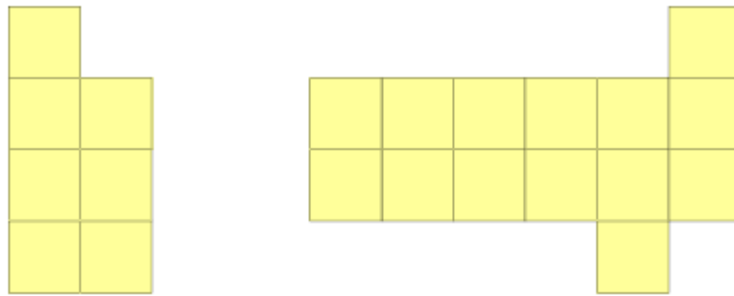
- 4 An electron undergoes the process that appears in the picture.
- draw the energy diagram including the electronic levels and the origin (energy=0)
 - determine in which of those depicted jumps the electron gains energy or releases it
 - draw an spectrum with the photons involved in those jumps
 - indicate the first ionization energy in the energy diagram



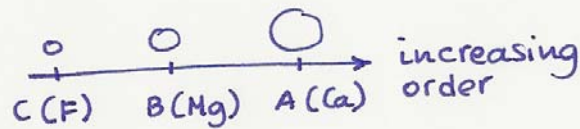
- jump a → the electron gains energy
- jump d → the electron gains energy
- jump c → the electron loses energy and emits a photon (VISIBLE)
- jump b → the electron loses energy and emits a photon (UV)



- 5 The number of protons of three elements are: "A"=20; "B"=12 and "C"=9
- draw the electron configuration of each neutral atom (orbital diagram)
 - the ions each element tend to form (Lewis notation)
 - compare the atomic size of those atoms and order them in increasing order (explain the reasons)
 - compare the electronegativity of those atoms and order them in increasing order (explain the reasons)



c) SIZE



d) ELECTRONEGATIVITY

