Practice:

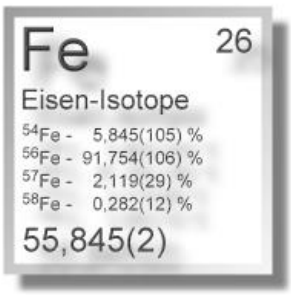
1. Elements & Isotopes

Example I.1. demonstrate

element	nitrogen	vanadium	antimony
symbol			
atomic number			
relative atomic mass			
number protons			
number neutrons			
number electrons			
family of elements			

Example I.1. solve

element	chlorine	silver	neodymium
symbol			
atomic number			
relative atomic mass			
number protons			
number neutrons			
number electrons			
family of elements			



Isotope				
mass number				
ratio				
atomic number				
electrons				
protons				
neutrons				

2. Understand Isotopes

Example I.2. demonstrate

The element with the atomic number 12 consists of 3 stable isotopes with a varying number of neutrons in the nucleus and the following ratios:
12n: 0.7888; 13n : 0.09988, 14n : 0.1113

Calculate the mean atomic mass, assuming that protons and neutrons weigh 1u each and electrons 1/2000u.

Bonus question:
what is the u,
which element is it?

Example I.2.A solve

Copper has 2 stable isotopes, 63Cu (0.6915 fraction) and 65Cu (0.3085).

a) How many protons and neutrons are in the nuclei of the isotopes?

b) Calculate the molar mass of Cu assuming that protons and neutrons weigh 1u each and electrons 1/2000u.

Example I.2.B solve

Bromine has 2 stable isotopes with 44 and 46 neutrons in the nucleus respectively. The mean molar mass of bromine is 79.9 g/mol. Calculate the ratios:

3. valence electrons, find (main) group and family of elements

Example I.3. demonstrate

Potassium

Bismuth

Neon

Example I.3 solve

Barium

Antimony

Aluminium

Helium

4. Find period and last electron shell of an element (ground state)

Example I.4 demonstrate

Potassium

Bismut

Neon

Example I.4 solve

Barium

Antimon

Aluminium

Helium

5. Determine number of valence electrons

Example I.5 demonstrate

Element	nitrogen	vanadium	antimony
total electrons			
valence electrons			
last shell			

Example I.5 solve

Element	chlorine	cadmium	neodymium
total electrons			
valence electrons			
last shell			

6. Complete the following table

Example I.6 demonstrate

symbol	^{29}Si	^{44}Ca	^{57}Fe
protons			
neutrons			
electrons			
valence electrons			
charge			
family of elements			

Example I.6 solve

symbol	^{50}Ti	^{59}Co	^{33}S
protons			
neutrons			
electrons			
valence electrons			
charge			
family of elements			