- forms when an atom **accepts electron(s)**.
- the number of protons in a negative ion is less than the number of electrons.
6   Standard representation can be used to represent an atom. The information that can be obtained from the standard representation of an atom are
- its proton number,
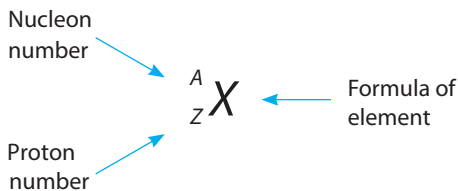- its nucleon number and
- the formula of the element.

Nucleon number

$$_{Z}^{A}X$$

Formula of element

Proton number

Figure 2.8 The standard representation of an atom

Example 1

The nucleus of a niobium atom, Nb, contains 41 protons and 52 neutrons. Determine the proton number and nucleon number of niobium.
Then, write the standard representation of niobium.

Solution
Proton number, Z = Number of protons
$$= 41$$
Nucleon number, A = Number of protons + Number of neutrons
$$= 41 + 52$$
$$= 93$$
The standard representation of niobium is $_{41}^{93}$Nb.

Example 2

Gold or aurum has the standard representation $_{79}^{197}$Au.
Calculate the number of protons, neutrons and electrons in an aurum atom.

Solution
Based on the standard representation, the proton number is 79 and the nucleon number is 197.
Number of protons = Proton number
$$= 79$$
Number of neutrons
= Nucleon number – Proton number
= 197 – 79
= 118
Number of electrons = Number of protons
$$= 79$$

Smart Tips

For atoms, number of electrons = number of protons