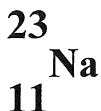


Chemistry Unit 3: Atoms & Particles

Consider this atom ...



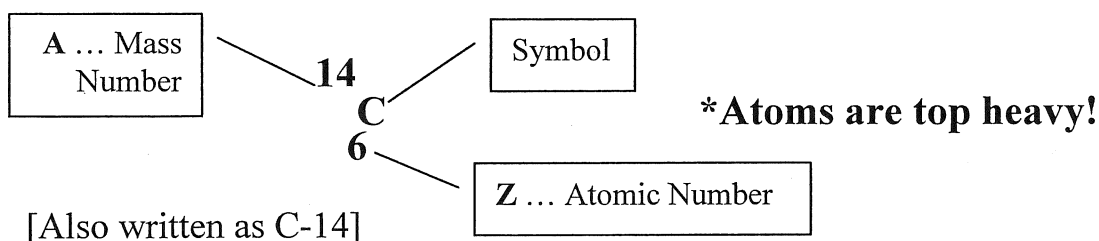
What element is represented?

How many protons are in this atom?

How many neutrons are present in the nucleus?

Atomic Number = the number of protons (Z)

Mass Number = the sum of protons and neutrons (A)



How many particles do each of these isotopes of Carbon contain?

Isotope	Protons	Neutrons	Electrons
C-12	6	6	6
C-13	6	7	6
C-14	6	8	6

1. List the numbers of particles in the three isotopes of hydrogen.

Isotope	Protons	Neutrons	Electrons
H-1	1	0	1
H-2 (Deuterium)	1	1	1
H-3 (Tritium)	1	2	1

2. True/False? Atoms that have the same number of neutrons but different numbers of protons are called isotopes.
3. True/False? The mass number of a nucleus represents the number of protons in the nucleus.
4. For each of the following elements, use a periodic table to write the elements atomic number.
- a. Zinc 30

b. Tungsten 74

c. Strontium 38
- d. Cobalt 27

e. Lithium 3

f. Antimony 51

5. Write the atomic symbol (${}^A_Z\text{X}$) for each of the isotopes described below.

- a. Z = 8, number of neutrons = 9



b. the isotope of chlorine in which $A = 37$ $^{37}_{17}\text{Cl}$

c. $Z = 27$, $A = 60$ $^{60}_{27}\text{Co}$

d. number of protons = 26, number of neutrons = 31 $^{57}_{26}\text{Fe}$

e. the isotope of I with a mass number of 131 $^{131}_{53}\text{I}$

f. $Z = 3$, number of neutrons = 4 ^7_3Li

6. How many protons and neutrons are contained in the nucleus of each of the following atoms? Assuming each atom is uncharged, how many electrons are present?

a. $^{241}_{95}\text{Am}$ $n^0 = 146$ $p^+ = 95$ $e^- = 95$

b. $^{56}_{25}\text{Mn}$ $n^0 = 31$ $p^+ = 25$ $e^- = 25$

7. Complete the following table.

Name	Symbol	At. Number	Mass Number	Neutrons
Sodium	$^{23}_{11}\text{Na}$	11	23	12
Nitrogen	$^{15}_7\text{N}$	7	15	8
Barium	$^{136}_{56}\text{Ba}$	56	136	80
Lithium	^7_3Li	3	7	4
Boron	$^{11}_5\text{B}$	5	11	6

8. How many protons and electrons are present in a vanadium atom? 23, 23

9. How many protons and electrons are present in a nitrogen atom? 7, 7

10. How many protons and electrons are present in a potassium atom? 19, 19

11. How many protons and electrons are present in a platinum atom? 78, 78

12. What is the name of the element that has atoms containing 5 protons? Boron

13. What is the name of the element that has atoms containing 17 protons? Chlorine

14. What is the name of the element that has atoms containing 25 protons? Manganese

15. What is the name of the element that has atoms containing 82 protons? Lead

16. Write the symbol for the silver atom that has 61 neutrons. $^{108}_{47}\text{Ag}$