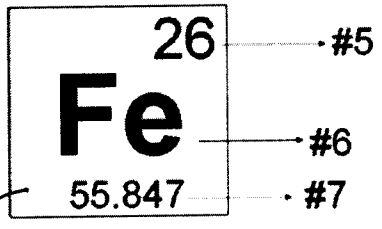
General Chemistry
Mr. MacGillivray
Atomic Structure Worksheet

1. The number of protons in the nucleus of an atom of a particular element is called the atomic number of that element.

2. In a neutral element, the number of protons must equal the number of electrons.

3. The mass number of an atom is the sum of the protons and the neutrons in the nucleus of an atom.

4. Atoms of an element that have the same number of protons but different numbers of neutrons are said to be different isotopes of that element.



5. The number "26" is the atomic # of Fe.

6. The symbol "Fe" stands for the name of this element: iron.

7. The number "55.847" is the atomic mass of the element Fe.

8. There are three isotopes of hydrogen: H-1, H-2, and H-3. The average mass of a hydrogen atom is 1.0079 (check this on the periodic table). Which of these three isotopes above is probably the most common? Why?
H-1, because the average mass of H atoms (1.0079) is closest to 1 one.

9. Examine the abundance of Fe isotopes:
5.8% Fe-54
91.8% Fe-56
2.1% of Fe-57
0.28% of Fe-58

Look at the atomic mass of Fe again. Why do you think it is so close to 56 amu?
Because Fe-56 is the most abundant isotope.

II. Fill in the table below. All atoms are neutral.

Isotope symbol	$^{54}_{26}Fe$	$^{56}_{26}Fe$	$^{57}_{26}Fe$	$^{58}_{26}Fe$
Alternate symbol	Fe-54	Fe-56	Fe-57	Fe-58
# of protons	26	26	26	26
# of neutrons	28	30	31	32
Mass #	54	56	57	58

Z is the symbol for atomic number

III. Fill in the table below. All atoms are neutral.

Element name	Symbol	p^+	n^0	e^-	mass number	Z
phosphorus	$^{31}_{15}P$	15	16	15	31	15
uranium	$^{238}_{92}U$	92	146	92	238	92
carbon	$^{14}_{6}C$	6	8	6	14	6
nitrogen	$^{14}_{7}N$	7	7	7	14	7
uranium	$^{235}_{92}U$	92	143	92	235	92
hydrogen	$^{1}_{1}?H$	1	0	1	1	1
hydrogen	$^{2}_{1}?H$	1	1	1	2	1
hydrogen	$^{3}_{1}?H$	1	2	1	3	1