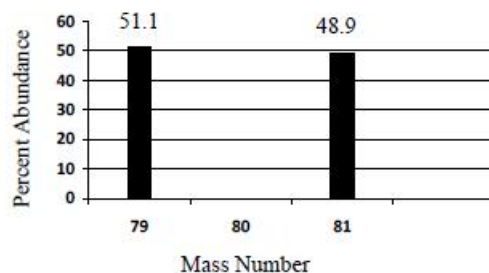


Atomic Structure and Properties
1.2 Mass Spectroscopy of Elements
Worksheet

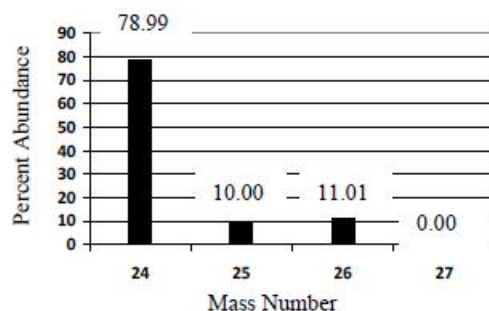
1) What is an isotope?

Questions 2 – 5 refer to the $^{238}_{92}\text{U}$ isotope.

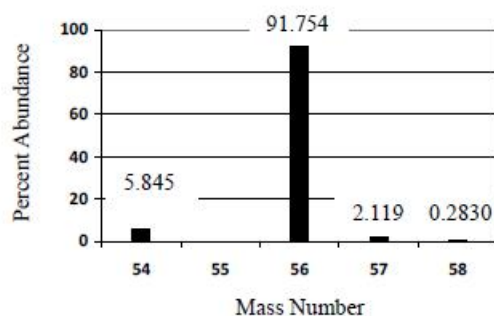
- 2) How many protons are contained within the nucleus?
- 3) How many neutrons are contained within the nucleus?
- 4) How many electrons are contained within a single neutral isotope of this element?
- 5) What is the mass of this isotope in amu?
- 6) Which isotope is more likely to bond with oxygen, ^{12}C or ^{14}C ? Explain.
- 7) A pure sample of bromine was vaporized and injected into a mass spectrometer and the data was plotted on the graph below. The mass value for Br-79 is 78.918 amu. Find the mass of Br-81.



- 8) A pure sample of an element was vaporized and injected into a mass spectrometer and the data was plotted on the graph below. The mass values for the isotopes were found to be: A-24 (23.985 amu), A-25 (24.986 amu), and A-26 (25.983). Find the average atomic mass and identify the element.



- 9) A pure sample of an element was vaporized and injected into a mass spectrometer and the data was plotted on the graph below. The mass values for the isotopes were found to be: A-56 (55.935 amu), A-54 (53.940 amu), A-57 (56.935 amu), and A-58 (57.933 amu). Find the average atomic mass and identify the element.



- 10) A pure sample of an element was vaporized and injected into a mass spectrometer and the data was plotted on the graph below. The mass values for the isotopes were found to be: A-50 (49.946 amu), A-52 (51.941 amu), A-53 (52.941 amu), and A-54 (53.939 amu). Find the average atomic mass and identify the element.

