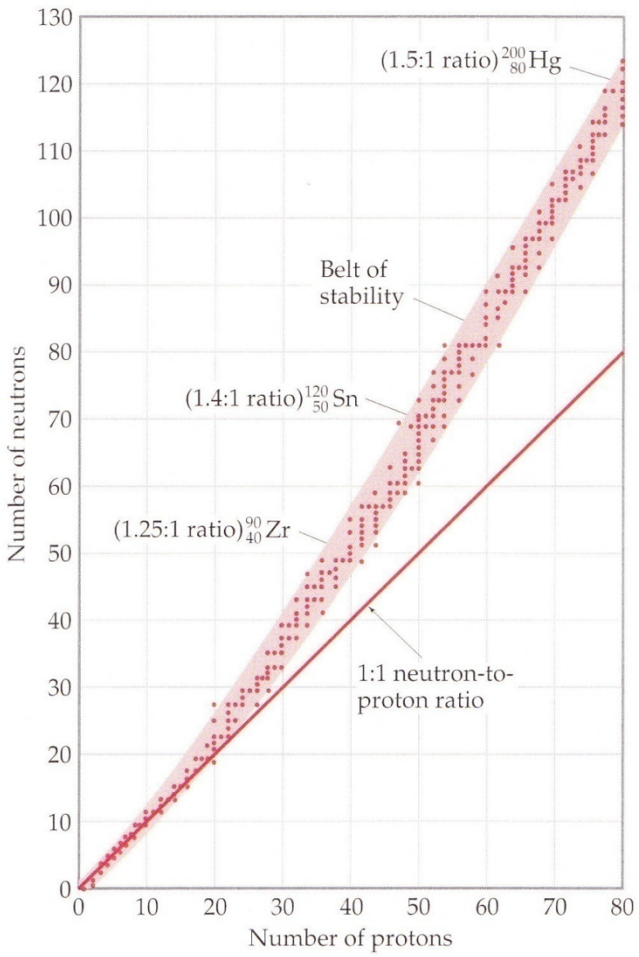
Name _____ Date _____ Per _____

Neutron: Proton Ratio: The ratio of n:p in a stable atom varies with size. Small atoms are stable at a 1:1 ratio. As the atom becomes larger, more neutrons are needed for stability, driving the stable n:p ratio as high as 1.5:1. This creates a zone of stability, inside of which the isotopes are stable. Outside the zone, nuclei either have too many or too few neutrons to be stable, and therefore decay by emitting α, β- or γ particles to bring the ratio back to the zone of stability.

All isotopes of elements above atomic number 83 (Bismuth) are unstable and will undergo radioactive decay.



Use the above chart to determine if the following scenarios result in <u>stable</u> or <u>unstable</u> nuclei.

1.) 30 p^+ and 40 n: _____

2.) 60 p^+ and 95 n: _____

3.) 55 p^+ and 75 n: _____

4.) 10 p^+ and 15 n: _____

5.) Atomic number of 35, mass number of 80: _____

6.) Atomic number of 23, mass number of 58: _____

7.) Atomic number of 40, mass number of 80: _____