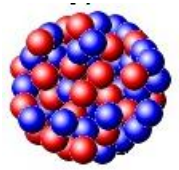
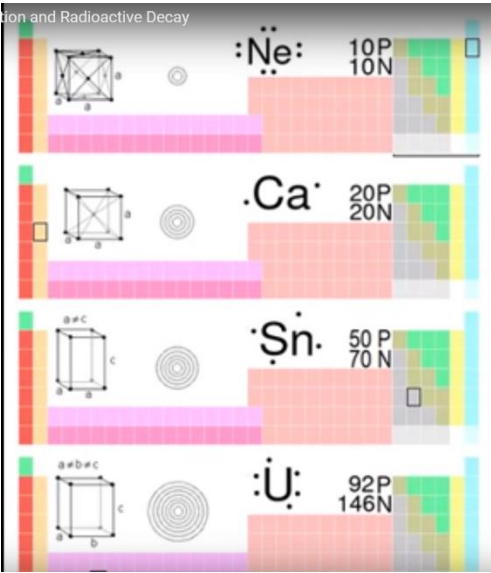


**Essential Question:** How do alpha, beta, and gamma radiation affect the nucleus of the atom?

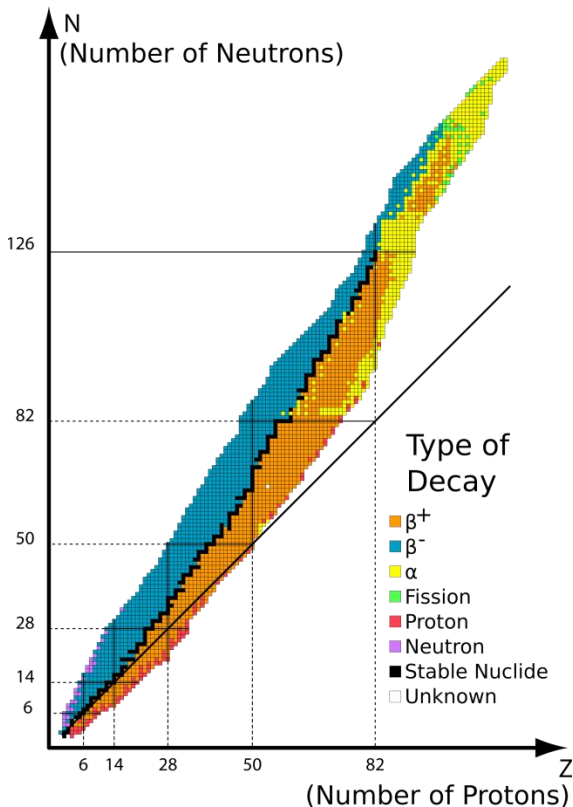
Radiation is parts of atoms being given off.

**Why does the ratio of neutrons to protons increase as we go up the periodic table?**



1. What holds the nucleus together?
2. Why does the nucleus want to shoot apart?
3. Why does the atom need more neutrons when there are lots of protons?

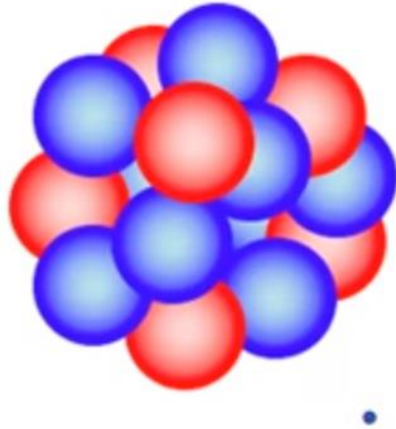
**Chart of Isotopes**



4. What ratio of protons to neutrons does the perfect black line represent? \_\_\_\_\_
5. You can see that this graph tends to drift \_\_\_\_\_ toward the \_\_\_\_\_.
6. If an atom exists on either side of the band of stable atoms (black squares), it is going to \_\_\_\_\_.
7. What is the atom trying to accomplish by giving off radiation?  
 \_\_\_\_\_

**What are the types of radiation?**

# Radioactivity



$\alpha$



$\beta$



$\gamma$



Click with the mouse or tablet to draw with pen

8. Alpha decay is \_\_\_\_\_.

9. Beta decay is \_\_\_\_\_.

10. Gamma radiation is given off by the nucleus and is related to the \_\_\_\_\_ that holds the nucleus together.

**How do we write nuclear formulas?**

11. Alpha decay equation with uranium-238:

12. Beta minus decay equation with cesium-137:

13. Beta plus decay equation with sodium-22: