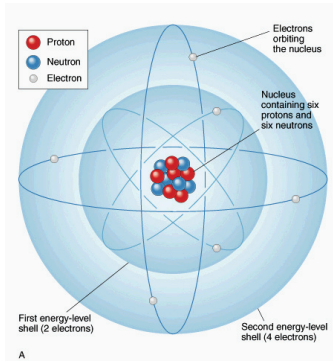
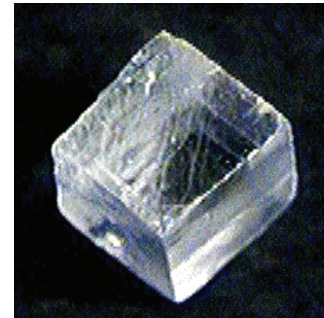




1. Minerals grow in specific shapes. This is because they have an orderly arrangement of atoms known as \_\_\_\_\_.



2. Please give the following information about aluminum.
- mass number \_\_\_\_\_
  - atomic number \_\_\_\_\_
  - typical ionization \_\_\_\_\_
  - draw the aluminum atom, get the electron orbitals correct.

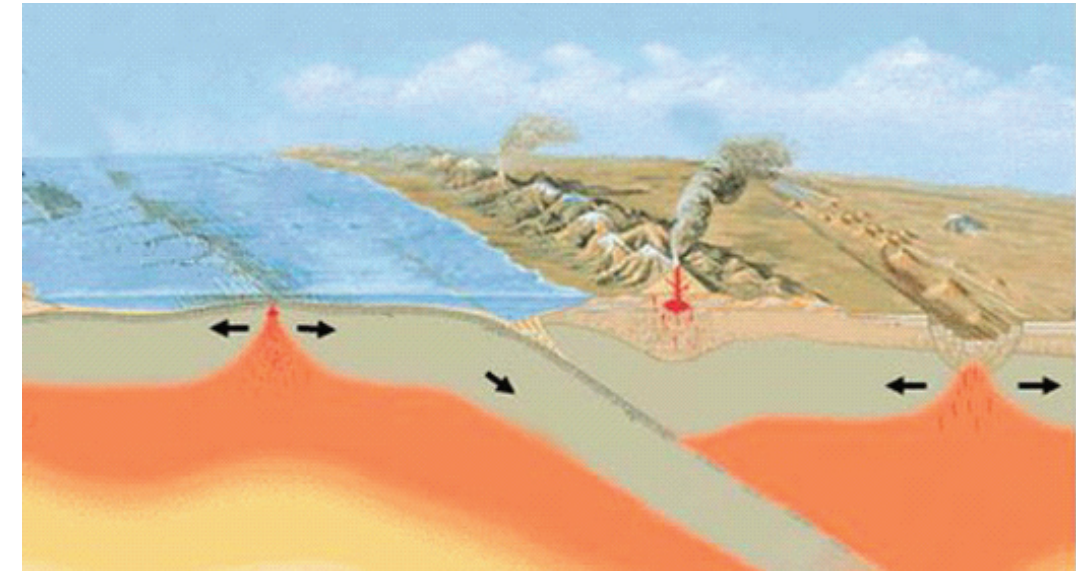


3. The two most common minerals in Hawaii are:

a. \_\_\_\_\_ and b. \_\_\_\_\_

And they come from:

a. \_\_\_\_\_ and b. \_\_\_\_\_



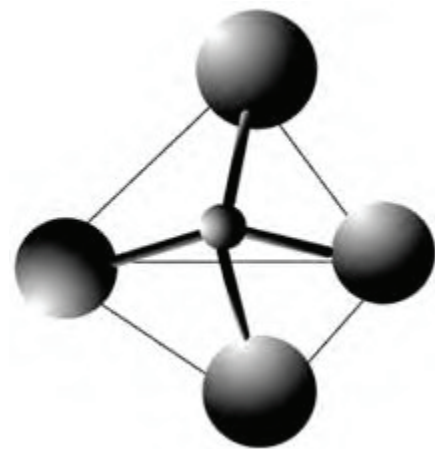
4 Circle areas where magma originates.

5. Describe the source of magma at each site and something about its origin.

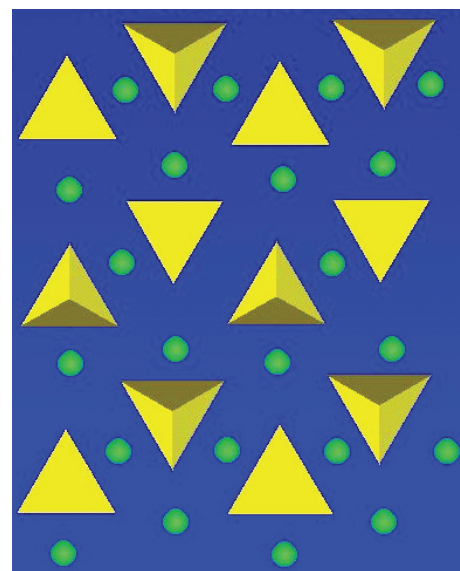
6. Label the diagram using the terms we have learned about plate tectonics.

7. There is one type of setting where magma originates not shown. What is it?

Draw it in...



8. This is a silicate tetrahedron. Please label all components and their charges. What is the charge of the final compound?



9. This is the structure of olivine. Label the components. Include their charges and write the final equation.