

2.e : I can relate the position of an element in the periodic table to its atomic number and atomic mass.

1) What does atomic number tell you about an element?

Atomic number represents the number of protons in the nucleus of an atom of that element.

2) Which subatomic particles contribute to the mass of an atom?

The subatomic particles that contribute most of the mass of an atom are the protons and neutrons.

3) If Uranium-234 has an atomic number of 92 and an atomic mass of 234, how many neutrons are there?

Uranium would have 142 neutrons.

4) Is the periodic table organized by atomic number or by atomic mass?

The periodic table is organized by atomic number, although atomic mass generally also increases as atomic number does.

5) Complete the table below

Element Name	Element Symbol	Atomic Number	Atomic Mass	# Protons	# Electrons	# neutrons
Hydrogen	H	1	1	1	1	0
Magnesium	Mg	12	24	12	12	12
Bromine	Br	35	80	35	35	45
Copper	Cu	29	64	29	29	35

2.h ... trends in ionization energy, electronegativity, and the relative sizes of ions and atoms.

In your notes, explain the following...

1) Why is Bromine smaller than Calcium?

Bromine and Calcium are in the same period and so they have the same number of electron shells. However, bromine has a higher atomic number and must have more protons. Because bromine has more protons, the electrons are pulled in closer to the nucleus. With electrons closer to the nucleus, bromine has a smaller atomic radius and is a smaller atom than calcium.

2) Why does it take more energy to remove an electron from Calcium than Barium?

Calcium and Barium are in the same group and so they have the same number of valence electrons. Barium is in period six though and has six electron shells whereas calcium is in period 4 and only has 4 electron shells. Because Calcium has two fewer electron shells, its electrons are closer to the nucleus. With the electrons closer, the nucleus exerts a stronger attractive electromagnetic force and makes the electrons more difficult to remove. Thus, the electrons of calcium take more energy to remove than barium.

2.i: I can use the periodic table to determine the number of electrons available for bonding.

1) What is a valence electron?

A valence electron is one of the electrons on the outermost electron shell of an atom.

2) Lithium reacts violently with water, producing heat and hydrogen gas. What is one other element that will have a similar reaction and how do you know?

Sodium or any other alkali metal will have a similar reaction. They are in the same family and have the same number of valence electrons, and so react in the same way.

3) How many valence electrons in Carbon, Phosphorus, and Fluorine?

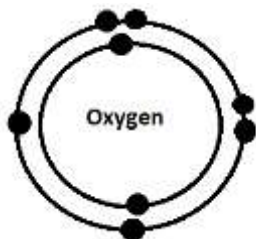
Carbon has 4 valence electrons, phosphorus has 5 valence electrons, and fluorine has 7 valence electrons.

4) If you add the number of valence electrons in Sodium Chloride (NaCl) together, what do you get?

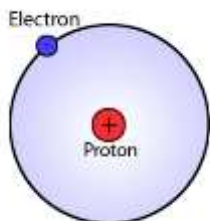
Sodium has one valence electron and chlorine has 7 valence electrons. Adding those together you would have 8 total valence electrons.

5) Draw the bohr model diagrams for:

a. Oxygen



b. Hydrogen



c. Magnesium

