

Name: _____

Homeroom: _____

Worksheet on the Periodic Table

LO: Make Bohr models of atoms. SLE: Meet NGSS.

1. Understanding isotopes

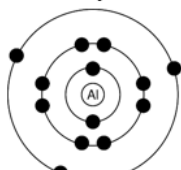
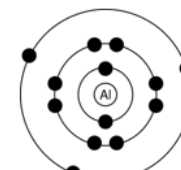
Isotope 1	Isotope 2
	
Protons= 13 Neutrons=13	Protons= 13 Neutrons= 14
Atomic Mass= $13+13= 26$	Atomic Mass= $13+14= 27$
Hello my name is Aluminium-26	Hello my name is Aluminium-27
OR ${}^{26}\text{Al}$	OR ${}^{27}\text{Al}$

Figure:
<http://study.com/academy/lesson/isotope-definition-lesson-for-kids.html>

Isotopes might be defined as “two different versions of the same element.”

- 1.1. Based on the information on the left, how do isotopes differ?

- 1.2. How then would you improve upon the above definition of isotopes?

1.3. Fluorine-18 and Fluorine-19 are isotopes.

- (a) How many protons does each have?

- (b) How many neutrons does each have?

2. Understanding a square of the periodic table

Phosphorus
15
P
30.974

Image: cafepress.com

- 2.1. What is the atomic number of the element represented on the left?

- 2.2. What is the atomic mass of the element represented on the left?

- 2.3. How many protons and neutrons are there in a typical phosphorus atom?

- 2.4. If a phosphorus atom is electrically neutral (not charged), how many electrons does it have?

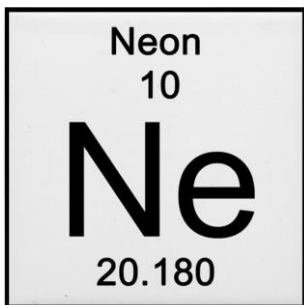


Image: *cafepress.com*

2.5. What is the atomic number of the element represented on the left?

2.6. What is the atomic mass of the element represented on the left?

2.7. How many protons and neutrons are there in a typical neon atom?

2.8. If a neon atom is electrically neutral (not charged), how many electrons does it have?

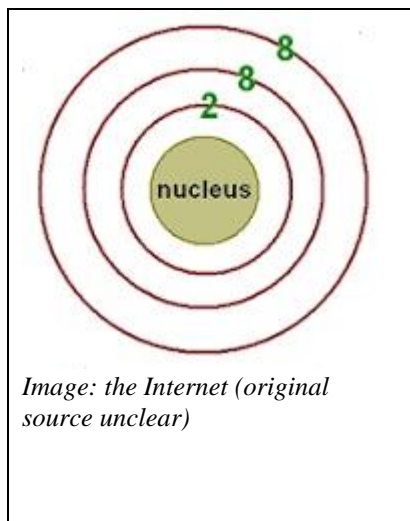
3. Drawing Bohr models of specific atoms

3.1. You have previously drawn a Bohr model of a “generic” atom. Make another quick sketch of that here.

3.2. If you were drawing a Bohr model of phosphorus (P), how would you draw the nucleus? (Just describe what it would look like.)

3.3. If you were drawing a Bohr model of neon (Ne), how would you draw the nucleus? (Just describe what it would look like.)

Now let's consider how to put electrons into the energy levels (or "shells") surrounding the nucleus. While large atoms have many energy levels, we will only consider the first three levels.



When adding electrons to a Bohr model, we first fill the innermost energy level (shell), then the next-innermost shell, and so forth. The innermost shell can hold up to 2 electrons, and the next two can hold up to 8 electrons each. [You will see different numbers for this 3rd shell; the differences relate to how different people define a shell, which is beyond our present scope.]

For example, if we were making a Bohr model of an electrically neutral helium atom, we would put its two electrons into the innermost shell. If we were making a Bohr model of an electrically neutral lithium atom, we would put two of its electrons into the innermost shell and one electron into the 2nd shell.

3.4. With all of the above as background, please draw a full Bohr model of an electrically neutral phosphorus atom.

3.5. Please draw a full Bohr model of an electrically neutral neon atom.