All sections marked with a ⚛ are considered essential concepts and must be completed to receive full credit on WS.

1. Isotope D	A.	An average of all the isotopes; the mass of average atom.
2. Atomic mass A	B.	An atom with an equal number of electrons and protons.
3. Atomic # F	C.	An atom with more or less electrons than protons.
4. Neutral atom B	D.	A variation of an element with a different number of neutrons.
5. Ion C	E.	Total number of protons and neutrons in the nucleus.
6. Mass # E	F.	Number of protons; determines the element.

Give abbreviations and number of protons

Calcium (*Ca*) 20 — Boron (B) 5

Potassium (K) 19 — Selenium (Se) ~~34~~ 34

Copper (Cu) 29 — Silver (Ag) 47

Zirconium (Zr) 40 — Mercury (Hg) 80

Which of the following are isotopes?

Element A: 15 protons; 15 electrons; 16 neutrons

Element B: 14 protons; 16 electrons; 14 neutrons

Element C: 15 protons; 18 electrons; 15 neutrons

Element D: 16 protons; 18 electrons; 15 neutrons

Element E: 15 protons; 18 electrons; 14 neutrons

7 protons and 10 electrons. *Neutral atom or ion?*

15 protons and 15 electrons. *Neutral atom or ion?*

35 protons and 37 electrons. *Neutral atom or ion?*

89 protons and 89 electrons. *Neutral atom or ion?*

Give the element abbreviation and charge.

5 protons and 2 electrons: Element: B Charge: +3

16 protons and 18 electrons: Element: S Charge: -2

35 protons and 36 electrons: Element: Br Charge: -1

12 protons and 10 electrons: Element: Mg Charge: +2

Sulfur 32 has 16 protons and 16 neutrons. *(32 – 16p = 16n)*

Magnesium 25 has 12 protons and 13 neutrons

Carbon 14 has 6 protons and 8 neutrons.

Lithium 7 has 3 protons and 4 neutrons.

Chlorine 35 has 17 protons and 18 neutrons.

Fluorine 19 has 9 protons and 10 neutrons.

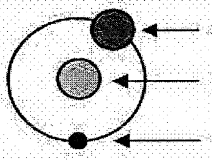
Oxygen 16 has how many neutrons? 8 neutrons

Beryllium 8 has how many neutrons? 4 n

Boron 11 has how many neutrons? 6 n

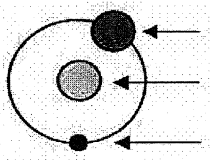
What's wrong with this picture of an atom?

neutron is in wrong location



What's wrong with this picture of an atom?

11

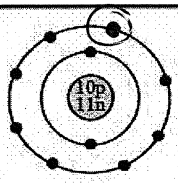


~~Oxygen 16 has how many neutrons?~~

~~Beryllium 8 has how many neutrons?~~

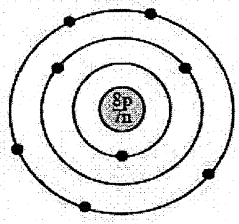
~~Boron 11 has how many neutrons?~~

This picture is supposed to be of a neutral atom. Fix it.



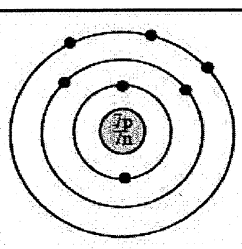
What is wrong with this picture of an atom?

inner shells are not full



What is wrong with this picture of an atom?

inner shell are not full



Which row is Lithium (Li) in? 2 It has electrons in levels 1 and 2.

Which row is phosphorous (P) in? 3 So, phosphorous has electrons in which electron levels? 1, 2, 3

Which row is calcium (Ca) in? 4 So, calcium has electrons in what levels? 1, 2, 3 + 4

Which row is argon (Ar) in? 3 So, argon has electrons in what levels? 1, 2 + 3

Argon (Ar) is at the end of row 3. So argon has 3 full electron levels.

Helium (He) is at the end of row 1. So helium has 1 full electron levels.

Xenon (Xe) is at the end of row 5. So xenon has 5 full electron levels.

How many full electron levels does Calcium have? 3

How many full electron levels does Sulfur have? 2