

Name _____

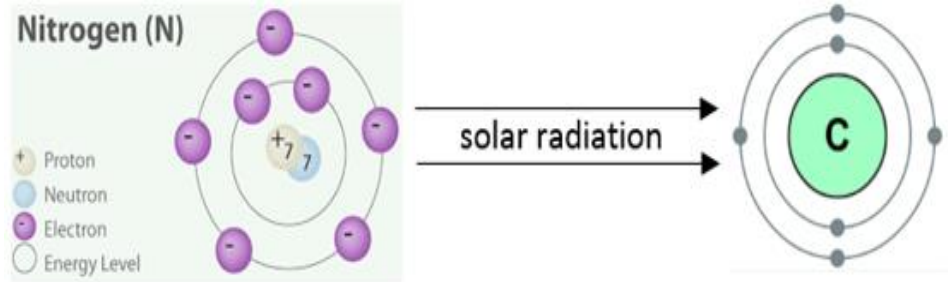
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Where carbon-14 comes from:

1. Carbon is a common component of our atmosphere bound to oxygen in the form of carbon-dioxide or carbon- monoxide. Radiation from the sun interacts with these atmospheric gases and others the most of which is nitrogen. Nitrogen when bombarded by the sun’s radiations can turn into carbon-14. The majority of the carbon in our atmosphere is carbon-12. Carbon-14 is a small percentage of the atmosphere that has remained relatively consistent throughout our planet’s recent history. The ratio of carbon-14 is changing however, due to carbon inputs to atmosphere from the combustion of fossil fuels.



Select the best answer based on your knowledge and the above passage.

- A. Carbon-14 comes from carbon-12
- B. Carbon-14 is a product of solar radiation in our atmosphere and comes nitrogen.
- C. Carbon-14 comes from Santa Clause
- D. Carbon-14 has 7 electrons which makes it an isotope.

Isotopes : Different number of _____, but same number of _____.

- To determine the number of Protons and Neutrons use the Atomic Number and Atomic Mass

CARBON 12

Atomic Number 6

Atomic Mass 12

CARBON 14

Atomic Number 6

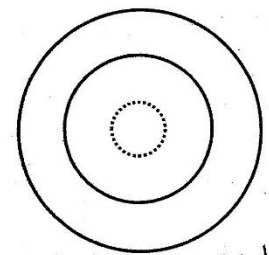
Atomic Mass 14

CARBON 13 – You Try!

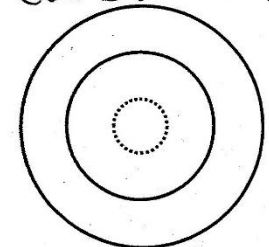
Atomic Number - ?

Atomic Mass -?

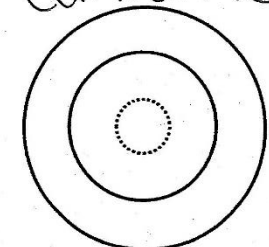
Carbon 12



Carbon 14



Carbon 13



BELOW are 3 naturally occurring isotopes of Carbon.

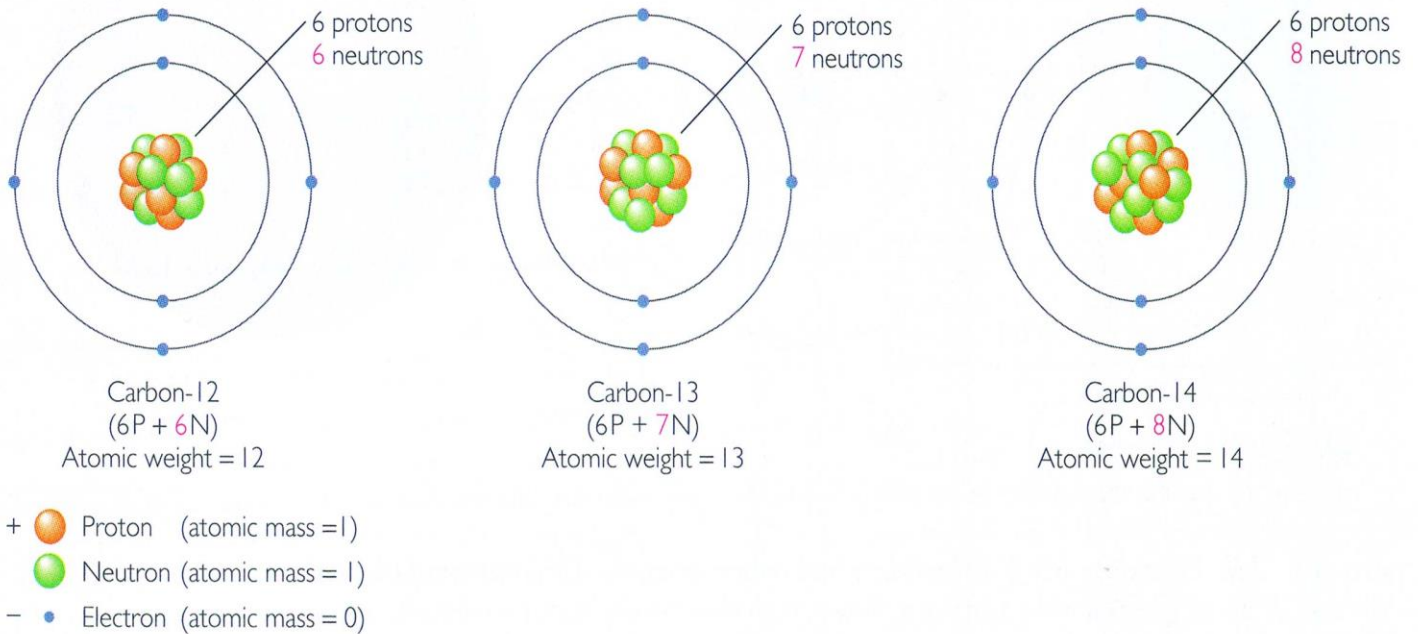


FIGURE 2.3 These three carbon isotopes all have the same number of protons and thus the same atomic number, 6. Their atomic masses differ, however, because they have slightly different numbers of neutrons. The atomic mass of any element is the average of the weighted sum of the atomic masses of its various isotopes. One isotope of an element—for example, carbon-12—is far more abundant than the others because natural processes favor that particular isotope.

2. Base your answers (1-3) on the above diagram. Which isotope of carbon has the greatest atomic mass?

- A. Carbon 12
- B. Carbon 13
- C. Carbon 14
- D. Carbon 15

3. Which atomic particle gives carbon or any atom its identity? (What makes carbon, carbon?)

- A. protons
- B. neutron
- C. electrons
- D. quarks and leptons

4. Which atomic particle causes this isotope's mass or "weight" to vary from the norm?

- A. protons
- B. neutron
- C. electrons
- D. quarks and leptons

Name _____

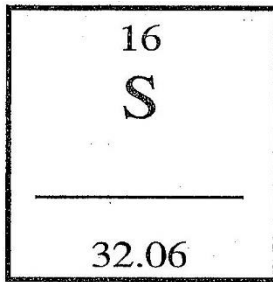
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1ST - Put Periodic Table Away, then only utilize Atomic Theorems provided in class to complete the following

2ND - Once you have the chart as thoroughly complete as possible then you utilize Periodic Table to check.



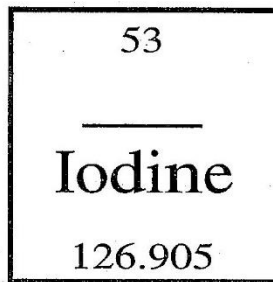
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



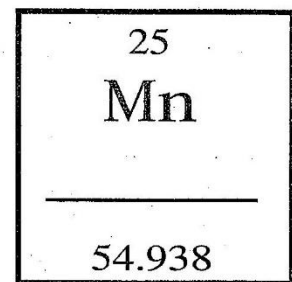
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



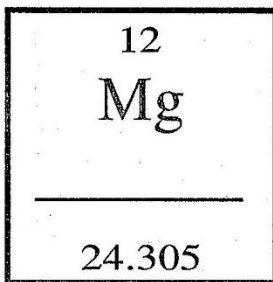
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



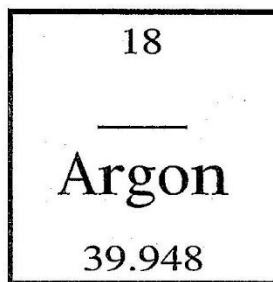
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



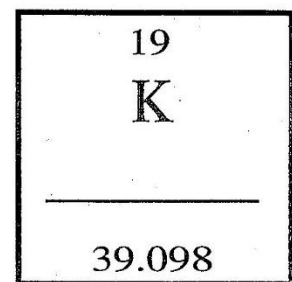
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



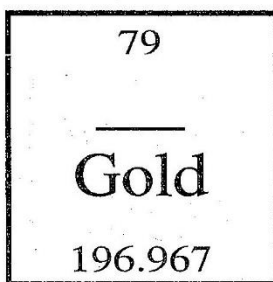
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



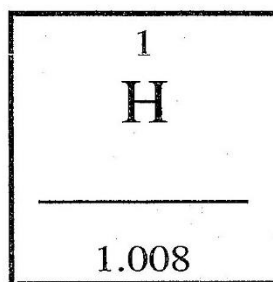
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



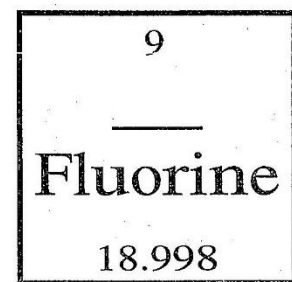
Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

of Electrons = _____



Atomic # = _____

Atomic Mass = _____

of Protons = _____

of Neutrons = _____

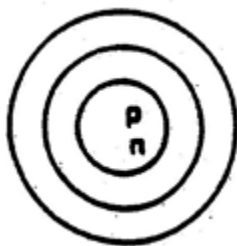
of Electrons = _____

BELOW: Simply label the number of protons **## p** & number of neutrons **## n**.
Simply label the number of electrons in each shell with the **number**.

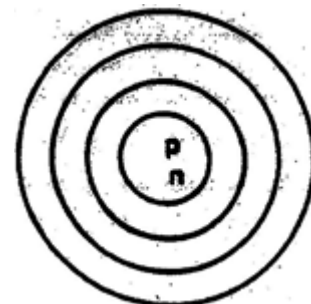
Beryllium: atomic number 4
atomic mass 9



Argon: atomic number 18
atomic mass 40



Potassium: atomic number 19
atomic mass 39

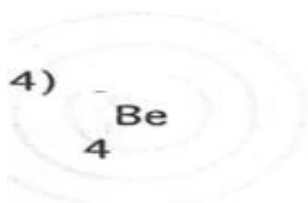


BELOW: Review the examples. Construct Bohr models of the following elements.
You can simply label the number of electrons in each shell with the **number**.

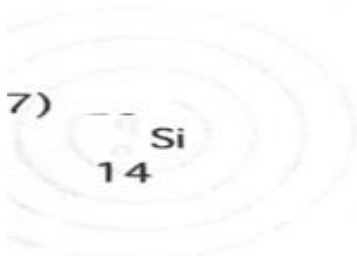
1) K
19

2) Na
11

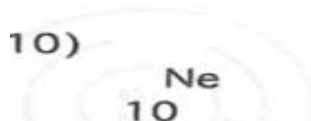
3) Li
3



5) N
7



8) He
2



BELOW: Simply label the number of protons **## p** & number of neutrons **## n**.

Simply label the number of electrons in each shell with the **number**.

period = shell count group = valence e^-

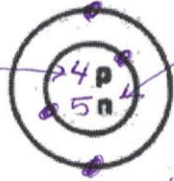
electron shells
2, 8, 8

Beryllium: atomic number 4
atomic mass 9

Argon: atomic number 18
atomic mass 40

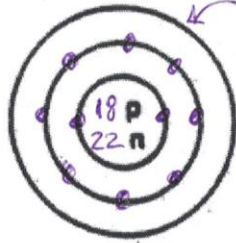
Potassium: atomic number 19
atomic mass 39

equals
of
protons

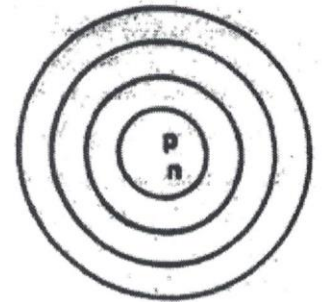


of
neutrons

atomic mass $9 - (4) = 5$



how many
 e^- ?



BELOW: Review the examples. Construct Bohr models of the following elements.

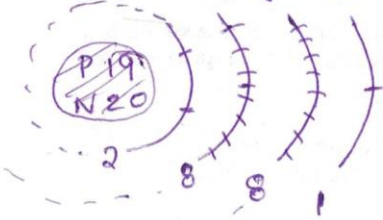
You can simply label the number of electrons in each shell with the **number**.

utilize Periodic
Table

1) 39 ← Atomic mass

K

19 ← Atomic #



2) 23

Na
11

Label
Valence e^-



3) 7

Li
3

Keep going
u

4) 9

Be

4

5) 14

N

7

6) 16

O

8

7) 28

Si

14

8) 4

He

2

9) 11

B

5

10) 20

Ne

10

Space Inside the Atom

3. A nucleus occupies a very small amount of space inside an atom. From the nucleus to an electron is approximately 10,000 times the radius of the nucleus. Imagine the nucleus of an atom to be a ball 10 cm in diameter. How far away from this ball would the nearest hypothetical electron be? Could you throw the ball that distance so it reaches the electron?

Masses of Atoms

4. The atomic mass unit, amu, represents a very small amount of mass and is actually 0.000,000,000,000,000,000,001,67 grams. Calculate your mass in grams, and then convert your mass to amus.
5. An electron is only $1/1836$ the mass of a proton. If your mass was 50 kilograms, what would be the mass of something 1836 times smaller than you? Try it the other way. What would be the mass of something 1836 times larger than you?