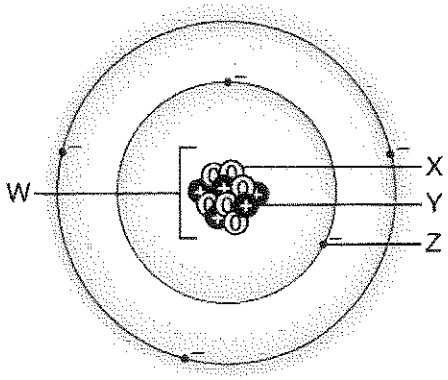
Chem Part A Review

TEK 8.5 A: describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud.

MULTIPLE CHOICE

Use the diagram to the right to answer the following two questions.



Which letter in this model of an atom represents a neutron? X

What element does this atomic model represent? Boron

The nucleus of an atom has what type of charge? positive

What subatomic particles make up the mass of an atom?

A. Protons and Electrons
B. Electrons and Neutrons
C. Protons
(D.) Protons and Neutrons

What element has the largest atom?

A. Lithium (3)
B. Chlorine (17)
(C.) Barium (56)
D. Potassium (19)

How many protons does Mercury (Hg) have? 80

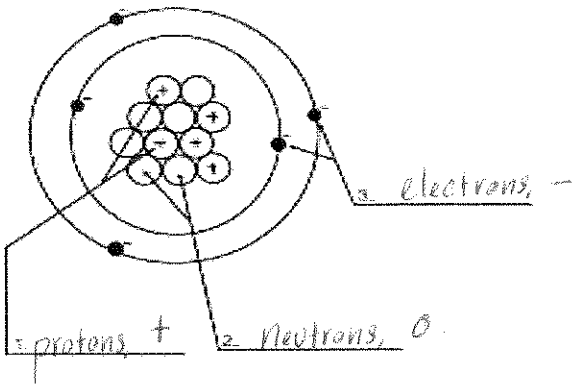
2 35 17 18

How many electrons in a single atom of Bromine (Br)? 35 How many neutrons does Chlorine (Cl) have? 18

An uncharged atom has the same number of:

A. neutrons and electrons
B. neutrons and protons
(C.) protons and electrons

Identify the four parts of the atom that are pointed out by arrows in the diagram below. Describe the electrical charges of the structures that are labeled 1, 2, and 3 in the diagram.



one more e⁻ than proton

An atom consists of 7 neutrons, 7 electrons, and a number of protons. The atom has a charge of -1. What is its mass number?

= 6 protons = Carbon

mass # = 13

What are the biggest parts of an atom? nucleus (protons & neutrons)

Complete the following chart:

Particle	Location	Mass (amu)	Charge
Proton	Nucleus	1	+
Electron	outside nucleus	1/1836 or .00054	−
Neutron	nucleus	1	0

Describe 2 differences between a neutron and an electron.

neutron – no charge, in the nucleus, 1amu

electron – negative charge, outside nucleus, .00054 amu, moves rapidly in orbit

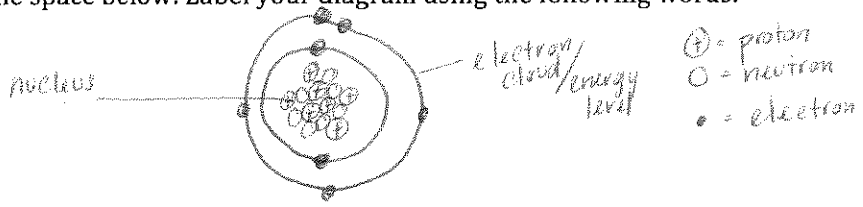
How many negative charges does Lithium have? 3

How many positive charges does Carbon have? 6

How many neutral charges does Beryllium have? 5 Be = 9-4 = 5

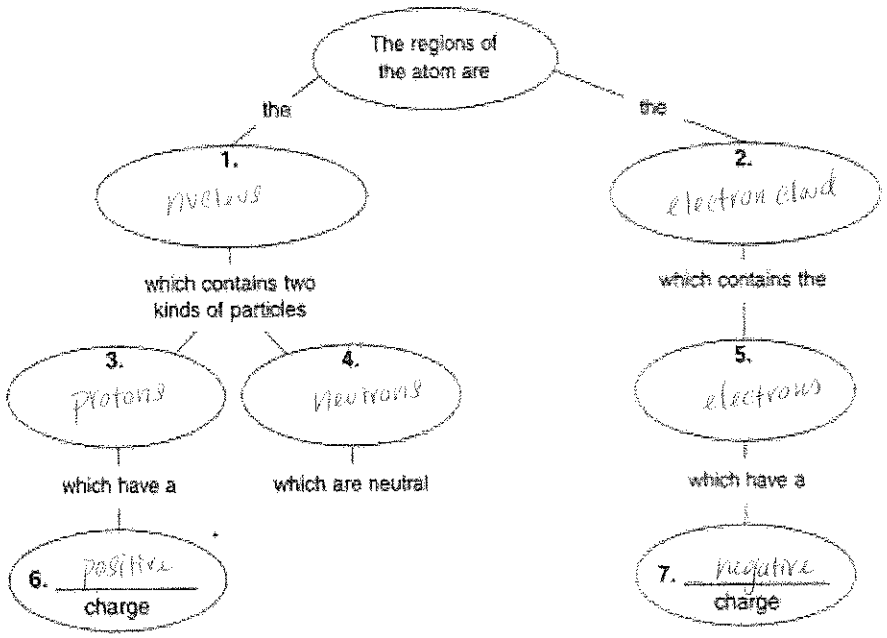
Draw an atom of Nitrogen in the space below. Label your diagram using the following words:

- Proton
- Neutron
- Electron
- Nucleus
- Electron Cloud



nucleus positive protons

negative electron cloud neutrons electrons



Complete the information about the element in the box.

19
K
Potassium
39.098

Atomic # 19

Atomic Mass 39.098

# of Protons 19

# of Neutrons 20

# of Electrons 19

39
19
20

TEK 8.5B: Identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity

Which family has a full outer energy level and is considered to be the most stable of all elements?

A. The Halogens
B. The Alkali Metals
C. The Transition Metals
D. The Noble Gases

Which of these elements is most reactive?

A. Neon (10)
B. Titanium (22)
C. Potassium (19)
D. Carbon (6)

What does the number of protons tell us about an element?

A. the mass number
B. the number of subatomic particles
C. the reactivity
D. what atom it is (Atomic number)

Which element below has 4 valence electrons?

A. Lead
B. Neon
C. Calcium
D. Zinc

Boron (B) has 2 electron clouds, or energy levels. Neon (Ne) has 8 electrons in its outer energy level.

Substances react in order to have atoms with

A. an innermost energy level filled with electrons
B. an outermost energy level filled with electrons
C. an outermost energy level filled with protons
D. none of the above

Why don't the protons in the nucleus of an atom repel each other?

A. They are far enough apart that their like charges do not repel each other
B. They are held together by the strong nuclear forces.
C. The negatively charged neutrons cancel the net positive charge of the proton in the nucleus.
D. The negative areas of the protons are attracted to the positive areas of other protons and hold the nucleus together.

An atom of an element in Group 18 has how many valence electrons? 8 Elements in Group 16 have 6 valence electrons.

You are given an assignment to research an element on the periodic table. Your element has 5 protons.

What is the name of your element? Boron How many valence electrons does it have? 3

List two properties of your element. it is a metalloid, solid @ room temp, ductile, malleable, conducts electricity

What are the electrons in the outermost energy level of an atom called? Valence electrons
What do they determine? reactivity / bonding

What is a change that occurs when one or more substances are changed into entirely new substances with different properties? Chemical Change / Chemical bonding

If an element has an atomic number of 6, how many protons must it have? 6 If you took away 1 of those protons, what element would it be? Boron

If someone told you that they saw a Carbon atom a microscope and they counted 6 neutrons and 7 protons in it's nucleus, what would you tell them and why? it is not Carbon, all C atoms have 6 protons
the element would be an isotope of Nitrogen (N-13)

Why are groups 1 and 17 are the most reactive elements on the periodic table?
Group 1 has 1 valence e⁻ & easily loses it. Group 17 has 7 valence e⁻ & easily gains one.

We all know that the noble gases have 8 valence electrons which makes them virtually non-reactive. Explain why Helium is classified as a noble gas when it only has 2 valence electrons?
Helium only has 1 energy level, which holds 2 e⁻, so its outer shell is full - it behaves as a Noble Gas

I am in the same family as Arsenic, have fewer protons than Iodine, and I have five energy levels. Who am I??

(A) Antimony
B. Carbon
C. Magnesium
D. Tin

A scientist is looking for fluorine in his lab to make a compound. Which of the following elements could she substitute it with?

A. Carbon (6)
B. Krypton (36)
(C) Bromine (35) → same family - will react similarly
D. Aluminum (13)

Which of these elements is most reactive?

A. Neon (10)
B. Titanium (22)
(C) Potassium (19)
D. Carbon (6)

Which of the following elements below is a metalloid?

A. Silicon (14)
B. Calcium (20)
C. Fluorine (9)
D. Iron (26)

In the periodic table, the elements in Group 13 can be expected to have?

A. similar chemical and physical properties
B. different chemical and physical properties
C. the same number of protons & neutrons
D. similar density and melting points

Elements on the periodic table are arranged in order of increasing

A. atomic number
B. hardness in solid form
C. atomic radius
D. neutron number

Which element is least likely to form compounds with other elements (unreactive)?

A. Argon
B. Iron
C. Nitrogen
D. Hydrogen

What properties are used to organize elements on the periodic table?

A. Reactivity
B. Chemical compounds
C. Atomic number
D. A and C
E. B and C

Which of the following groups listed below is the least reactive?

A. Alkaline earth metals
B. Halogens
C. Transition metals
D. Noble gases

Which element does not belong?

A. Carbon
B. Nitrogen – not in Group 14 (Carbon Group)
C. Lead
D. Silicon

Which best describes the elements in group 13?

A. Metals
B. Non-metals – synthetic
C. Metalloids
D. All of the above

Elements in a family or group often share similar properties because

A. they look alike
B. they are found in the same place on Earth
C. they have the same physical state (solid, liquid, or gas)
D. their atoms have the same number of valence electrons

Which of the following is a property of nonmetals?
(A) poor conductors of electric current
C. malleable
B. very reactive in water
D. shiny

Hydrogen's physical properties are more like the properties of
(A) nonmetals than of metals
C. metalloids than of metals
B. metals than of nonmetals
D. metalloids than of nonmetals

Which of these is not a noble gas?
A. argon
(B) hydrogen
C. helium
D. neon

Which group number represents the halogens? 17

Which group number represents the noble gases? 18

Which group number represents the alkaline Earth metals? 2

Family is another name for what organization on the periodic table? Column / Group

Which group is not reactive? Noble Gases

Lanthanides and actinides are placed at the bottom of the periodic table
A. because they are all radioactive
(B) because they are elements that have been predicted, but not yet all discovered or stable
C. to keep the periodic table from being too wide

Families are shown... A. horizontally (B) vertically

Circle one answer
Periods are shown (horizontally) or vertically). Calcium and Sodium are in the same family. (True or (False)

Describe ***two*** properties of beryllium

metal, 2 valence e⁻
reactive, in the Alkaline earth metal family

Where are the metals, nonmetals, and metalloids located in the periodic table?

Metals- Left Non-metals - Right Metalloids from Left to diagonal on the right