

Bing-Bing-Toe !!!

Match #1:

**Chemistry Basics & Atomic Structure,
Nuclear**

BING-BING-TOE GAME RULES

		FREE Space		

Bing-bing-toe game rules

- **Clock Side = even #s – X** **Window side = odd #s – O**
- **2 players from each team go head to head (standing by opposite team)**
- **Team may not help! Teams lose points for trying to distract the other team or help their team with answers.**
- **1st to hold up board with correct answer gets to play a square.**
- **Each BING-TOE = 1 point**

Bing-bing-toe game rules

Window side = odd #s – O

Clock Side = even #s – X

NO SITTING AT TABLE 1 or TABLE 8

ODD # - O team will send someone to Table 1

EVEN # - X team will send someone to Table 8

**How many atoms are in one
molecule of $\text{Al}(\text{OH})_3$?**

Seven (7)

**What particle did Thompson discover
and which experiment proved it?**

**Electron →
Cathode Ray Tube Experiment**

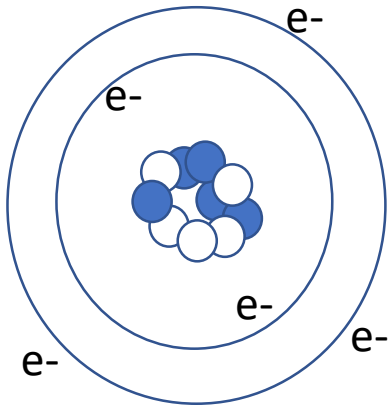
What parts of Dalton's theory remain true today?

- 1. All matter is composed of atoms**
- 2. Atoms of an element are identical in mass/properties, etc**
- 3. Different elements differ in mass/properties**
- 4. Atoms cannot be subdivided, created, or destroyed**
- 5. Atoms combine to form whole # chemical compounds**
- 6. In chemical rxns atoms combine, separate, or rearrange**

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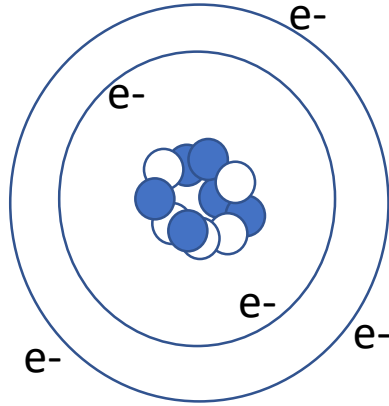
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Which TWO of these atoms are isotopes of each other? WHY?



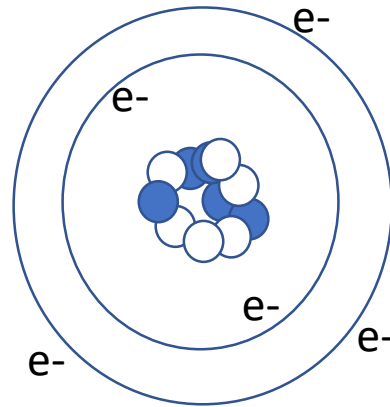
Atom A

5 protons
5 neutrons
5 electrons



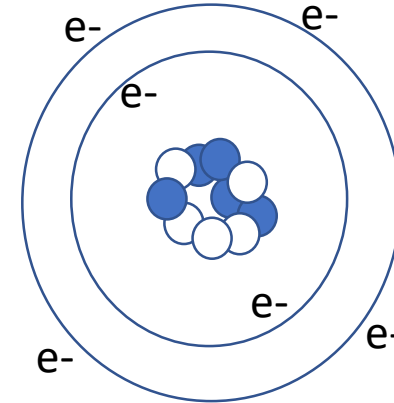
Atom B

6 protons
5 neutrons
5 electrons



Atom C

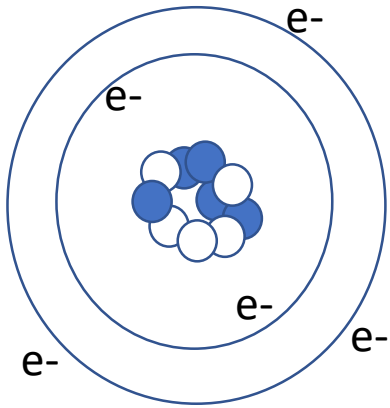
5 protons
6 neutrons
5 electrons



Atom D

5 protons
5 neutrons
6 electrons

Which TWO of these atoms are isotopes of each other? WHY?

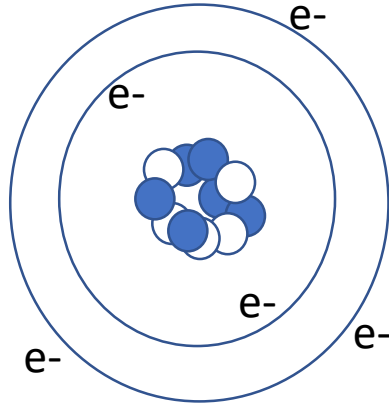


Atom A

5 protons

5 neutrons

5 electrons

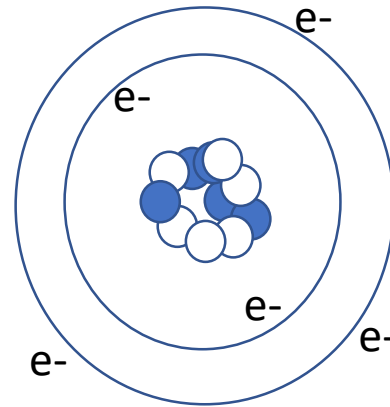


Atom B

6 protons

5 neutrons

5 electrons

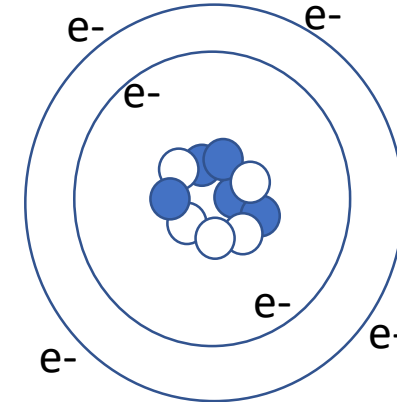


Atom C

5 protons

6 neutrons

5 electrons



Atom D

5 protons

5 neutrons

6 electrons

What Two parts of Daltons theory Have been proven false?

- 1. All matter is composed of atoms**
- 2. Atoms of an element are identical in mass/properties, etc**
- 3. Different elements differ in mass/properties**
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**Name the phases of matter
(four answers, NOT aqueous...)**

Solid, liquid, gas, and plasma

Name the 6 phase changes and what phases the change is between

Melting – Solid to Liquid

Condensing – Gas to Liquid

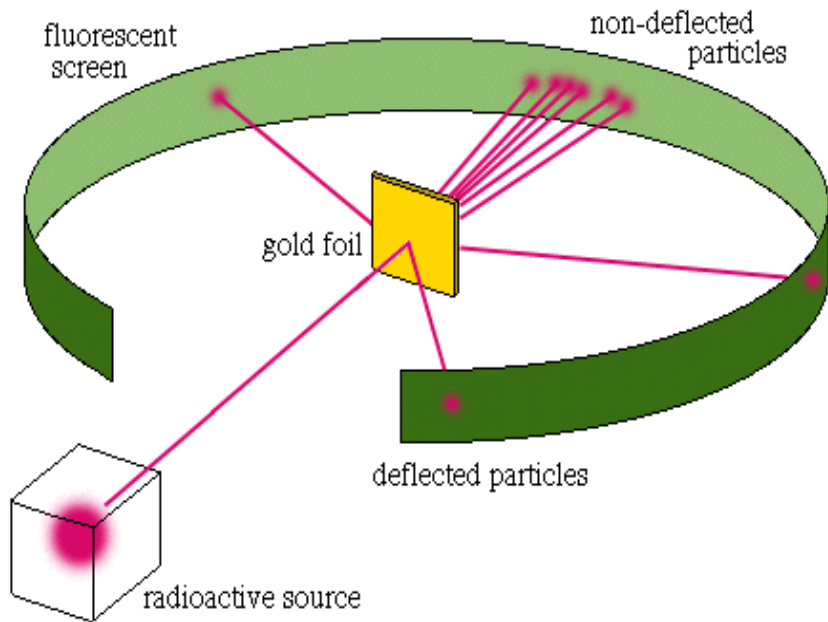
Sublimation – Solid to Gas

Freezing – Liquid to Solid

Vaporizing – Liquid to gas

Deposition – Gas to Solid

Draw a diagram for Rutherford's Experiment. Explain what it proved about atomic structure



Atom mostly empty space
Dense, central, positive core
- nucleus

**Name an element with similar
properties to Iodine.**

Fluorine, Chlorine, any halogen

How do you calculate mass number?

Protons + neutrons = mass number

**How many valence Electrons do the
Halogen elements have?**

Seven

Define chemical change and physical change. Give an example of each.

Physical change is same substance before and after (boiling water).

Chemical change involves the making and breaking of chemical bonds to make a new substance (combustion, rusting, etc)

**Name the three subatomic particles
and give their relative masses.**

Proton – 1 amu

Neutron – 1 amu

Electron – almost no mass at all

Convert 15mi/day into in/sec

11 in/sec

**Classify Each Substance Below as:
Pure Substance (element or compound)
Mixture (homogeneous or heterogeneous).**

Calcium

Cookies and Cream Ice Cream

Carbon Dioxide

Tap Water

Neon

Kool Aid Punch

H₂O

Italian Salad dressing

Pure Substance

Mixture

Element

Pure Comp

Homogeneous

Heterogeneous

CALCIUM

H₂O

KOOL AID

SALAD

NEON

CARBON

TAP WATER

DRESSING

DIOXIDE

COOKIES AND

CREAM ICE

CREAM

How many valence electrons do the alkali metals have and what is the charge of their ions?

1 valence electron

1+ charge

What radioactive emission changes a neutron into a proton?

Beta particle

Scientists discover some new elements. Using the data below, which is most likely to be radioactive?

$\begin{matrix} 238 \\ 119 \end{matrix} Xx$	$\begin{matrix} 290 \\ 120 \end{matrix} Yy$	$\begin{matrix} 250 \\ 121 \end{matrix} Zz$	$\begin{matrix} 296 \\ 148 \end{matrix} Xy$
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$\begin{matrix} 290 \\ 120 \end{matrix} Yy$

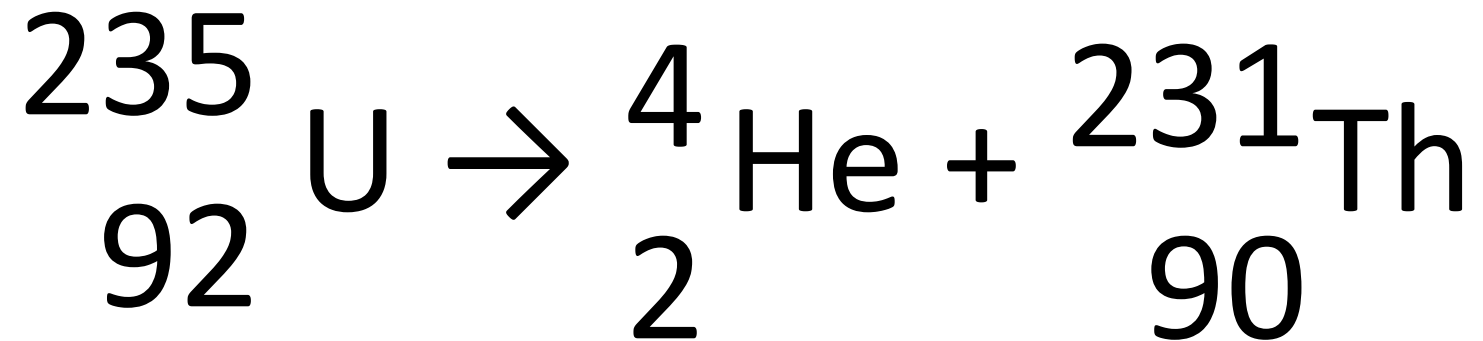
What radioactive emission changes a neutron into a proton?

Beta Emission

**How many protons and neutrons are
in the nuclei of Tl-204 atoms?**

81 protons and 123 neutrons

Uranium-235 undergoes alpha emission. What is the balanced eq.?



Neutron initiated fission of U-235 results in the release of 4 beta particles, the formation of Sr-90 and the release of another nucleus. What is the other nucleus?

Cerium - 146

Calculate the average atomic mass of Magnesium from these data. Magnesium occurs in nature in three isotopic forms:

Mg-24 (78.70% abundance)

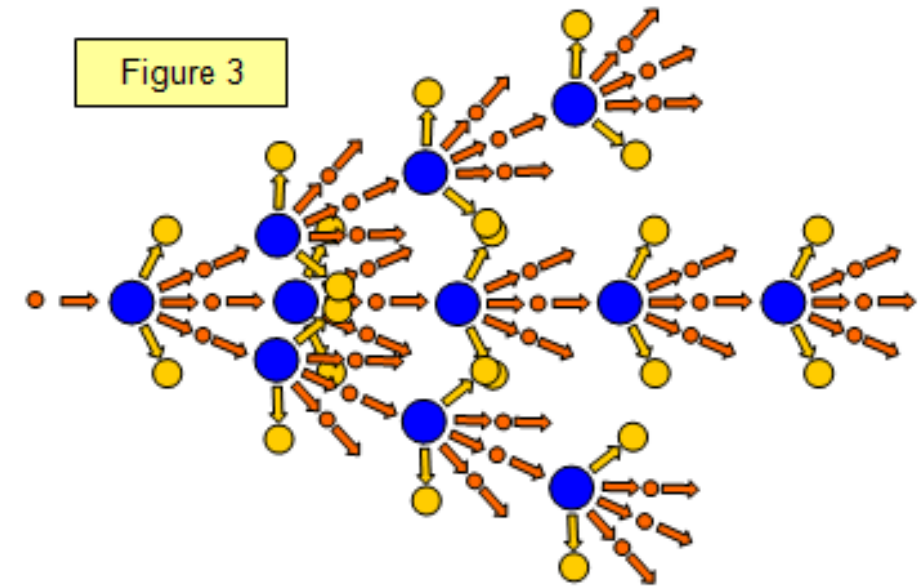
Mg-26 (11.17% abundance)

Mg-25 (10.13% abundance)

24.31 amu

What is nuclear fission?

A large, unstable nucleus breaking apart into smaller more stable nuclei. Sometimes the result is a chain reaction.



A substance has a density of 1.39g/ml. You have 10g of the substance. What volume (in L) do you have?

$$7.2 \times 10^{-3} \text{ L}$$

**How many decigrams are in 437 kg?
Write in scientific notation!**

$$4.37 \times 10^6 \text{ dg}$$

How many sig. figs are in the following values?

612 kg

0.00067 ml

309.4 g

612 kg → 3 s.f.

0.00067 ml → 2 s.f.

309.4 g → 4 s.f.

**Perform the calculation using
accurate sig figs**

$$1.31 \text{ cm} \times 2.3 \text{ cm} =$$

$$3.0 \text{ cm}$$

**Perform the calculation using
accurate sig figs**

$$8.264 \text{ g} - 7.8 \text{ g} =$$

$$0.5 \text{ g}$$

**What holds the nucleus together so
the repulsion between protons
doesn't make the atom fly apart?**

Strong Force