Grudge Ball !!!

Match #1:

Foundations

Nuclear

GRUDGE BALL RULES

Each team gets 10Xs

- Teams will take a turn answering a review Q
- Correct answer
  - = 2Xs to take from any team (splitting is ok) and a shot at the hoop.

Successful shot from the:

2 point line = +2X (4 total)

3 point line = +3X (5 total)

GRUDGE BALL RULES

No More Xs?
Gain back Xs by answering the Q correctly.

Incorrect Answer?
If team gets incorrect answer, random choice gets to steal the Q, so BE READY!

Winning
Most Xs at the end of game wins!

How many atoms are in one molecule of $Al(OH)_3$?

Seven (7)

1

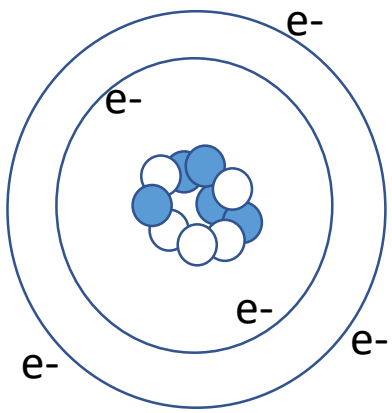
What particle did Thompson discover and which experiment proved it?

Electron →
Cathode Ray Tube Experiment

What Three parts of Dalton's theory remain true today?

1. **All matter is composed of atoms**
2. **Atoms combined to form simple whole number chemical compounds**
3. **In chemical reactions atoms are combined, separated, or rearranged**

Do any of these atoms represent isotopes? If so, which ones and why?

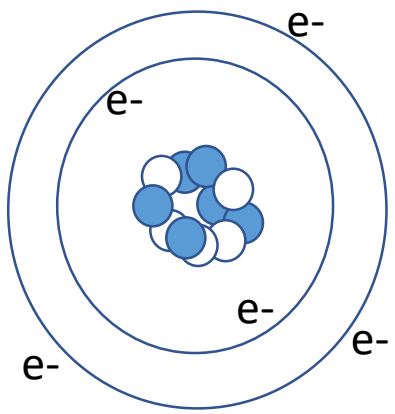


Atom A

5 protons

5 neutrons

5 electrons

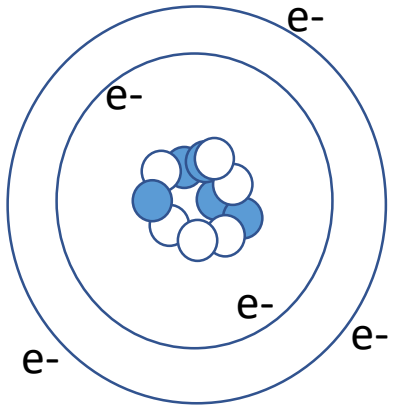


Atom B

6 protons

5 neutrons

5 electrons

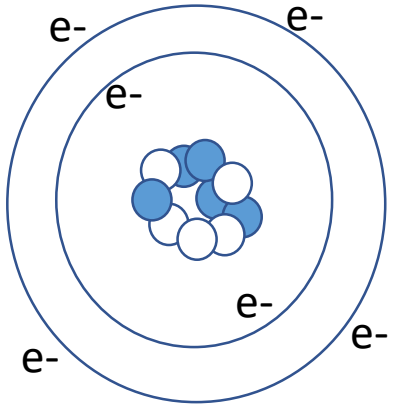


Atom C

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. **Atoms of a given element are identical in mass and size**
2. **Atoms cannot be subdivided, created, or destroyed**

Name the states of matter

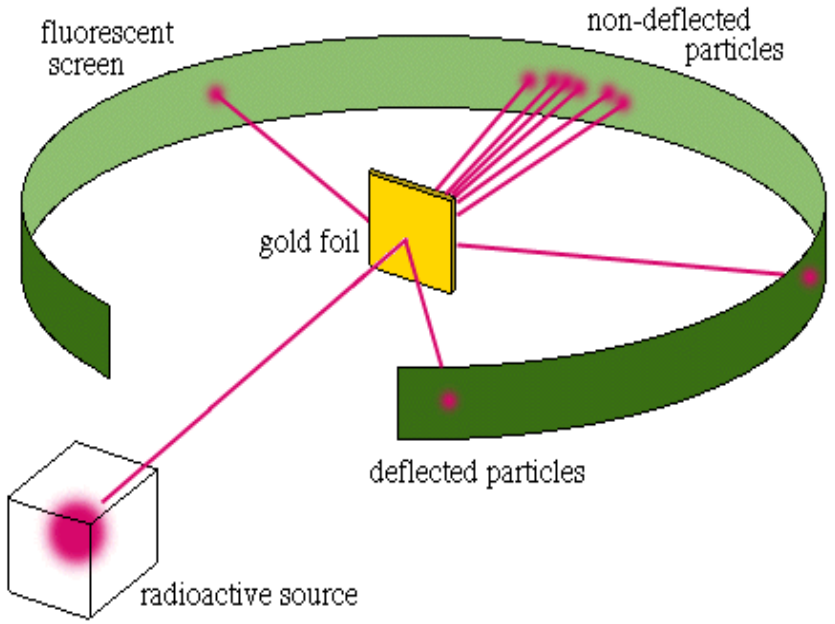
Solid, liquid, gas, and plasma

Name all 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 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 DRESSING
NEON	CARBON DIOXIDE	TAP WATER	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

The half-life of thorium-227 is 18.72 days How many days are required for three-fourths of a given amount to decay?

37.44 days

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.?

$$^{235}_{92}U \rightarrow {}^{4}_{2}He + {}^{231}_{90}Th$$

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?

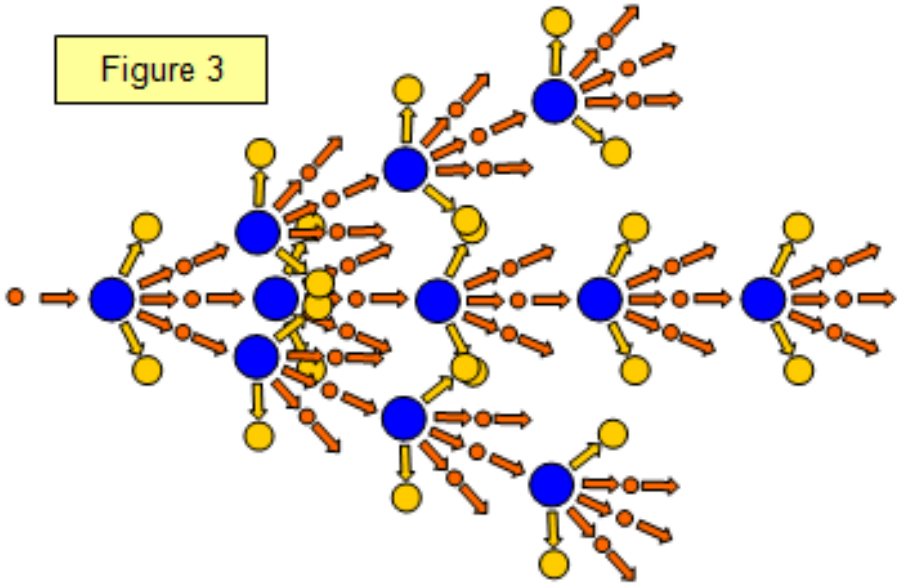
Cerium - 146

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?

7.2×10^{-3} L

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

4.37×10^6 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 cm x 2.3 cm =

3.0 cm

Perform the calculation using accurate sig figs

8.264 g - 7.8 g =

0.5 g

A radioactive substance has a half life of 125 days. What percent is left after 1.45 years?

5.31%