

# Chapter 4

## Lesson 1

# Welcome To 8th grade Physical Science!

Mrs. Winters

Hot Sync

## Materials Needed

Wednesday 1/8/14

## Today

Answer the following questions in **complete sentences** on the hot sync worksheet.

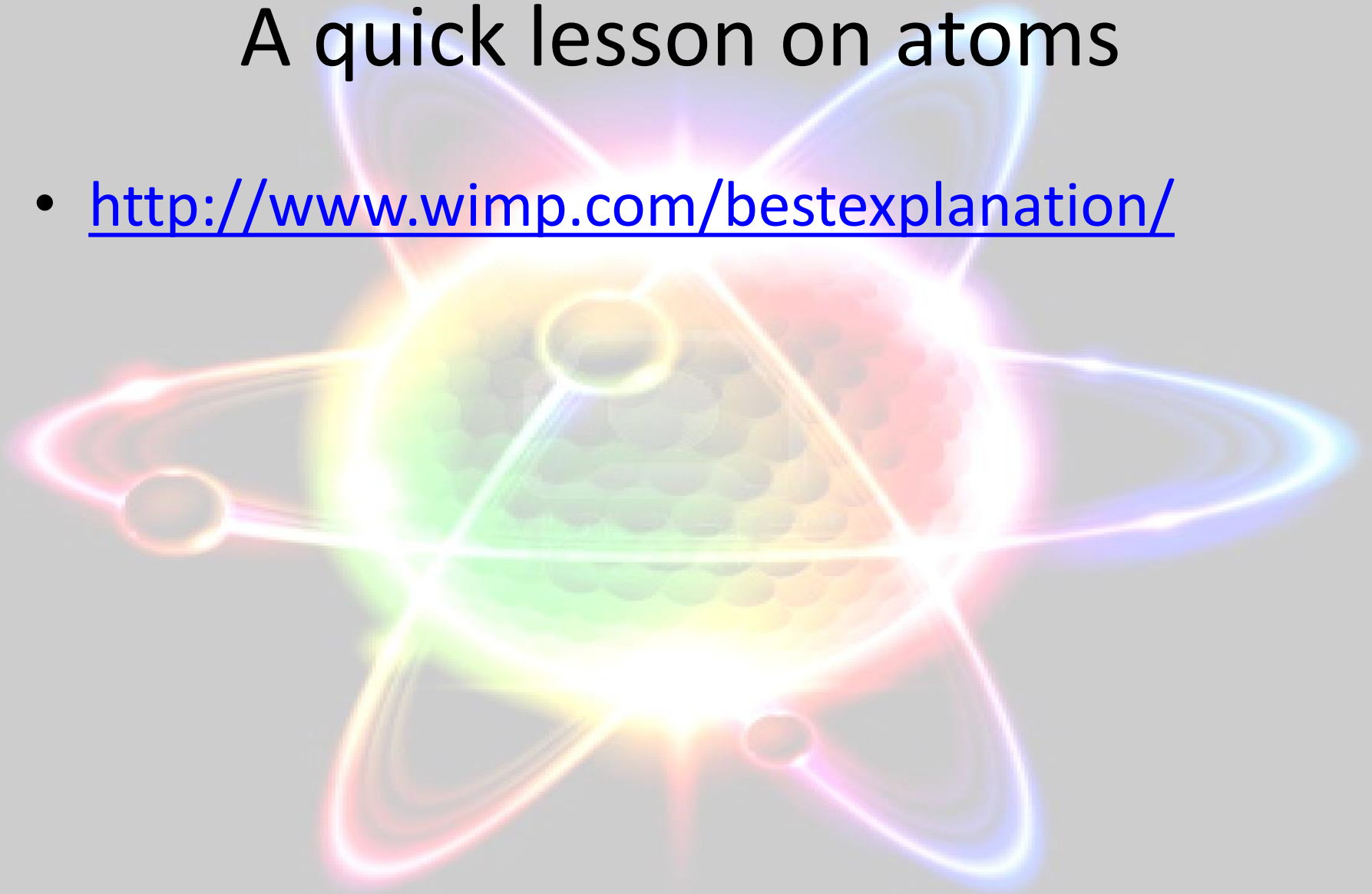
Please take these materials out of your backpack.

- Pencil
- Blank sheet of paper for notes.

- 1) Write down everything you know about atoms. (2 sentences)
- 2) Draw and label a picture of what you think an atom looks like.

# A quick lesson on atoms

- <http://www.wimp.com/bestexplanation/>



## 4.1 Atoms—Basic Units of Matter

Bill Nye!!

[http://www.youtube.com/  
watch?v=CnjxrFNie5I](http://www.youtube.com/watch?v=CnjxrFNie5I)









Resources



# 4.1 Atoms—Basic Units of Matter

## LESSON Vocabulary

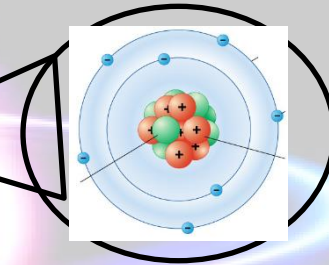
-  matter
-  atom
-  nucleus
-  proton
-  neutron
-  electron



## What is the current atomic model?

- **Matter** is everything that has mass and takes up space, such as gases, solids, and liquids.

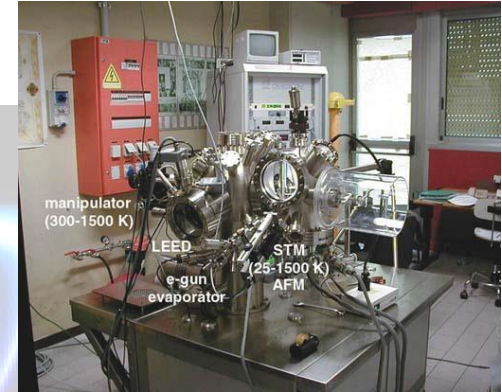
Matter is not sound, heat, or light—these are forms of energy.



- An **atom** is a very small particle that makes up all matter.

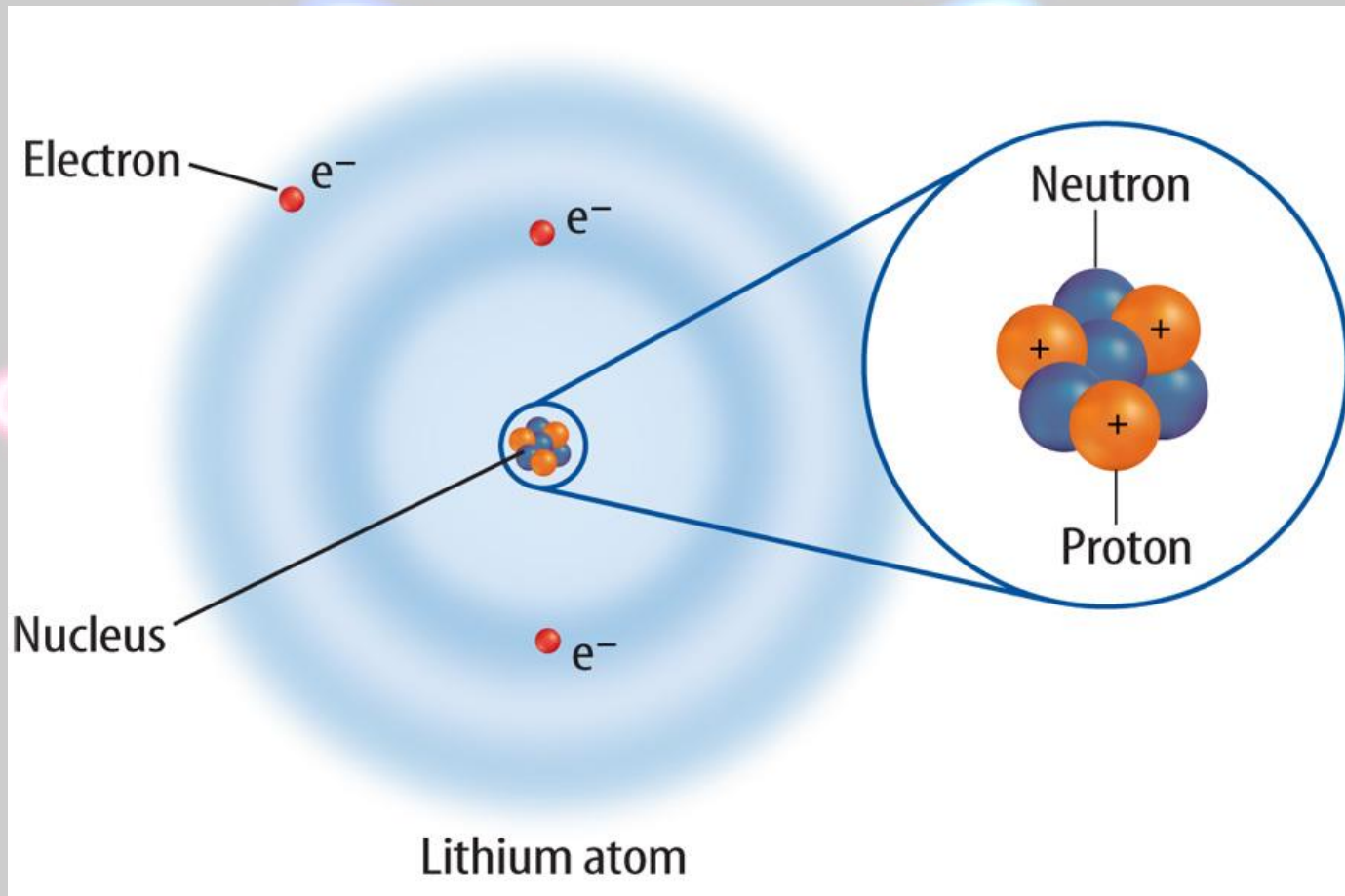


## Parts of the Atom



- Atomic-force microscopes show the surfaces of atoms.
- ◀ • The **nucleus** is the region located in the center of the atom.
- ◀ • A particle with a positive charge is a **proton**.
- ◀ • A particle with a negative charge is an **electron**.
- ◀ • A **neutron** has no charge.

# Parts of the Atom (cont.)



HOME

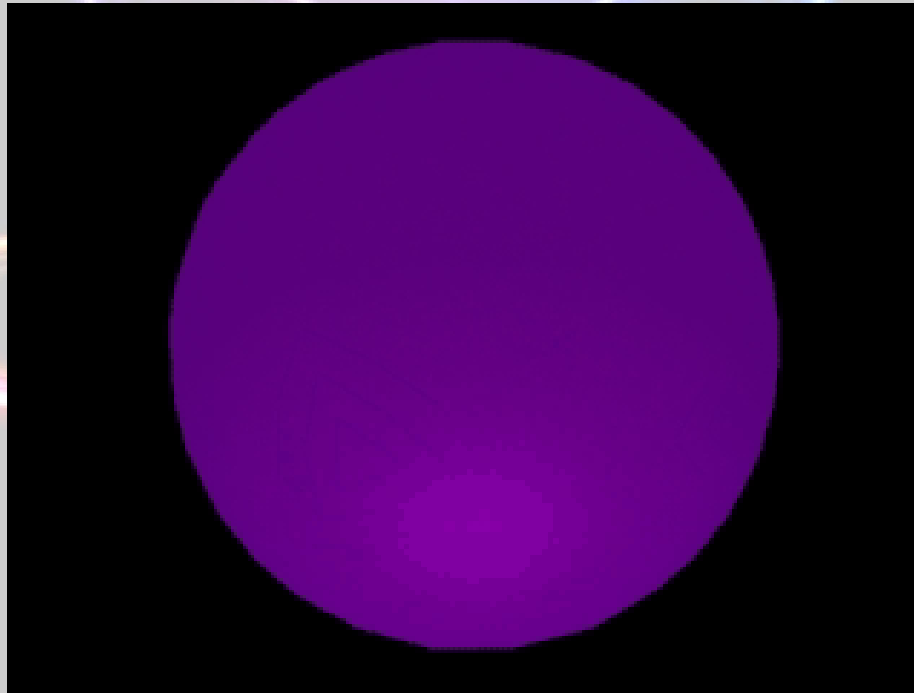
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# Parts of the Atom (cont.)

Concepts In Motion



Resources



## The Size of Atoms

- Protons, neutrons, and electrons are all smaller than the atom.

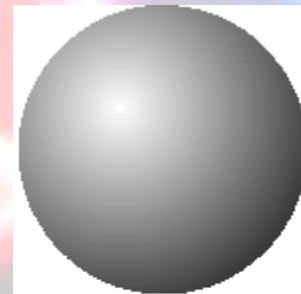
**Table 1** Properties of Atomic Particles

Particle	Charge	Mass (g)	Mass (amu)
Proton	+1	$1.6727 \times 10^{-24}$	1.007316
Neutron	0	$1.6750 \times 10^{-24}$	1.008701
Electron	-1	$9.110 \times 10^{-28}$	0.000549



## Historical Evidence of Atoms

- Democritus (460–370 B.C.) was the first to propose that atoms were indivisible solid spheres with no holes.



**Democritus**  
**(400 B.C.)**



# The Law of Conservation of Mass

\* Demonstration—Steel Wool

- A chemical reaction rearranges atoms of one substance into another substance with different properties.
- The total mass of the starting materials is always equal to the total mass of the product.





# Welcome To 8th grade Physical Mrs. Winters! Hot Sync

Thursday 1/9/14

Answer the following questions in  
**complete sentences** on the hot sync  
worksheet.

## Materials Needed Today

Please take these materials out of  
your backpack.

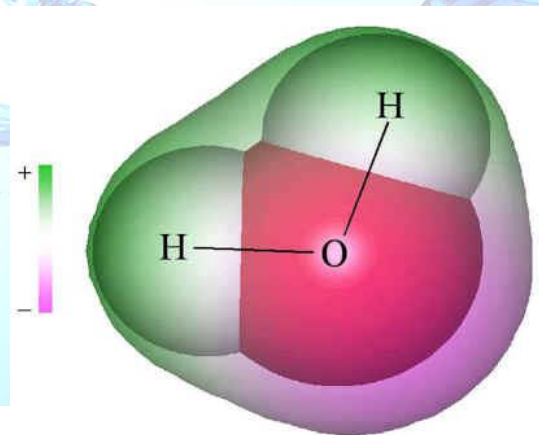
- Pencil
- Blank sheet of paper for notes.

- 1) Give an example of matter and provide evidence that it is matter! (2 sentences)
- 2) What are the three parts/groups of an atom? (list the charges of each (positive, negative, neutral))



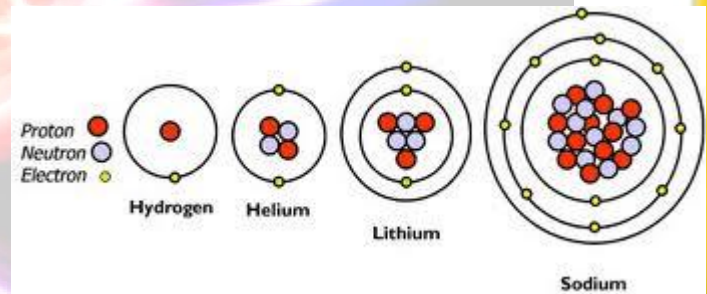
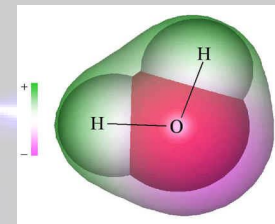
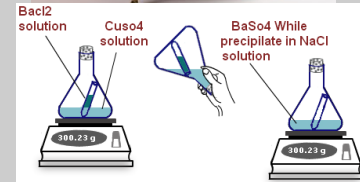
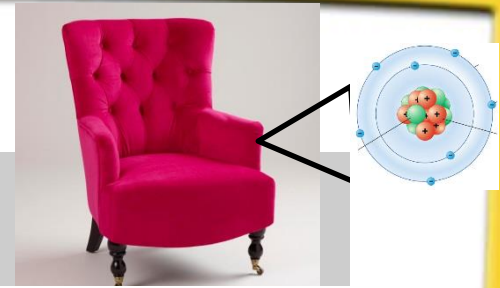
## The Law of Definite Proportions

- Any pure compound always contains the same elements in the same proportion.
  - Water from your kitchen is the same as water in a glacier on Mars.
  - $\text{H}_2\text{O}$ : two hydrogen atoms and one oxygen atom


















# Dalton's Atomic Model

1. All matter is made up of atoms.
2. Atoms are neither created nor destroyed in chemical reactions.
3. Atoms of different elements combine in whole-number ratios.
4. Each element is made of a different kind of atom.
5. The atoms of different elements have different masses and properties.



# Dalton's Atomic Model (cont.)

### Dalton's Atomic Symbols

				
Hydrogen	Azote	Carbon	Oxygen	Phosphorus
				
Sulphur	Magnesia	Lime	Soda	Potash
				
Strontian	Barytes	Iron	Zinc	Copper

### Modern Atomic Symbols

H	N	C	O	P
Hydrogen	Nitrogen	Carbon	Oxygen	Phosphorus
S	Mg	Ca	Na	K
Sulfur	Magnesium	Calcium	Sodium	Potassium
Sr	Ba	I	Z	Cu
Strontium	Barium	Iron	Zinc	Copper



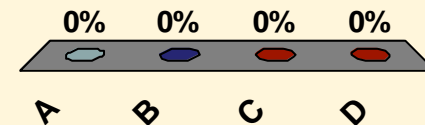


## LESSON 1 Review



Which is **NOT** a particle in an atom?

- A** positron
- B** neutron
- C** electron
- D** proton

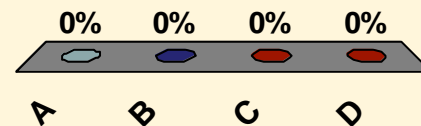


## LESSON 1 Review



Which law states that the total mass of the starting materials equals the total mass of the product in a chemical reaction?

- A Dalton's atomic model
- B** the law of conservation of mass
- C the law of definite proportions
- D Democritus' law





## LESSON 1 Review



\_\_\_\_\_ make up the nucleus of an atom.

- A Protons and electrons
- B Neutrons and electrons
- C** Protons and neutrons
- D Neutrons and photons

