

Name: Kate Date: \_\_\_\_\_ B#: \_\_\_\_\_

# Atomic Structure:

<div style="border: 1px solid black; padding: 5px; width: fit-content;">             8              O              Oxygen              15.999           </div>	→	atomic number
	→	chemical symbol
	→	element name
	→	atomic mass

What 2 parts of an atom does the atomic # represent?

protons & electrons

How do you figure out the # of neutrons?

subtract atomic # from the atomic mass.

<div style="border: 1px solid black; padding: 5px; width: fit-content;">             6              C              Carbon              12.011           </div>	# P: <u>6</u>
	# E: <u>6</u>
	# N: <u>6</u>

<div style="border: 1px solid black; padding: 5px; width: fit-content;">             10              Ne              Neon              20.179           </div>	# P: <u>10</u>
	# E: <u>10</u>
	# N: <u>10.179</u>

<div style="border: 1px solid black; padding: 5px; width: fit-content;">             19              K              Potassium              39.098           </div>	# P: <u>19</u>
	# E: <u>19</u>
	# N: <u>20.1</u>

## CREATING BOHR DIAGRAMS

Rules for arranging electrons:

1. The 1<sup>st</sup> energy level can hold up to 2 electrons.
2. The 2<sup>nd</sup> energy level can hold up to 8 electrons.
3. The 3<sup>rd</sup> energy level can hold up to 8 electrons.

What term is used to describe the electrons in the outermost energy level?

Valance electrons

Sketch An Atom	
Draw 5 protons in the nucleus and label with the charge.	
Draw 6 neutrons in the nucleus and label with the charge.	
Draw 2 electrons in the 1 <sup>st</sup> energy level and label with their charge.	
Draw 3 electrons in the 2 <sup>nd</sup> energy level and label with their charge.	
What element is represented?	<u>Boron</u>

Sketch An Atom	
Draw 3 protons in the nucleus and label with the charge.	
Draw 4 neutrons in the nucleus and label with the charge.	
Draw 2 electrons in the 1 <sup>st</sup> energy level and label with their charge.	
Draw 1 electrons in the 2 <sup>nd</sup> energy level and label with their charge.	
What element is represented?	<u>Lithium</u>

*kate kate*

Neon		
# P	10	
# E	10	
# N	10	
# of Valence Electrons	8	
Atomic #: 10		Mass #: 20

Magnesium		
# P	12	
# E	12	
# N	12	
# of Valence Electrons	2	
Atomic #: 12		Mass #: 24

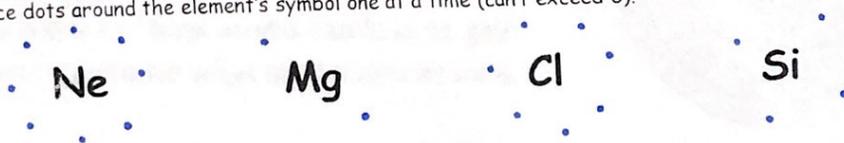
Chlorine		
# P	17	
# E	17	
# N	18	
# of Valence Electrons	7	
Atomic #: 17		Mass #: 35

Silicon		
# P	14	
# E	14	
# N	14	
# of Valence Electrons	4	
Atomic #: 14		Mass #: 28

## CREATING LEWIS DOT DIAGRAMS

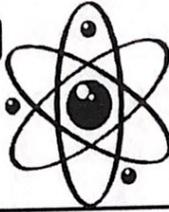
Rules for arranging electrons:

1. Figure out how many valence electrons the element has in its atom.
2. Place dots around the element's symbol one at a time (can't exceed 8).



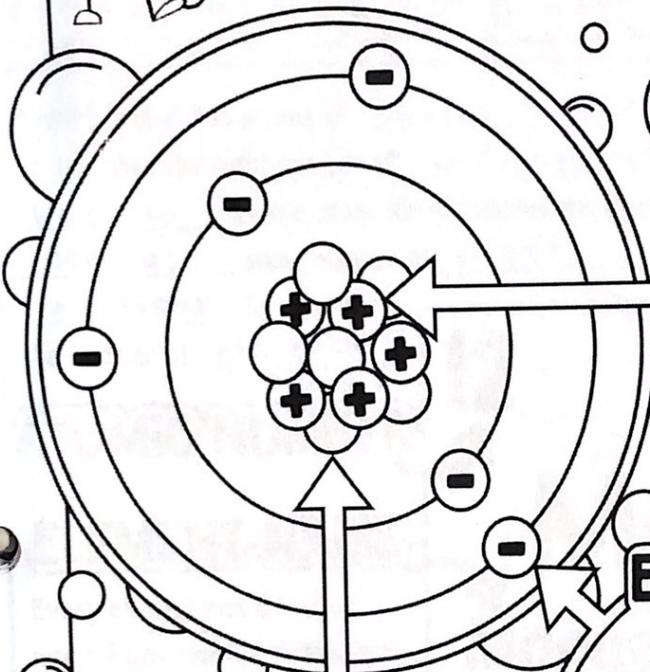


# PARTS OF AN ATOM



All matter is made of tiny particles called atoms.

Atoms are made of even smaller subatomic particles called protons, electrons and neutrons.



## PROTON

positively charged particles in the nucleus that have a mass of one AMU. The number of protons determines the element atomic number of an atom. For example hydrogen has 1, helium has 2.

## ELECTRON

negatively charged particles in the electron shells or levels. The mass of an electron is 1/1860 than that of a proton, so it does not add significant mass to the atom.

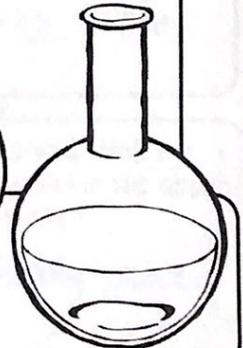
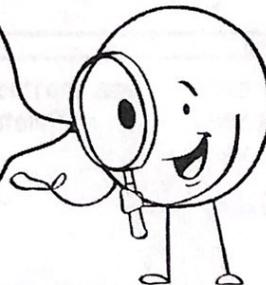
## NEUTRON

Neutral particles in the nucleus of the atom. They have no charge and have a mass of one AMU. Hydrogen is the only element that does not have at least one neutron in its nucleus.

AMU = ATOMIC MASS UNIT

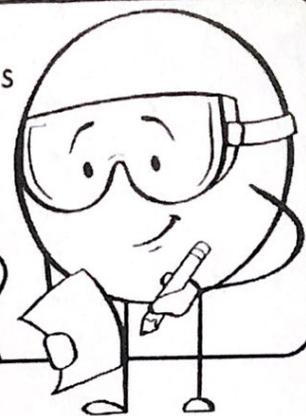
## WOW!

Atoms are so small! The dot on this i contains about 1 trillion atoms!



Atoms are mostly empty space. The mass comes from the protons and neutrons in the nucleus!

A substance that cannot be broken down into simpler substances by chemical means. An element is composed of atoms that have the same number of protons in their nucleus.



# ELEMENTS

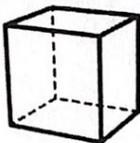
Every element has a unique atomic number. It indicates the total number of protons in the nucleus of the atom. Normal atoms are electrically neutral, same number of protons as electrons. So it is also the number of electrons.

Every elements is abbreviated using a unique symbol of one or two letters. The first letter is always capitalized and if there is a second letter, it is lower case.

Some are based on other languages, for example the symbol Fe is Iron from the Latin "ferrium."

## ATOMIC NUMBER

12



## ELEMENT NAME

Every element has a unique name. Many element names are very old and are based on other languages.

Chlorine is named after "khloros," the Greek work for "yellowish - green"

Newly discovered elements are named by the discoverer, but must be approved by an international committee.

**Mg**  
Magnesium

## SYMBOL

## ATOMIC MASS

24.305

Atomic mass is the mass of the protons and the

neutrons in an atom. Every proton and neutron has a mass of 1 AMU. Electrons do not count towards the mass because they are tiny. The mass can be shown with a decimal because it is an average mass of the isotopes of that element.

## You try:



What element's neutral atom has 17 electrons?

Chlorine

How many neutrons are in a lithium atom?

4

What do you think the cube symbol in the upper right means?

naturally solid