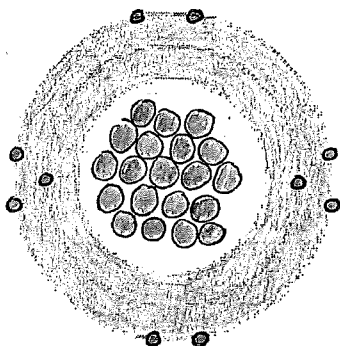


# Atoms and Periodic Table STUDY GUIDE

Name Answer Key  
 Period \_\_\_\_\_ 7<sup>th</sup> Grade Science

**MAKE SURE TO STUDY ALL PAST STUDY GUIDES! SCIENTIFIC METHOD, MATTER, review ACIDS AND BASES...**

## ATOMIC STRUCTURE (ScienceSaurus pgs. 255 – 256)



← THIS illustration represents an atom, the smallest particle into which an element can be divided and still maintain its physical/chemical properties.

← Color the neutrons blue. Color the protons orange. Color the electrons red. Shade the electron cloud pink.

← Identify the element represented by this model. Neon  
 (Use your periodic table!)

## PARTS OF THE ATOM (Atoms and Elements pg. 326)

Distinguish the parts of an atom with the following comparison chart.

	PROTON	NEUTRON	ELECTRON
Symbol	<u>P</u>	<u>n</u>	<u>e<sup>-</sup></u>
Electric Charge	<u>+1</u>	<u>0</u>	<u>-1</u>
Where located in atom?	<u>nucleus</u>	<u>nucleus</u>	<u>electron cloud around nucleus</u>
Relative Mass	<u>1</u>	<u>1</u>	<u>1/1840</u>
Drawing			

## PERIODIC TABLE (ScienceSaurus pg. 265)

Russian chemist Dmitri Mendeleev organized all known all elements into a chart referred to as the

periodic table. We continue to use his organizational system today. Each element is represented with a box known as an element key or tile. Each element key includes the element's name, its chemical symbol, its atomic number and its atomic mass.

LABEL each part of the following element key:

atomic number → 12

chemical symbol → Mg

atomic mass → 24.3050

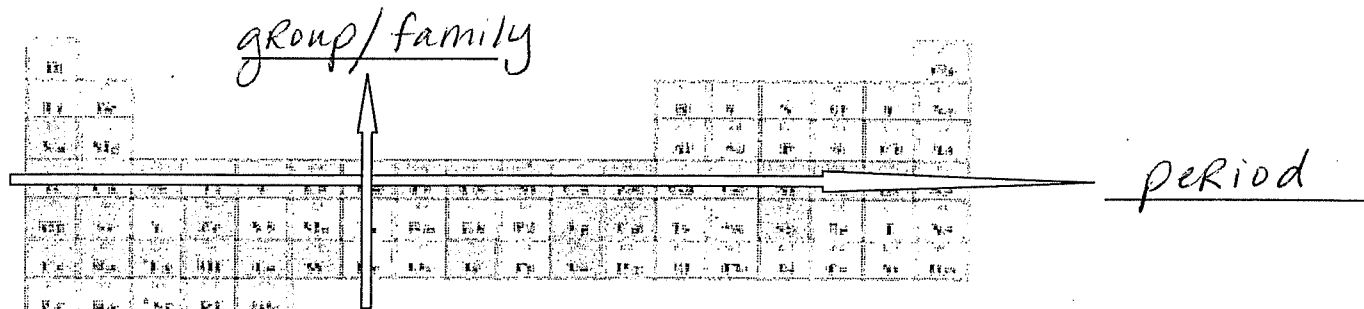
element name → Magnesium

Within the periodic table, from left to right, the elements are arranged in order according to their

atomic number. Each horizontal row is called a period.

Each vertical column is referred to as a group or family.

On the following periodic table, label each arrow as representing a period or group/family.



**METALS, NONMETALS, METALLOIDS** (Atoms and Elements pgs. 350- 367)

**REVIEW of PROPERTIES:**

- \* ability to be pulled into wires = ductility
- \* ability to be hammered or rolled into thin sheets = malleability
- \* ability to reflect light = luster
- \* ability to conduct thermal energy or electricity = conductivity
- \* having no luster = dull
- \* poor conductors of electricity or thermal energy make good insulators
- \* break apart easily = brittle

Using your notes, fill in the following chart: Be specific when necessary!

	METALS	NONMETALS	METALLOIDS
Location on Periodic Table?	left & middle	Right	between metals and nonmetals
Common Characteristics:	luster ductility malleability conductors	dull poor conductors insulators brittle	semiconductors properties of metals & nonmetals
Conductors? Semiconductors? Insulators?	conductors	insulators	semiconductors
Solid, liquid, or gas at room temperature?	solid	mostly gas, some solid	solid
Examples of some common elements: (at least 5)	Na, Mg, Au, Ag, Cu, Pt, Hg, Fe	He, O, N, C, Cl, Ne, I, Ar	B, Si, As, Ge, Te

A	B	C	D
1	2	17	18

Using the periodic table above, answer the following:

- A represents Group # 1, the alkali metals.  
 B represents Group # 2, the alkaline earth metals.  
 C represents Group # 17, the halogens.  
 D represents Group # 18, the noble gases.

Using your notes, list any and all special characteristics about each of the following families:

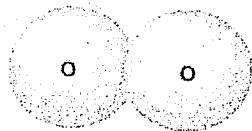
Halogens	<ul style="list-style-type: none"> <li>- Readily React with other elements to form compounds</li> <li>- do NOT exist as free elements</li> <li>- Reacts with a metal to form a salt</li> </ul>
Alkali Metals	<ul style="list-style-type: none"> <li>- HIGHLY reactive, react violently with water</li> <li>- only occur in nature as compounds</li> <li>- silvery, soft, low density</li> </ul>
Noble Gases	<ul style="list-style-type: none"> <li>- do NOT form compounds naturally</li> <li>- exist as free elements</li> </ul>
Alkaline Earth Metals	<ul style="list-style-type: none"> <li>- React quickly</li> <li>- exist in nature as compounds</li> <li>- <u>similar</u> to alkali metals</li> </ul>

### MOLECULES, COMPOUNDS, AND MIXTURES (ScienceSaurus pgs. 261, 262, 271)

Fill in the following table with the correct choice for each question. Your choices for each box are typed in **BOLD** letters.

	Molecule	Compound	Mixture
Chemically combined atoms? <b>YES</b> or <b>NO</b>	yes	yes	no
Can be made of: Atoms of the <b>SAME</b> element? Atoms of <b>DIFFERENT</b> elements? <b>BOTH</b> ?	BOTH same & different	DIFFERENT	BOTH same & different

Structure of the oxygen molecule (O<sub>2</sub>)



← Explain why this molecule is **NOT** a compound?

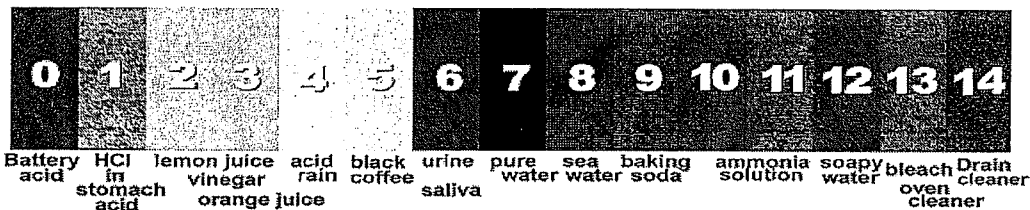
This molecule is NOT a compound because the molecule consists of two oxygen atoms. A compound consists of two or more different elements.

**MATTER REVIEW \*Use your matter study guide to answer the questions below.\***

Read each description. Write "A" for acid, "B" for base, or "N" for neutral.

- A 1. A solution with a pH of less than 7.
- B 2. The solution tastes bitter.
- A 3. The solution changes blue litmus paper red.
- B 4. A solution with a pH of greater than 7.
- B 5. The substance feels slippery and dissolves oils and fats.
- B 6. The solution changes red litmus paper blue.
- N 7. A solution with a pH of 7.

Use the pH scale below to answer the following questions.



1. What is the pH of bleach? 13
2. What is the pH of acid rain? 4
3. What is the only neutral substance on the pH scale? pure water
4. What is the most basic substance on this pH scale? drain cleaner
5. Which substance is more acidic: battery acid or acid rain? battery acid
6. What is the pH of the most acidic substance on this pH scale? 0

Read each description. Put an X in the appropriate column to mark whether the system is open or closed.

Description	Open System	Closed System
1. From the living room, you can smell a delicious pizza baking in the kitchen.	X	
2. You remove the lid from a jar of pickles.	X	
3. You observe a sealed plastic covering over a bag of uncooked popcorn.		X
4. You buy an unopened can of soda at the grocery store.		X

Read each description. Put an X in the appropriate column to mark whether the change is physical or chemical.

Description	Physical Change	Chemical Change
1. A bar of solid gold is melted and molded into a gold wedding band.	X	
2. A piece of toast turns brown as it burns inside of a toaster.		X
3. Gas bubbles are produced as pancake batter fries in a pan.		X
4. Water vapor in the air cools and falls as rain.	X	

**\*\*\*REMEMBER TO STUDY YOUR SCIENTIFIC METHOD STUDY GUIDE!\*\*\***