

science 9

Unit 2: Chemistry



BOOK 1: What is Matter? +
The Kinetic Molecular Theory

name: KEY block: _____

1

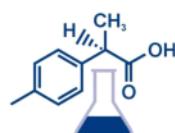
PART A : WHAT IS CHEMISTRY?

*chemicals

Here is a dramatization called, [A Day Without Chemistry](#)

1. List three ways you use chemistry every day:

- medicine
- House
- toothpaste
- car (fuel/electric)
- food



After watching, [What is Chemistry?](#)

Everything: has mass + volume

a) How would you define chemistry now?

The study of matter, elements + atoms ... and their physical + chemical properties

b) Chemistry is sometimes called the fundamental science because principles of chemistry intertwine with other sciences, especially biology, physics and math.

↳ Engineering

↳ Biochemistry
↳ medicines

c) Name one famous chemist mentioned in the video:

Marie Curie

John Dalton

→ radioactivity

→ structure of the atom

TEACHER DEMO: Chemical "Ice Pack"



Materials:

• beaker

Substances:

water, barium hydroxide

Procedure:

• mix 1 scoop of each chemical ammonium thiocyanate
• stir in a beaker • observe .

Make a prediction what do you think will happen?

Observations:

- white crystals (solid) combined and turned into a liquid
- got cold (temperature decrease)
- smell - ammonia gas was produced (new product means a chemical reaction has occurred)

[A Day Without Chemistry](#)



What is Chemistry:

<https://www.youtube.com/watch?v=j7d6RETP6PQ>

PRACTICE ➤ Periodic Table Scavenger Hunt

In the study of chemistry we will be using **The Periodic Table of the Elements** a lot!

Get to know your periodic table by searching your periodic table for the answers to these questions.

Si - silicon 1. Which element is number 14 on the periodic table?

C

2. What is the element symbol for californium?

83

3. How many protons are in an atom of bismuth?

Noble Gases

4. To which element group does argon belong?

Cd

5. Which element would you expect to have a higher mass:

cadmium or zinc?

12

6. What is the atomic mass of carbon?

Lanthanide

7. What do you call the element series from **atomic number 57-71?**

Au - Gold

8. Which element has a symbol that starts with a letter different

from the first one in its name: aluminum, copper, gold,

rhenium? **Re**

9. Which element has the lowest atomic mass?

Ru - Ruthenium

10. What is the first element with an **atomic mass greater than 100?**

Lithium

11. What is the first basic metal on the periodic table?

True

12. True or false: Tin and antimony are in the same element group. **(Transition metals)**

Fr - Francium

13. What is the heaviest alkali metal?

12

14. How many protons are in an atom of magnesium?

Silicon

15. Which of the following is **not** a nonmetal: sulfur, oxygen, silicon, nitrogen?

metalloid

Tungsten

16. What is the name of the element with the symbol W?

Pd - Palladium

17. Which element has an atomic mass of 106.42?

Halogen

18. Astatine belongs to which element group: nonmetal, halogen, noble gas?

Barium

19. What is the element with the symbol Ba?

j

20. Name a letter never used in any element symbol?

Atomic Number
(# of protons)

6
C
Carbon

element
name
12

Atomic Mass
(# protons + # neutrons)

Group S = Vertical
↑ Columns
• have a
name
(title)

3

Periodic Table of the Elements

1 H Hydrogen 1.0																			18 He Helium 4.0																																											
1 Li Lithium 6.9	2 Be Beryllium 9.0	3 Na Sodium 23.0	4 Mg Magnesium 24.3	5 Ca Calcium 40.1	6 Sc Scandium 45.0	7 Ti Titanium 47.9	8 V Vanadium 50.9	9 Cr Chromium 52.0	10 Mn Manganese 54.9	11 Fe Iron 55.8	12 Co Cobalt 56.9	13 Ni Nickel 58.7	14 Cu Copper 63.5	15 Zn Zinc 65.4	16 Ga Gallium 69.7	17 Ge Germanium 74.9	18 As Arsenic 79.0	19 Se Selenium 79.9	20 Br Bromine 83.8																																											
Alkali Metals	Alkaline Earth Metals	METALS	NON-METALS															Halogens	Noble Gases																																											
Alkali Metals	Alkaline Earth Metals	METALS	13 B Boron 10.8	14 C Carbon 12.0	15 N Nitrogen 14.0	16 O Oxygen 16.0	17 F Fluorine 19.0	18 Cl Chlorine 35.5	19 Ar Argon 39.9	20 Ne Neon 20.2	21 S Sulfur 32.1	22 P Phosphorus 31.0	23 S Sulfur 32.1	24 Se Selenium 79.0	25 Br Bromine 79.9	26 Kr Krypton 83.8	27 I Iodine 126.9	28 Xe Xenon 131.3	29 Rn Radon (222)	30 At Astatine (210)	31 Po Polonium (209)	32 Bi Bismuth (208)	33 At Astatine (210)	34 Po Polonium (209)	35 Br Bromine (208)	36 Kr Krypton (208)	37 Xe Xenon (208)	38 Rn Radon (208)																																		
Based on mass of C-12 at 12.00.	Any value in parentheses is the mass of the most stable or best known isotope for elements which do not occur naturally.	Alkali Metals	Alkaline Earth Metals	1 Ce Cerium 140.1	2 Pr Praseodymium 140.9	3 Nd Neodymium 144.2	4 Pm Promethium (145)	5 Sm Samarium 150.4	6 Eu Europium 152.0	7 Gd Gadolinium 157.3	8 Tb Terbium 158.9	9 Dy Dysprosium 162.5	10 Ho Holmium 164.9	11 Tm Thulium 167.3	12 Yb Ytterbium 168.9	13 Lu Lutetium 173.0	14 Ce Cerium 140.1	15 Pr Praseodymium 140.9	16 Nd Neodymium 144.2	17 Pm Promethium (145)	18 Sm Samarium 150.4	19 Eu Europium 152.0	20 Gd Gadolinium 157.3	21 Tb Terbium 158.9	22 Dy Dysprosium 162.5	23 Ho Holmium 164.9	24 Tm Thulium 167.3	25 Yb Ytterbium 168.9	26 Lu Lutetium 173.0																																	
Alkali Metals	Alkaline Earth Metals	METALS	27 Th Thorium 232.0	28 Ra Radium (226)	29 Rf Rutherfordium (227)	30 Db Dubnium (261)	31 Sg Seaborgium (262)	32 Bh Bohrium (263)	33 Hs Hassium (265)	34 Mt Meitnerium (266)	35 Ds Darmstadtium (281)	36 Rg Roentgenium (282)	37 Uut Ununtrium (284)	38 Uup Ununquadium (289)	39 Uuh Ununhexium (292)	40 Uus Ununseptium (?)	41 Ce Cerium 140.1	42 Pr Praseodymium 140.9	43 Nb Niobium 92.9	44 Mo Molybdenum 95.9	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.9	54 Xe Xenon 131.3	55 Cs Cesium 132.9	56 Ba Barium 137.3	57 La Lanthanum 138.9	58 Hf Hafnium 178.5	59 Ta Tantalum 180.9	60 W Tungsten 183.8	61 Re Rhenium 186.2	62 Os Osmium 190.2	63 Ir Iridium 192.2	64 Pt Platinum 195.1	65 Au Gold 197.0	66 Hg Mercury 200.6	67 Tl Thallium 204.4	68 Pb Lead 207.2	69 Bi Bismuth 209.0	70 Po Polonium (209)	71 At Astatine (210)	72 Rn Radon (222)	73 Fr Francium (223)	74 Ra Radium (226)	75 Rf Rutherfordium (227)	76 Db Dubnium (261)	77 Sg Seaborgium (262)	78 Bh Bohrium (263)	79 Hs Hassium (265)	80 Mt Meitnerium (266)	81 Ds Darmstadtium (281)	82 Rg Roentgenium (282)	83 Uut Ununtrium (284)	84 Uup Ununquadium (289)	85 Uuh Ununhexium (?)	86 Uus Ununseptium (294)