

Science 9

Unit 2: Chemistry



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

name: KEY block: _____

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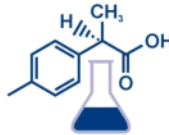
PART A : WHAT IS CHEMISTRY?

*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



[A Day Without Chemistry](#)



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

a) How would you define chemistry now?

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

Everything: has mass + volume

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:

Materials: • stirring rod
• beaker
• scoopula

Procedure:

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

Substances: water, barium hydroxide

ammonium thiocyanate

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)

What is Chemistry:

<https://www.youtube.com/watch?v=i7d6RETP6PQ>

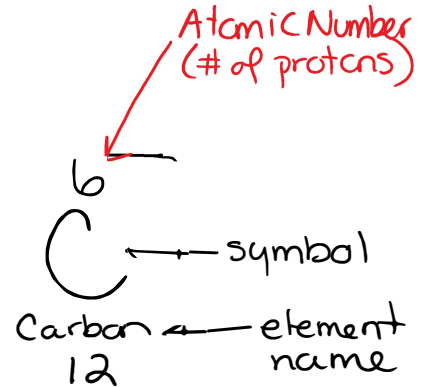
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PRACTICE Periodic Table Scavenger Hunt

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

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

1. Which element is number 14 on the periodic table?
Si - silicon
2. What is the element symbol for californium?
Cf
3. How many protons are in an atom of bismuth?
83
4. To which element group does argon belong?
Noble Gases
5. Which element would you expect to have a higher mass: cadmium or zinc?
6. What is the atomic mass of carbon?
12
7. What do you call the element series from **atomic number 57-71**?
Lanthanide
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?
H - Hydrogen
10. What is the first element with an **atomic mass** greater than 100?
Ru - Ruthenium
11. What is the first basic metal on the periodic table?
Lithium
12. True or false: Tin and antimony are in the same element group. (Transition metals)
13. What is the heaviest alkali metal?
Fr - Francium
14. How many protons are in an atom of magnesium?
12
15. Which of the following is not a nonmetal: sulfur, oxygen, silicon, nitrogen?
silicon
16. What is the name of the element with the symbol W?
Tungsten
17. Which element has an atomic mass of 106.42?
Pd - Palladium
18. Astatine belongs to which element group: nonmetal, halogen, noble gas?
Halogen
19. What is the element with the symbol Ba?
Barium
20. Name a letter never used in any element symbol?
j



Atomic MASS (# protons + # neutrons)
Gro s = Vertical ↑ Columns
• have a name (title)

1										18											
H Hydrogen 1.0										He Helium 4.0											
METALS										NON-METALS											
Atomic Number → 22 Symbol → Ti Name → Titanium Atomic Mass → 47.9 Ion charge(s) → 3+																					
1	2	3			4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
Li	Be	B	C	N	O	F	Ne	Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti		
6.9	9.0	10.8	12.0	14.0	16.0	19.0	20.2	23.0	24.3	27.0	28.1	31.0	32.1	35.5	39.9	39.1	40.1	45.0	47.9		
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Na	Mg	Al	Si	P	S	Cl	Ar	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn		
23.0	24.3	27.0	28.1	31.0	32.1	35.5	39.9	39.1	40.1	45.0	47.9	50.9	52.0	54.9	55.8	58.9	58.7	63.5	65.4		
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56		
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La		
85.5	87.6	88.9	91.2	92.9	95.9	(98)	101.1	102.9	106.4	107.9	112.4	114.8	118.7	121.8	127.6	126.9	131.3	137.3	138.9		
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74		
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ra		
132.9	137.3	138.9	178.5	180.9	183.8	186.2	190.2	192.2	195.1	197.0	200.6	204.4	207.2	209.0	(209)	(210)	(222)	(223)	(226)		
87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106		
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Uu	Uuq	Uup	Uuh	Uus	Uuo	107	108	109		
(223)	(226)	(227)	(261)	(262)	(263)	(262)	(265)	(266)	(281)	(272)	(284)	(289)	(288)	(292)	(?)	(294)	(?)	(?)	(?)		
Alkali Metals		Alkaline Earth Metals																Halogens		Noble Gases	
58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77		
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	107	108	109	110	111	112		
140.1	140.9	144.2	(145)	150.4	152.0	157.3	158.9	162.5	164.9	167.3	168.9	173.0	175.0	(?)	(?)	(?)	(?)	(?)	(?)		
90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109		
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	107	108	109	110	111	112		
232.0	231.0	238.0	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(262)	(?)	(?)	(?)	(?)	(?)	(?)		

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.