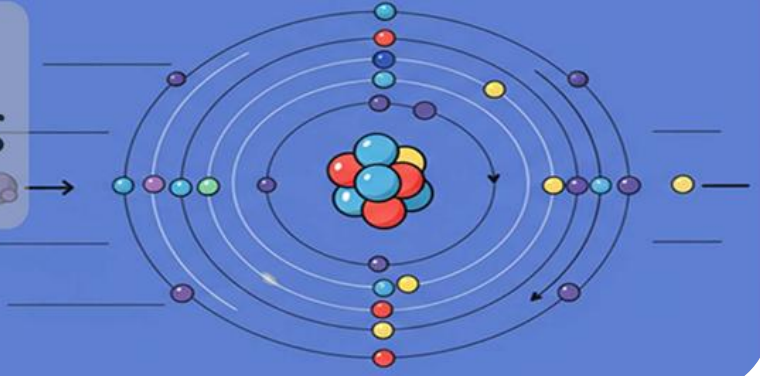
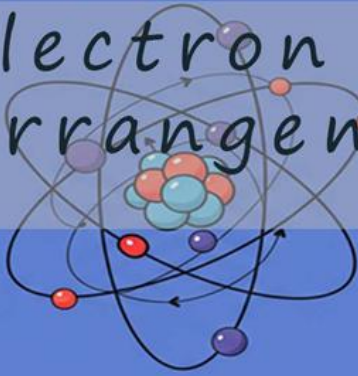


Electron Arrangements



Answer all the questions below

1 Complete the table below. It gives the electron arrangements for the first 20 elements.

Element	Chemical symbol	Atomic number	Mass number	No of protons	No of neutrons	No of electrons	Electronic configuration
hydrogen	H	1	1	1	0	1	1
helium							
lithium	Li						2,1
beryllium							
boron							
	C						
nitrogen							
							2,6
	F						
	Ne						
sodium							
		12					
		13					
Silicon							
	P						
sulphur							
							2,8,7
							2,8,8
	K						
Calcium							

2. The symbol for a helium atom is often written as ${}^4\text{He}$

2.

Write the symbols for the following atoms in a similar way to that for the helium atom.

a. sodium b. oxygen c. neon d. potassium

3. Lithium and sodium have very similar chemical properties. Using the table above suggest a reason for this.

4. Which of the following electron arrangements is correct for an oxygen atom?

a. 2, 6 b. 2, 8, 8 c. 2, 8, 6 d. 1, 7

5. Which group in the periodic table contains elements with a full outer shell of electrons?

a. Group 1 b. Group 2 c. Group 7 d. Group 8

6. Which element has the electron arrangement 2, 8, 1?

a. Sodium (Na) b. Potassium (K) c. Magnesium (Mg)

d. Aluminium (Al)

7. Fill in the gaps to complete the sentences below:

An element in Group 1 of the periodic table will typically have _____ electron(s) in its outer shell.

Answer: 1

b. The electron arrangement of chlorine is 2, __, 7.

c. Elements in the same group have similar chemical properties because they have the same number of _____ in their outer shell.

8. Match the element with its correct electron arrangement.

<u>Element</u>	<u>Electron Arrangement</u>
A. Neon	1. 2, 8, 7
B. Lithium	2. 2, 8, 8
C. Chlorine	3. 2, 1
D. Sodium	4. 2, 8, 1
E. Calcium	5. 2, 8, 8, 2

Answers

Element	Chemical symbol	Atomic number	Mass number	No of protons	No of neutrons	No of electrons	Electronic configuration
hydrogen	H	1	1	1	0	1	1
helium	He	2	4	2	2	2	2
lithium	Li	3	7	3	4	3	2,1
beryllium	Be	4	9	4	5	4	2,2
boron	B	5	11	5	6	5	2,3
carbon	C	6	12	6	6	6	2,4
nitrogen	N	7	14	7	7	7	2,5
oxygen	O	8	16	8	8	8	2,6
fluorine	F	9	19	9	10	9	2,7
neon	Ne	10	20	10	10	10	2,8
sodium	Na	11	23	11	12	11	2,8,1
magnesium	Mg	12	24	12	12	12	2,8,2
aluminium	Al	13	27	13	14	13	2,8,3
Silicon	Si	14	28	14	14	14	2,8,4
phosphorus	P	15	31	15	16	15	2,8,5
sulphur	S	16	32	16	16	16	2,8,6
chlorine	Cl	17	35	17	18	17	2,8,7
argon	Ar	18	40	18	22	18	2,8,8
potassium	K	19	39	19	20	19	2,8,8,1
Calcium	Ca	20	40	20	20	20	2,8,8,2

2. The symbol for a helium atom is often written as ${}^4\text{He}$

2.

Write the symbols for the following atoms in a similar way to that for the helium atom.

a. sodium b. oxygen c. neon d. potassium

23

11 Na

16

8 O

20

10 Ne

39

19 K

3. Lithium and sodium have very similar chemical properties. Using the table above suggest a reason for this.

Chemical properties depend on the number of electrons in the last shells.

Lithium and sodium both have 1 electron in their last electron shell so will have similar chemical properties.

4. Which of the following electron arrangements is correct for an oxygen atom?
- a. 2, 6 b. 2, 8, 8 c. 2, 8, 6 d. 1, 7

Answer: a. 2, 6

5. Which group in the periodic table contains elements with a full outer shell of electrons?
- a. Group 1 b. Group 2 c. Group 7 d. Group 8

Answer: d. Group 8

6. Which element has the electron arrangement 2, 8, 1?
- a. Sodium (Na) b. Potassium (K) c. Magnesium (Mg)
- d. Aluminium (Al)

Answer: a. Sodium (Na)

7. Fill in the gaps to complete the sentences below:

An element in Group 1 of the periodic table will typically have _____ electron(s) in its outer shell.

Answer: 1

- b. The electron arrangement of chlorine is 2, __, 7.

Answer: 8

- c. Elements in the same group have similar chemical properties because they have the same number of _____ in their outer shell.

Answer: electrons

8. Match the element with its correct electron arrangement.

<u>Element</u>	<u>Electron Arrangement</u>
Neon	2, 8, 7
Lithium	2, 8, 8
Chlorine	2, 1
Sodium	2, 8, 1
Calcium	2, 8, 8, 2

