

W07 Activity Electron Configuration

Instructions:

1. Use the [Clever](https://clever.com/oauth/instant-login?client_id=ffbc788e2659d79743a&district_id=5ef0f707353b900011bceef) link to log into Gizmos
https://clever.com/oauth/instant-login?client_id=ffbc788e2659d79743a&district_id=5ef0f707353b900011bceef
2. Find the Chemistry Class > Electron Configuration
 - a. This link might work once you are logged in: [Electron Configuration Gizmo](#)
3. You do not get credit for completing the Assessment Questions beneath the Gizmo.

Activity Procedure:

1. Select the element from the "Periodic Table" tab.
2. Select the "Electron Configuration" tab.
3. Show the correct electron configuration by clicking in the boxes next to the orbitals.
4. Use the "Check" button to see if you are correct.
5. Once you have the correct electron configuration take a screenshot and paste it below.

Be - Beryllium

Write the electron configuration of Beryllium here:

- $1s^2 2s^2$

Paste a screenshot of the correct electron configuration of Beryllium here:

PERIODIC TABLE ELECTRON CONFIGURATION ATOMIC RADIUS Tools

Click the appropriate boxes to add electrons.

7s 7p 6d 5f
6s 6p 5d 4f
5s 5p 4d
4s 4p 3d
3s 3p
2s 2p
1s
Subshells ordered by: Energy Number

Beryllium

4
Be
9.01

Bohr model

Electron configuration

$1s^2 2s^2$

Configuration in order of subshell filling
 Show total number of electrons

Total electrons: 4

Check Reset Next element

Correct electron configuration! Atomic radius = 112 picometers

<https://apps.explorelearning.com/gizmos/launch-gizmo/513>

H Home Background Color: He
 Li Be Beryllium Pictures Page Black White Gray B C N O F Ne
 NaMg Beryllium Technical Data Al Si P S Cl Ar
 K Ca Beryllium Isotope Data Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr
 Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe
 Cs Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn
 Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr Rf Db Sg Bh Hs Mt Ds Rg Cn Nh Fl Mc Lv Ts Og



Beryllium

Atomic Weight 9.0121831
 Density 1.848 g/cm³
 Melting Point 1287 °C
 Boiling Point 2470 °C
 Full technical data

This pure broken crystal of refined beryllium ordinarily would be melted down and turned into strong, lightweight parts for missiles and spacecraft. It is expensive and toxic, but unbeatable when cost is no object.

Scroll down to see examples of Beryllium.

<https://periodictable.com/Elements/004/index.html>

NIST Periodic Table 1 / 2 111% + 🔍 📄

PERIODIC TABLE

Atomic Properties of the Elements

NIST National Institute of Standards and Technology
 U.S. Department of Commerce
 Physical Measurement Laboratory www.nist.gov/pml
 Standard Reference Data www.nist.gov/srd

FREQUENTLY USED FUNDAMENTAL PHYSICAL CONSTANTS¹
 1 second = 9 192 631 770 periods of radiation corresponding to the transition between the two hyperfine levels of the ground state of ¹³³Cs

speed of light in vacuum	<i>c</i>	299 792 458 m s ⁻¹	(exact)
Planck constant	<i>h</i>	6.626 070 15 × 10 ⁻³⁴ J Hz ⁻¹	(exact)
elementary charge	<i>e</i>	1.602 176 634 × 10 ⁻¹⁹ C	(exact)
Avogadro constant	<i>N_A</i>	6.022 140 76 × 10 ²³ mol ⁻¹	(exact)
Boltzmann constant	<i>k</i>	1.380 649 × 10 ⁻²³ J K ⁻¹	(exact)
electron volt	eV	1.602 176 634 × 10 ⁻¹⁹ J	(exact)
electron mass	<i>m_e</i>	9.109 383 70 × 10 ⁻³¹ kg	
energy equivalent	<i>m_ec²</i>	0.510 998 950 MeV	
proton mass	<i>m_p</i>	1.672 621 924 × 10 ⁻²⁷ kg	
energy equivalent	<i>m_pc²</i>	938.272 088 MeV	
fine-structure constant	<i>α</i>	1/137.035 999	
Rydberg energy	<i>R_∞hc</i>	13.605 693 1230 eV	
Newtonian constant of gravitation	<i>G</i>	6.674 × 10 ⁻¹¹ m ³ kg ⁻¹ s ⁻²	

¹For the most accurate values of these and other constants, visit pml.nist.gov/constants.

Legend:
 Solids
 Liquids
 Gases
 Artificially Prepared

Periodic Table showing elements 1-18 with their atomic weights and symbols.


https://www.nist.gov/system/files/documents/2019/12/10/nist_periodictable_july2019.pdf

14 IVA	
2	6 ³ P ₀
C Carbon 12.011 $1s^2 2s^2 2p^2$ 11.2603	

C - Carbon

Write the electron configuration of Carbon here:

- $1s^2 2s^2 2p^2$
- [He] 2s² 2p²



C 6
12.011

Carbon

Carbon

Atomic Weight 12.011
 Density 2.26 g/cm³^[note]
 Melting Point 3550 °C^[note]
 Boiling Point 4027 °C^[note]
 Full technical data

A diamond is forever, unless you heat it too much and it burns up into carbon dioxide gas. Graphite is also pure carbon and widely used in pencils, but not nearly as pretty. In this poster, pretty trumps practical.

Scroll down to see examples of Carbon.

<https://periodictable.com/Elements/006/index.html>

Paste a screenshot of the correct electron configuration of Carbon here:

PERIODIC TABLE | ELECTRON CONFIGURATION | ATOMIC RADIUS | Tools

Click the appropriate boxes to add electrons.

7s 7p 6d 5f

6s 6p 5d 4f

5s 5p 4d 3d

4s 4p 3p 2p

3s 3p 2s

2s 1s

Subshells ordered by: Energy Number

Carbon
6
C
12.01

Bohr model

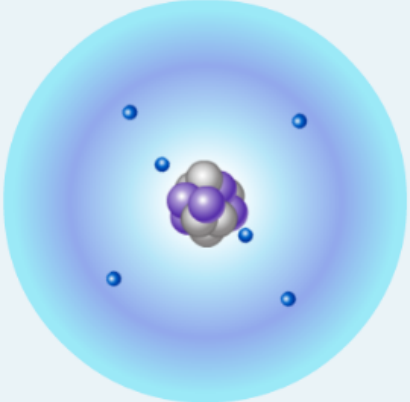
Electron configuration
1s²2s²2p²

Configuration in order of subshell filling
 Show total number of electrons

Total electrons: 6

Check Reset Next element

Correct electron configuration! Atomic radius = 67 picometers



6
C
Carbon
12.011

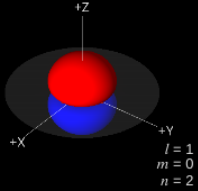
Oxidation states: -4, -3, -2, -1, 1, 2, 3, 4
Configuration: [He] 2s² 2p²
Expanded: 1s² 2s² 2p²
Energy levels: 2, 4
HOAO: l=1, m=0, n=2

1s 2s 2p 3s 3p 3d 4s 4p 4d 4f 5s 5p 5d 5f 6s 6p 6d 7s 7p

s block
p block
d block
f block

1 H Hydrogen 1s1	2 He Helium 1s2											15 P Phosphorus 3s2 3p3	16 S Sulfur 3s2 3p4	17 Cl Chlorine 3s2 3p5	18 Ar Argon 3s2 3p6		
3 Li Lithium 2s1	4 Be Beryllium 2s2	5 B Boron 2s2 2p1	6 C Carbon 2s2 2p2	7 N Nitrogen 2s2 2p3	8 O Oxygen 2s2 2p4	9 F Fluorine 2s2 2p5	10 Ne Neon 2s2 2p6										

Atomic Symbol Name Weight



<https://ptable.com/#Electrons/Configuration>

Na - Sodium

Write the electron configuration of Sodium here:

- $1s^2 2s^2 2p^6 3s^1$
- $[\text{Ne}] 3s^1$



Sodium

Atomic Weight 22.98976928
Density 0.968 g/cm³
Melting Point 97.72 °C
Boiling Point 883 °C
Full technical data

These soft, silvery sodium chunks were cut with a knife and stored under oil. In air they turn white in seconds; exposed to water they generate hydrogen gas and explode in flaming balls of molten sodium.

Scroll down to see examples of Sodium.

<https://periodictable.com/Elements/006/index.html>

Paste a screenshot of the correct electron configuration of Sodium here:

PERIODIC TABLE | ELECTRON CONFIGURATION | ATOMIC RADIUS | Tools

Click the appropriate boxes to add electrons.

7s 7p 6d 5f
 6s 6p 5d 4f
 5s 5p 4d 3d
 4s 4p 3p
 3s 2p
 2s 1s
 1s

Subshells ordered by: Energy Number

Sodium
11
Na
22.99

Bohr model

Electron configuration
1s²2s²2p⁶3s¹

Configuration in order of subshell filling
 Show total number of electrons
 Total electrons: 11

Correct electron configuration!

Atomic radius = 190 picometers

<https://apps.explorelearning.com/gizmos/launch-gizmo/513>

11
Na
Sodium
22.990

2
8
1

Oxidation states: -1, 1
 Configuration: [Ne] 3s¹
 Expanded: 1s² 2s² 2p⁶ 3s¹
 Energy levels: 2, 8, 1
 HOAO: l=0, m=0, n=3

		Pnictogens						Chalcogens		Halogens							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 H Hydrogen 1s1	2 He Helium 1s2																
2 Li Lithium 2s1	3 Be Beryllium 2s2	s block		p block		d block		f block				5 B Boron 2s2 2p1	6 C Carbon 2s2 2p2	7 N Nitrogen 2s2 2p3	8 O Oxygen 2s2 2p4	9 F Fluorine 2s2 2p5	10 Ne Neon 2s2 2p6
3 Na Sodium 3s1	4 Mg Magnesium 3s2											13 Al Aluminum 3s2 3p1	14 Si Silicon 3s2 3p2	15 P Phosphorus 3s2 3p3	16 S Sulfur 3s2 3p4	17 Cl Chlorine 3s2 3p5	18 Ar Argon 3s2 3p6

	1s 2s 2p 17.4228	1s 2s 2p 21.5645
2	17 ² P _{3/2} ^o Cl Chlorine 35.45 [Ne]3s ² 3p ⁵ 12.9676	18 ¹ S ₀ Ar Argon 39.948 [Ne]3s ² 3p ⁶ 15.7596
4	35 ² P ^o	36 ¹ S

Cl - Chlorine

Write the electron configuration of Chlorine here:

• $1s^2 2s^2 2p^6 3s^2 3p^5$


Paste a screenshot of the correct electron configuration of Chlorine here:

<p>H Home</p> <p>Li Be Chlorine Pictures Page</p> <p>NaMg Chlorine Technical Data</p> <p>K Ca Chlorine Isotope Data</p> <p>Rb Sr</p> <p>Cs Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr Rf Db Sg Bh Hs Mt Ds Rg Cn Nh Fl Mc Lv Ts Og</p>	<p>Background Color: He</p> <p>Black White Gray B C N O F Ne</p> <p>Al Si P S Cl Ar</p> <p>Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr</p> <p>Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe</p>
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Cl

17

35.453



Chlorine

Chlorine

Atomic Weight 35.45

Density 3.214 g/l^[note]

Melting Point -101.5 °C

Boiling Point -34.04 °C

Full technical data

A pale yellow-green gas, chlorine killed soldiers in WWI. Today it mainly purifies drinking water and swimming pools. Combined with sodium, chlorine makes common table salt and is thus essential to life.

Scroll down to see examples of Chlorine



Click the appropriate boxes to add electrons.

7s	<input type="checkbox"/>	7p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5f	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6s	<input type="checkbox"/>	6p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4f	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5s	<input type="checkbox"/>	5p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3d	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
4s	<input type="checkbox"/>	4p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
3s	<input type="checkbox"/>	3p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1s	<input type="checkbox"/>										
2s	<input type="checkbox"/>	2p	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1s	<input type="checkbox"/>														
1s	<input type="checkbox"/>	1s	<input type="checkbox"/>																		

Chlorine

17

Cl

35.45

Subshells ordered by: Energy

Number

Electron configuration

$1s^2 2s^2 2p^6 3s^2 3p^5$

Configuration in order of subshell filling

Show total number of electrons

Total electrons: 17

Check

Reset

Next element

Correct electron configuration!

Atomic radius = 79 picometers

Bohr model

