

Chemistry 1 Test Review Instructions

Instructions:

1. On the back of this sheet there is a grid that is separated into these 3 topics:

Atomic Structure (APEMAN problems)	Periodic Table Trends & Lewis Dot Structures	Metals vs. Nonmetals
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2. Each column has 2-3 activities for you to complete to earn extra points on your upcoming test as well as review for it.
3. You must complete **A2, P1, and M2** in order to qualify for extra points. Each additional activity is worth 1 point. A2, P1, and M2 are qualifying activities so you can only earn up to five points on your test for each additional activity completed. **YOU WILL EARN ZERO** points if A2, P1, and M2 are not completed.
4. You will only have until the end of the period to complete the activities. They will be available on my website for reference, but no extra time will be given to complete activities at home.
5. You are encouraged to work with your table group on the first three activities.
6. Staple all finished activities to this sheet. Notecards and Lewis dot war game instructions are on the front table
7. Check the additional activities off as you complete them.


	Completed		Completed		Completed
A1		P2 See below		M1	
A3		P3			

P2. Lewis Dot War Game Score Sheet: Draw the pair of elements at "war" and circle the winning element

Opponents Played	Round 1		Round 2		Round 3		Round 4		Round 5	

8. Turn in to the box labeled Test Reviews on the front table

Chemistry Test 1 Review

Atomic Structure (APEMAN problems)	Periodic Table Trends & Lewis Dot Structures	Metals vs. Nonmetals
<p>Listen to History of the atom by professor Dave (youtube) and write a summary.</p> <p align="center">A1</p>	<p>Use your notes and readings to help you answer the questions on the *Periodic Table Trends study guide.</p> <p align="center">P1</p>	<p>Choose at least 5 metals and 5 nonmetals. Create cartoon characters out of their chemical symbols. Design a comic strip based on your characters and draw enough panels to describe an adventure, based on your knowledge of characteristics that define metals, nonmetals, and metalloids. For example, your strip might show how the elements combined to form a compound.</p> <p align="center">M1</p>
<p>*Build an Atom PHet simulation. Complete the student guide (NOTE: this is similar to elementary education HW)</p> <p align="center">A2</p>	<p>Find a partner and play the lewis dot war game Repeat with 2 other opponents</p> <p align="center">  </p> <p align="center">P2</p>	<p align="center">Complete the *metals and nonmetals quiz with a partner</p>
<p>Complete the Atomic Differences Quiz with a partner <i>Name that element!</i></p> <p align="center">A3</p>	<p>Choose a family of elements from the Periodic Table. Create a bar, circle, or line graph that compares/contrasts the number of protons, neutrons, and electrons found in each member element of the family.</p> <p align="center">P3</p>	<p align="center">M2</p>

Building an Atom PHeT Student Guide AZ

Directions:

1. Google Phet Build an Atom and click on the simulation
2. Explore the *Build an Atom* simulation with a partner (about 5 minutes).
http://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html
3. Drop down the net charge and mass number menus.
In the "Show" box, check the box next to where it says "Stable/Unstable."

Part I - Examining Subatomic Particles

4. Using *Build an Atom*, construct a stable atom of carbon with a net charge of zero (0).
5. Answer questions 1 and 2 (the bonus) on Part I
6. Using your carbon atom, add one proton.
7. Check the boxes in the "What changes?" column based on your observations.
8. Return the atom to a stable atom of carbon with a net charge of zero (0).
9. Repeat steps 5-7 with the following actions and record observations in the corresponding table:
 - Remove a neutron
 - Remove an electron
10. Add an electron

1. Which subatomic particles are in the center of the atom? _____
2. Bonus: The center of the atom is the _____.

Action	What Changes?
Add a Proton	<input type="checkbox"/> Element Name
	<input type="checkbox"/> Charge
	<input type="checkbox"/> Mass

Action	What Changes?
Remove a Neutron	<input type="checkbox"/> Element Name
	<input type="checkbox"/> Charge
	<input type="checkbox"/> Mass

Action	What Changes?
Remove an Electron	<input type="checkbox"/> Element Name
	<input type="checkbox"/> Charge
	<input type="checkbox"/> Mass

Action	What Changes?
Add an Electron	<input type="checkbox"/> Element Name
	<input type="checkbox"/> Charge
	<input type="checkbox"/> Mass

Part II - Looking at the Nucleus

- For each element in the table, use the simulator to create a stable atom of the element with a net charge of zero (0).
- Draw the nucleus (center) for each atom.
- Count and record the number of protons and neutrons in each element and record the mass number.
- Answer the questions.



Name of Element	Draw the nucleus	Number of subatomic particles in the nucleus:
Helium		Protons: ___ Neutrons: ___ Mass Number: ___
Boron		Protons: ___ Neutrons: ___ Mass Number: ___
Neon		Protons: ___ Neutrons: ___ Mass Number: ___

Questions:

- When the number of protons is changed, the _____ changes.
- When the number of neutrons is changed, the _____ changes.

Part III - Changing atom characteristics

- Use the simulator to build each atom described in the first column, then answer the questions in the rest of the row.

Subatomic Particles	Element Name	Charge and Mass of Element	Circle the Element
Protons: 6 Neutrons: 6 Electrons: 6			
Protons: 7 Neutrons: 6 Electrons: 6			

Protons: 6 Neutrons: 7 Electrons: 7		
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Questions:

- Which subatomic particle changes the identity of the element? _____
- Which subatomic particle changes the mass of the element without changing the identity of the element? _____
- Which subatomic particle changes the charge of the element without changing the mass of the element? _____
- The table below lists three characteristics of an atom of an element.

Characteristics of an Element		
Number of Protons	Number of Neutrons	Number of Valence Electrons
56	81	2

An atom of which element is described by the data table?

- Barium (Ba)
- Calcium (Ca)
- Bromine (Br)
- Xenon (Xe)

P11

Worksheet: Periodic Trends

Name _____
Period _____

- 1. Which statement best describes Group 2 elements as they are considered in order from top to bottom of the Periodic Table?
(A) The number of principal energy levels increases, and the number of valence electrons increases.
(B) The number of principal energy levels increases, and the number of valence electrons remains the same.
(C) The number of principal energy levels remains the same, and the number of valence electrons increases.
(D) The number of principal energy levels remains the same, and the number of valence electrons decreases.
- 2. What is the total number of valence electrons in an atom of boron?
(A) 1 (C) 3
(B) 7 (D) 5
- 3. What is the total number of valence electrons in an atom of xenon, Xe?
(A) 0 (C) 8
(B) 2 (D) 18
- 4. The elements calcium and strontium have similar chemical properties because they both have the same
(A) atomic number
(B) mass number
(C) number of valence electrons
(D) number of completely filled sublevels
- 5. On the Periodic Table of the Elements, all the elements within Group 16 have the same number of
(A) valence electrons (C) protons
(B) energy levels (D) neutrons
- 6. An element with a partially filled *d* sublevel in the ground state is classified as
(A) a halogen (C) an alkali metal
(B) a transition metal (D) an alkaline earth metal
- 7. Which electron configuration represents a transition element?
(A) $1s^2 2s^2 2p^2$ (C) $[Ar] 3d^2 4s^2$
(B) $[Ne] 3s^2$ (D) $[Ar] 3d^{10} 4s^2 4p^6$
- 8. Which element in Period 5 of the Periodic Table is a transition element?
(A) Sr (C) Ag
(B) Sb (D) Xe
- 9. Which of the following atoms has the largest atomic radius?
(A) Na (C) Mg
(B) K (D) Ca
- 10. Which noble gas has the highest first ionization energy?
(A) radon (C) neon
(B) krypton (D) helium

SKIP

- 11. Which sequence of elements is arranged in order of decreasing atomic radii?
(A) Al, Si, P (C) Cl, Br, I
(B) Li, Na, K (D) N, C, B
- 12. Which list of elements from Group 2 on the Periodic Table is arranged in order of increasing atomic radius?
(A) Be, Mg, Ca (C) Ba, Ra, Sr
(B) Ca, Mg, Be (D) Sr, Ra, Ba
- 13. As each successive element in Group 15 of the Periodic Table is considered in order of increasing atomic number, the atomic radius
(A) decreases (C) remains the same
(B) increases
- 14. The strength of an atom's attraction for the electrons in a chemical bond is the atom's
(A) electronegativity (C) heat of reaction
(B) ionization energy (D) heat of formation
- 15. Which properties are most common in nonmetals?
(A) low ionization energy and low electronegativity
(B) low ionization energy and high electronegativity
(C) high ionization energy and low electronegativity
(D) high ionization energy and high electronegativity
- 16. Which Group 17 element has the least attraction for electrons?
(A) F (C) Br
(B) Cl (D) I
- 17. Which element in Group 16 has the greatest tendency to gain electrons?
(A) Te (C) S
(B) Se (D) O
- 18. The Group 17 element with the highest electronegativity is
(A) fluorine (C) bromine
(B) chlorine (D) iodine
- 19. As the elements of Group 1 on the Periodic Table are considered in order of increasing atomic radius, the ionization energy of each successive element generally
(A) decreases (C) remains the same
(B) increases
- 20. The amount of energy required to remove the outermost electron from a gaseous atom in the ground state is known as
(A) first ionization energy (C) conductivity
(B) activation energy (D) electronegativity
- 21. Which element is a member of the halogen family?
(A) K (C) I
(B) B (D) S

Not on chem test!
SKIP

SKIP

SKIP

SKIP

Metals, Nonmetals, and Metalloids Quiz

MZ

Complete the following table by writing Yes or No to indicate the general properties of metals and nonmetals (12 points, 1 pt per box)

Properties	Metals	Nonmetals
Usually have luster		
Are often malleable		
May be gaseous at room temperature		
Tend to lose electrons and become cations		
Tend to gain electrons and become anions		
Usually have a low melting point		

Metals, Nonmetals, or Metalloid? (1 point each)

	Magnesium
	Silicon
	Aluminum
	Carbon
	Sulphur
	An element is a brittle solid at room temperature and slightly conductive
	An element is liquid at room temperature, shiny, and conducts electricity
	An element is gas at room temperature, as a solid its brittle.

How many valence electrons do all of the metals in Group 2 of the Periodic table have?

Which Non Metal is NOT on the right side of the Periodic Table?

What halogen sublimates from a solid to a gas quickly?