Test Prep ✓Checksheet

Unit 3: The Periodic Table
Chapter 5

Use the blank periodic table on the back to practice!!! ☞

___ Be able to state the periodic law

Be able to label all of the following on a blank periodic table:

- ___ groups 1-18, or 1A - 8A
- ___ periods 1-7
- ___ alkali metals
- ___ alkaline earth metals
- ___ halogens
- ___ noble gases
- ___ transition elements
- ___ lanthanide series
- ___ actinide series
- ___ metals
- ___ nonmetals
- ___ semimetals (metalloids)
- ___ inner transition metals
- ___ solids, liquid, and gases

Remember to study properties of each group

Be able to explain, compare and contrast:

___ atomic radius (& its periodic trend)
___ ionic radius (& its periodic trend)
___ ionization energy (& its periodic trend)
___ electronegativity (& its periodic trend)

Be able to:

___ [redacted]
___ Determine the number of valence electrons for any element
___ Identify all the elements that are found as diatomic molecules
___ [redacted]...)
___ [redacted]
___ Determine the most likely ionic charge of an element in groups 1A - 8A.

The Divided Periodic Table

H

Li	Be
Na	Mg
K	Ca
Rb	Sr
Cs	Ba
Fr	Ra

Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg
Ac	Rf	Db	Sg	Bh	Hs	Mt			

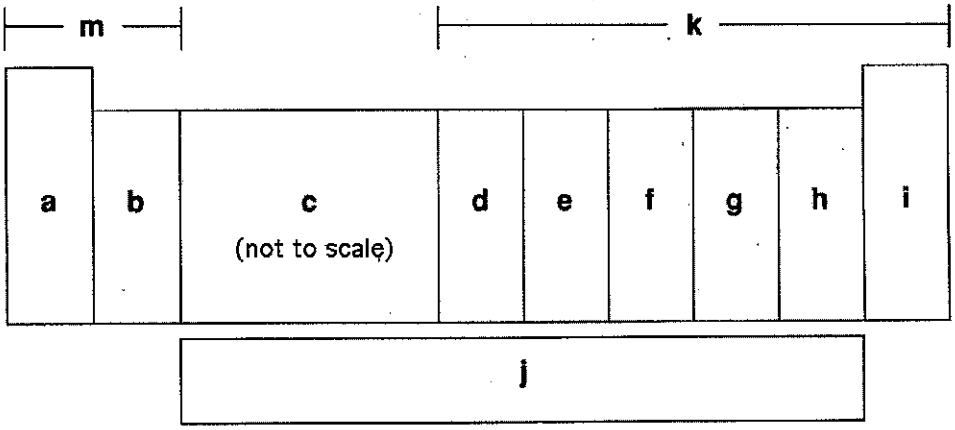
					He
B	C	N	O	F	Ne
Al	Si	P	S	Cl	Ar
Ga	Ge	As	Se	Br	Kr
In	Sn	Sb	Te	I	Xe
Tl	Pb	Bi	Po	At	Rn

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

Reading the Periodic Table

On the line at the left, write the letter of the appropriate location of each group of elements on the periodic table below. Some letters will be used more than once.

_____ 2. alkaline earth metals
_____ 3. inner transition metals
_____ 4. halogens
_____ 5. *d*-block elements
_____ 7. alkali metals
_____ 8. *f*-block elements
_____ 9. noble gases
_____ 10. *p*-block elements
_____ 12. *s*-block elements
_____ 13. transition metals
_____ 14. group of one semimetal and four metals



Use the skills you developed in Section 5–2 to answer each of the following questions.

Below is the abbreviated electron configuration for sodium. Explain each part of this configuration in the space provided.

[Ne] $3s^1$

15. _____
16. _____
17. _____
18. _____

33. Explain why noble gases are inert and do not form ions.

_____
_____

34. Define the term electronegativity. What is the periodic trend for electronegativity?

_____
_____

1. Complete the following table:

Element	Symbol	Electron Configuration	Valence Electron Configuration	Number of Valence Electrons	Group (1 - 18)	Period (1 - 7)	Block (s, p, d, f)
			$2s^2 2p^2$				
					11	5	
Tin							
	Ba						

2. Determine the group, period, and block for each of the following electron configurations:

a. $[Kr]5s^2 4d^3$ Group _____ period_____ block_____

b. $[Ne]3s^2$ Group _____ period_____ block_____

c. $[Xe]6s^2 4f^{14} 5d^{10} 6p^1$ Group _____ period_____ block_____

3. State the octet rule:

_____

_____

_____

4. List the diatomic elements: _____

5. Within each set below, circle the element that has the highest electronegativity value.

a. Cu Zn Ga b. Ca Mg Ba c. Si P As

Write the charge that each of the following atoms will acquire if they become ions.

_____ **23.** O _____ **26.** N

_____ **24.** Na _____ **27.** Ca

_____ **25.** F _____ **28.** Ar

29. Define *atomic radius.*

_____

_____

30. Why do atoms get smaller as you move across a period?

_____

_____

31. Explain the relationship between the relative size of an ion to its atom and the charge on the ion.

_____

_____

Periodic Trends

Use the periodic table and your knowledge of periodic trends to answer the following questions.

Which atom in each pair has the larger atomic radius?

_____ 1. Li or K
_____ 2. Ca or Ni
_____ 3. Ga or B
_____ 4. O or C
_____ 5. Cl or Br
_____ 6. Be or Ba
_____ 7. Si or S
_____ 8. Fe or Ru

Which ion in each pair has the smaller atomic radius?

_____ 9. K^+ or S^{2-}
_____ 10. Ba^{2+} or I^-
_____ 11. Al^{3+} or P^{3-}
_____ 12. K^+ or Cs^+
_____ 13. Fe^{2+} or Fe^{3+}
_____ 14. F^- or S^{2-}

Which atom or ion in each pair has the larger ionization energy?

_____ 15. Na or O
_____ 16. Be or Ba
_____ 17. Ar or F
_____ 18. Cu or Ra
_____ 19. I or Ne
_____ 20. K or V
_____ 21. Ca or Fr
_____ 22. W or Se

1. Chlorine, selenium, and bromine are located near each other on the periodic table. Which of these elements is (a) the smallest atom? (b) the atom with the highest ionization energy?

2. Phosphorus and nitrogen are located near each other on the periodic table. Which of these elements is (a) the largest atom? (b) the atom with the highest ionization energy?

3. Scandium, yttrium, and lanthanum are located near each other in the periodic table. Which of these elements is (a) the largest atom? (b) the atom with the smallest ionization energy?

6. Which of the following is the largest: a potassium atom, a potassium ion with a charge of 1+, or a rubidium atom?

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1. ___
2. ___
3. ___
4. ___
5. ___
6. ___
7. [redacted]
8. ___
9. ___

7. Which of the following is the smallest: a chlorine atom, a chlorine ion with a charge of 1–, or a bromine atom?

8. Which of the following is the smallest: a lithium atom, a lithium ion with a charge of 1+, or a sodium atom?