

1. Which atom has the largest atomic radius?

- A) potassium B) rubidium
C) francium D) cesium

2. As the elements in Period 3 are considered in order of increasing atomic number, there is a general *decrease* in

- A) atomic mass
B) atomic radius
C) electronegativity
D) first ionization energy

3. An atom of which element has the largest atomic radius?

- A) Fe B) Mg C) Si D) Zn

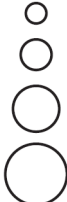



4. Which characteristics both generally *decrease* when the elements in Period 3 on the Periodic Table are considered in order from left to right?

- A) nonmetallic properties and atomic radius
B) nonmetallic properties and ionization energy
C) metallic properties and atomic radius
D) metallic properties and ionization energy

5. As atomic number increases within Group 15 on the Periodic Table, atomic radius

- A) decreases, only
B) increases, only
C) decreases, then increases
D) increases, then decreases

6. Which grouping of circles, when considered in order from the top to the bottom, best represents the relative size of the atoms of Li, Na, K, and Rb, respectively?

- A)  B)  C)  D) 

7. How do the atomic radius and metallic properties of sodium compare to the atomic radius and metallic properties of phosphorus?

- A) Sodium has a larger atomic radius and is more metallic.
B) Sodium has a larger atomic radius and is less metallic.
C) Sodium has a smaller atomic radius and is more metallic.
D) Sodium has a smaller atomic radius and is less metallic.

8. Which list of elements from Group 2 on the Periodic Table is arranged in order of increasing atomic radius?

- A) Be, Mg, Ca B) Ca, Mg, Be
C) Ba, Ra, Sr D) Sr, Ra, Ba

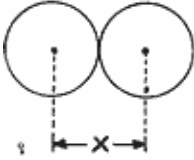
9. The data table below shows elements Xx, Yy, and Zz from the same group on the Periodic Table.

Element	Atomic Mass (atomic mass unit)	Atomic Radius (pm)
Xx	69.7	141
Yy	114.8	?
Zz	204.4	171

What is the most likely atomic radius of element Yy?

- A) 103 pm B) 127 pm C) 166 pm D) 185 pm

10. Which trends are observed when the elements in Period 3 on the Periodic Table are considered in order of increasing atomic number?
- A) The atomic radius decreases, and the first ionization energy generally increases.
B) The atomic radius decreases, and the first ionization energy generally decreases.
C) The atomic radius increases, and the first ionization energy generally increases.
D) The atomic radius increases, and the first ionization energy generally decreases.
11. As the elements in Group 17 on the Periodic Table are considered from top to bottom, what happens to the atomic radius and the metallic character of each successive element?
- A) The atomic radius and the metallic character both increase.
B) The atomic radius increases and the metallic character decreases.
C) The atomic radius decreases and the metallic character increases.
D) The atomic radius and the metallic character both decrease.
12. Which list of elements is arranged in order of increasing atomic radii?
- A) Li, Be, B, C B) Sr, Ca, Mg, Be
C) Sc, Ti, V, Cr D) F, Cl, Br, I
13. Compared to the nonmetals in Period 2, the metals in Period 2 generally have larger
- A) ionization energies
B) electronegativities
C) atomic radii
D) atomic numbers
14. Which of the following electron configurations represents the element with the smallest atomic radius?
- A) 2-4 B) 2-5 C) 2-6 D) 2-7
15. Which electron configuration represents the atom with the largest atomic radius?
- A) 1 B) 2-1 C) 2-2 D) 2-3
16. As the elements of Group 16 are considered in order from top to bottom, the covalent radius of each successive element increases. This increase is primarily due to an increase in
- A) atomic number
B) mass number
C) the number of protons occupying the nucleus
D) the number of occupied electron shells

17. What occurs as the atomic number of the elements in Period 2 increases?
- A) The nuclear charge of each successive atom decreases, and the atomic radius decreases.
 - B) The nuclear charge of each successive atom decreases, and the atomic radius increases.
 - C) The nuclear charge of each successive atom increases, and the atomic radius decreases.
 - D) The nuclear charge of each successive atom increases, and the atomic radius increases.
18. Atoms of which of the following elements have the *smallest* atomic radius?
- A) Si B) P C) S D) Cl
19. Which statement best compares the atomic radius of a potassium atom and the atomic radius of a calcium atom?
- A) The radius of the potassium atom is smaller because of its smaller nuclear charge.
 - B) The radius of the potassium atom is smaller because of its larger nuclear charge.
 - C) The radius of the potassium atom is larger because of its smaller nuclear charge.
 - D) The radius of the potassium atom is larger because of its larger nuclear charge.
20. The diagram represents two adjacent atoms of sulfur. Distance X is closest to
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- A) 63.5 pm B) 104 pm
C) 190 pm D) 208 pm