

Which of the following elements is found in group 2, period 3 of the periodic table?

- A. Boron
- B. Calcium
- C. Aluminum
- D. Magnesium

Your teacher presents you with an unlabeled sample of an element. Which of the following might you use to determine whether the sample is a metal or a nonmetal?

- ☐ A. microscope
- ☐ B. Bunsen burner
- ☒ C. conductivity test
- ☐ D. Distillation apparatus

Based on their location in the periodic table, which two elements are expected to show similar properties?

- A. carbon and silicon
- B. lithium and fluorine
- C. calcium and oxygen
- D. aluminum and sulfur

Arrange the elements in order of increasing effective nuclear charge, beginning with the element with the lowest value.

Gallium - 3 Arsenic - 4 Potassium - 1 Krypton - 5 Calcium - 2

From left to right across a period for main-group elements, the effective nuclear charge

- A. Increases
- B. Decreases
- C. Remains the same
- D. Increases and then Decreases

Na is As Na⁺

- A. The same size as
- B. Smaller than
- C. Larger than

Based on their relative positions on the periodic table, which of these atoms has the highest first ionization energy?

- A. Br
- B. Cl
- C. F
- D. I

Would you expect the shielding effect to be greater in bromine than in chlorine?

- A. No, because they are both in the same period.
- B. Yes, because bromine has a lower atomic number.
- C. Yes, because there are more filled energy levels in bromine.
- D. No, because chlorine loses an electron more easily than bromine.

Place each periodic trend description into the appropriate box, indicating whether the trend described is increasing or decreasing.

Atomic radius down a group

Ionization energy across a period

Ionic radius across a period

Electron affinity down a group

Increases	Decreases
Atomic radius down a group	Ionic radius across a period
Ionization energy across a period	Electron affinity down a group