

Periodic Trends Practice Worksheet

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

- ① Identify each element as a metal, metalloid, or nonmetal
 - Ⓐ germanium _____
 - Ⓑ zinc _____
 - Ⓒ phosphorous _____
 - Ⓓ lithium _____
- ② Which of the two species is larger in each of the following pairs?
 - Ⓐ N^{3-} or F _____
 - Ⓑ Mg^{2+} or Ca^{2+} _____
 - Ⓒ Fe^{2+} or Fe^{3+} _____
- ③ Which of the two species is smaller in each of the following pairs?
 - Ⓐ K^+ or Li^+ _____
 - Ⓑ Au^+ or Au^{3+} _____
 - Ⓒ P^{3-} or N^{3-} _____
- ④ What atom has the LARGEST atomic radius?

- ⑤ What atom has the SMALLEST atomic radius?

- ⑥ Which is larger?
 - Ⓐ Mg or Mg^{2+} _____
 - Ⓑ I or I^- _____
 - Ⓒ Cl^- or Br^- _____
 - Ⓓ F^- or Ne _____
 - Ⓔ N^{3-} or P^{3-} _____
- ⑦ Put the following in order of increasing radius: Br^- Se^{2-} Sr^{2+} Kr Rb^+
- ⑧ Circle the correct answer.
 - Ⓐ Bromine has a higher / lower ionization energy than Lead
 - Ⓑ Barium has a higher / lower ionization energy than Radon
 - Ⓒ Fluorine has a higher / lower ionization energy than Arsenic
 - Ⓓ Lithium has a higher / lower ionization energy than Cesium
- ⑨ Which of the two species is larger in each of the following pairs?
 - Ⓐ Mg or Sr
 - Ⓑ Be or N
 - Ⓒ P or Cl
 - Ⓓ Ni or Br
- ⑩ Arrange the following in order of increasing electronegativity: S , O , Ne , Al

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Answers

- ① Identify each element as a metal, metalloid, or nonmetal
- (a) germanium metalloid (b) zinc metal
(c) phosphorous nonmetal (d) lithium metal
- ② Which of the two species is larger in each of the following pairs?
- (a) N^{3-} or F N^{3-} (b) Mg^{2+} or Ca^{2+} Ca^{2+} (c) Fe^{2+} or Fe^{3+} Fe^{2+}
- ③ Which of the two species is smaller in each of the following pairs?
- (a) K^+ or Li^+ Li^+ (b) Au^+ or Au^{3+} Au^{3+} (c) P^{3-} or N^{3-} N^{3-}
- ④ What atom has the LARGEST atomic radius?
Francium
- ⑤ What atom has the SMALLEST atomic radius?
Helium
- ⑥ Which is larger?
- (a) Mg or Mg^{2+} Mg (b) I or I^- I (c) Cl^- or Br^- Br^-
(d) F^- or Ne F^- (e) N^{3-} or P^{3-} P^{3-}
- ⑦ Put the following in order of increasing radius: Br^- Se^{2-} Sr^{2+} Kr Rb⁺
 $\text{Sr}^{2+} < \text{Rb}^+ < \text{Kr} < \text{Br}^- < \text{Se}^{2-}$
- ⑧ Circle the correct answer.
- (a) Bromine has a higher / lower ionization energy than Lead
(b) Barium has a higher / lower ionization energy than Radon
(c) Fluorine has a higher / lower ionization energy than Arsenic
(d) Lithium has a higher / lower ionization energy than Cesium
- ⑨ Which of the two species is larger in each of the following pairs?
- (a) Mg or Sr (b) Be or N (c) P or Cl (d) Ni or Br
- ⑩ Arrange the following in order of increasing electronegativity: S, O, Ne, Al
 $\text{Ne} < \text{Al} < \text{S} < \text{O}$