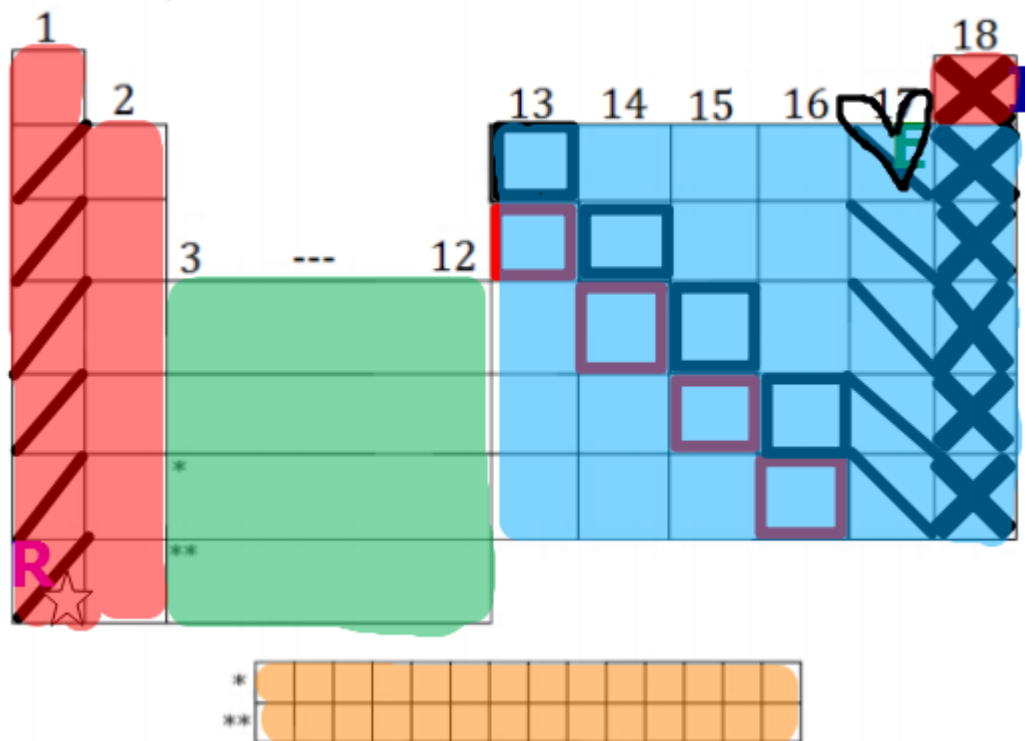


UNIT 5 REVIEW/SUMMARY WORKSHEET



UNIT 5 REVIEW WORKSHEET

Matching

Alkali metals

Alkaline earth metals

Noble gases

Transition metals

Halogens

1. The alkali metals have a single electron in the highest energy level.
2. The alkaline earth metals achieve the electron configurations of noble gases by losing two electrons.
3. The halogens achieve the electron configuration of noble gases by gaining one electron.
4. The noble gases have full s and p orbitals in the highest occupied energy levels.
5. The noble gases are stable and unreactive.
6. The halogens are highly reactive nonmetals and readily form compounds with metals.
7. The alkaline earth metals are metals that are more reactive than the transition elements but less reactive than the alkali metals.

Atomic radius
Electronegativity
Metals
Nonmetals

Decrease
Ionization energy
Noble gas configuration
Metalloid

Noble gases
Increase
Shielding effect

8. **ionization energy** is the energy required to remove an electron from an atom.
9. The attraction of an atom for an additional electron is called **electronegativity**.
10. When they have a **noble gas configuration**, ions have a stable, filled outer electron level.
11. Along with the increased distance of the outer electrons from the nucleus, the **shielding effect** of the inner electrons causes ionization energy to decrease going down a column of the Periodic Table.
12. A low ionization energy is characteristic of a(n) **metal**.
13. Ionization energies tend to **increase** across periods of the periodic table.
14. An element with an extremely high ionization energy is classified as a(n) **noble gas**.
15. The distance from the nucleus to the highest occupied energy level is known as **atomic radius**.
16. The **noble gases** do not have measured electronegativities since they do not commonly form compounds.

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Predict the oxidation number based on the electron configuration shown.

17. $1s^2 2s^2 2p^6 3s^2$ **+2 (lose 2 e-)** 18. $1s^2 2s^2 2p^6 3s^1$ **+1 (lose 1 e-)**
19. $1s^2 2s^2 2p^6$ **0 (stay the same)** 20. $1s^2 2s^2 2p^5$ **-1 (gain 1 e-)**
21. $1s^2 2s^2 2p^1$ **+3 (lose 3e-)**

=====
Choose the location of the element with the higher ionization energy.

22. **Period 2, Group 14** or Period 3, Group 13
23. **Period 4, Group 2** or Period 5, Group 2
24. **Period 1, Group 18** or Period 2, Group 1
25. Period 3, Group 17 or **Period 3, Group 18**
26. Period 3, Group 17 or **Period 2, Group 17**
27. **Period 3, Group 17** or Period 3, Group 16

Arrange the element locations in order of increasing electronegativity.

28. (A) Period 4, Group 13 **C < A < B** (B) Period 3, Group 13

29. (A) Period 4, Group 2 **A < C < B** (B) Period 4, Group 16

30. (A) Period 2, Group 16 **C < A < B** (B) Period 2, Group 17

31. (A) Period 3, Group 15 **C < A < B** (B) Period 2, Group 16

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Choose the location of the element with the larger atomic radius.

32. Period 2, Group 1 or Period 4, Group 1

33. Period 4, Group 2 or Period 4, Group 16

34. Period 4, Group 13 or Period 2, Group 13

35. Period 2, Group 16 or Period 2, Group 14

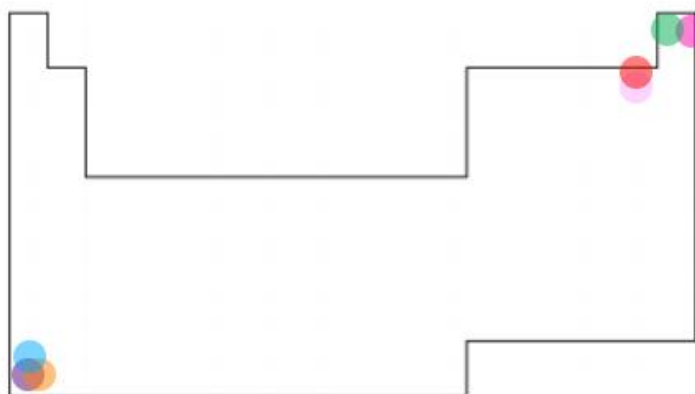
36. Period 3, Group 17 or Period 4, Group 17

37. Period 2, Group 2 or Period 6, Group 2

38. Period 3, Group 14 or Period 3, Group 16

Multiple Choice

39. In any ___, the number of electrons between the nucleus and the outer energy level is the same.
(A) period (B) group (C) both (D) neither
40. In a ___, electron affinity values decreases as atomic number increases.
(A) period (B) group (C) both (D) neither
41. The halogens are considered a ___.
(A) period (B) group (C) both (D) neither



On the Periodic Table, show the location of the element with the...

42. lowest ionization energy
43. most nonmetallic properties
44. smallest atomic radius
45. highest electronegativity
46. largest atomic radius
47. highest ionization energy
48. most metallic properties

Answer the following questions.

49. Explain the relationship between the relative size of an ion to its atom and the charge on the ion.
positive ion = atom has lost e-, ion is smaller
50. Explain why noble gases are inert and do not form ions.
noble gases have full "s" and "p" sublevels in HOEL
51. Why do elements in the same family generally have similar properties?
same outer electron configuration
52. If element X is a very reactive nonmetal, then the element with atomic number X + 1 should have what properties?
unreactive element/noble gas