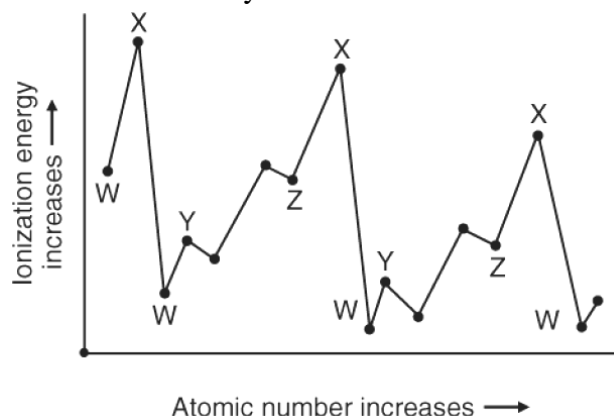


Recognizing Periodic Trends

This is a graph of the ionization energies for the first 20 elements by atomic number.



IONIZATION ENERGIES

Use the information on this chart to determine which families are W, X, and Y:

| | 1 | 2 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|----------|--------------------------|----------|----------|----------|----------|-----------|-----------|
| 1 | H 131 | Ionization Energy | | | | | | He 237 |
| 2 | Li 52 | Be 90 | B 80 | C 109 | N 140 | O 131 | F 168 | Ne 208 |
| 3 | Na 49 | Mg 74 | Al 58 | Si 79 | P 106 | S 100 | Cl 126 | Ar 152 |
| 4 | K 42 | Ca 59 | | | | | | |

1. W is the _____ family.
2. X is the _____ family.
3. Y is the _____ family.

SIZES OF ATOMS & IONS

For each pair, circle the LARGER one (size, not mass):

4. N F
5. Ne Ar
6. Mg Mg²⁺
7. Br Br⁻
8. K Ca
9. Si O
10. O O²⁻
11. Al Al³⁺
12. S Ar
13. Na F

In each group of atoms, circle the atom with the...

14. largest
atomic radius

| | |
|----|----|
| Li | Be |
| Na | Mg |

15. largest
ionization
energy

| | |
|----|----|
| C | N |
| Al | Si |

16. smallest
atomic radius

| | |
|----|----|
| S | Cl |
| Se | Br |

17. smallest
ionization
energy

| | |
|----|----|
| Cl | Ar |
| Br | Kr |

18. Iodine, I, would have properties most like:

N, nitrogen Cl, chlorine Te, tellurium Xe, xenon

19. Who is the most reactive alkali metal (group 1)?

20. Which element is the most electronegative and found in the halogen family?