

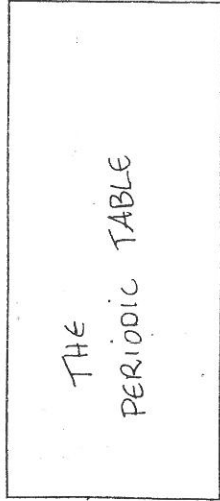
8 possible

Name Answer key (STURMAN)

QUIZ: PERIODIC TABLE TRENDS

- 18 possible
- $\geq 16 \frac{1}{4} A$
- $14 \frac{1}{2} - 16 B$
- $12 \frac{3}{4} - 14 \frac{1}{4} C$
- $10 \frac{3}{4} - 12 \frac{1}{2} D$
- $\leq 10 \frac{1}{2} F$

Refer to the periodic table below to answer the following questions.



1. What is the relationship between the number of families in each block and the number of electrons in the valence orbitals?

+1 The # of families in each block = # of e⁻ in valence orbitals.

6.c. +2 How many families in the f-block? 14

Read
Cates
Tenny's
Catie P.
Lee P.
Lambert

3. What happens to atom size as you go across a period? Justify the pattern.

+2 Atom size decreases as you go across a period

Since the principal quantum # remains the same, ∴ the energy remains the same, yet the # of p + e⁻ is increasing creating a stronger attractive force ∴ reducing the size since e⁻s are brought in closer.

+2 4. What happens to atom size as you go down a column? Justify the pattern.
more e⁻ to fill shells.

Atom size increases as you go down a column

∴ they travel further away from the nucleus creating a larger atom.

Cates
Tenny's
Catie P.
Lee P.

(5)

(9)

Read
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Lee P.

5. Indicate the common ion for the following families. Justify each answer.

+2 a. alkali metals +1 since it's easier to lose one e⁻, than to gain 7 to become stable.

+2 b. boron group +3 since it's easier to lose 3 e⁻, than to gain 5 to become stable.

+2 c. nitrogen group -3 since it's easier to gain 3 e⁻ than to lose 5 to become stable.

+2 d. halogens -1 since it's easier to gain 1 e⁻ than to lose 7 to become stable.

6. Why does the ion size increase down a group?

+2 Ion size increases down a group since the e⁻ have more energy (higher quantum #) + spread out more creating a larger ion.

+2 7. What accounts for the ion size decreasing across a period to 3A then getting large again in 5A and decreasing to 7A? From 1A through 3A the atoms are losing e⁻, which ↓ repulsive force which makes them smaller.
more space → 1A lose 1, 2A lose 2, 3A lose 3, in 5A-8A gain e⁻ so larger than smaller.
8. Write in order from largest to smallest: Potassium, Potassium ion, Rubidium 5A gain 3, 6A gain 2, 7A gain 1
less space +1

→ Rubidium, Potassium, Potassium ion.

E.C. Describe the significance of Coulomb's law in determining periodic trend.

+2 $F_e = k \frac{q_1 q_2}{d^2}$ This law shows that as opposite charges increases, the attractive force increases ∴ making a smaller atom.
It also shows that as d ↓, force increases ∴ making a smaller atom.

(5)

(9)