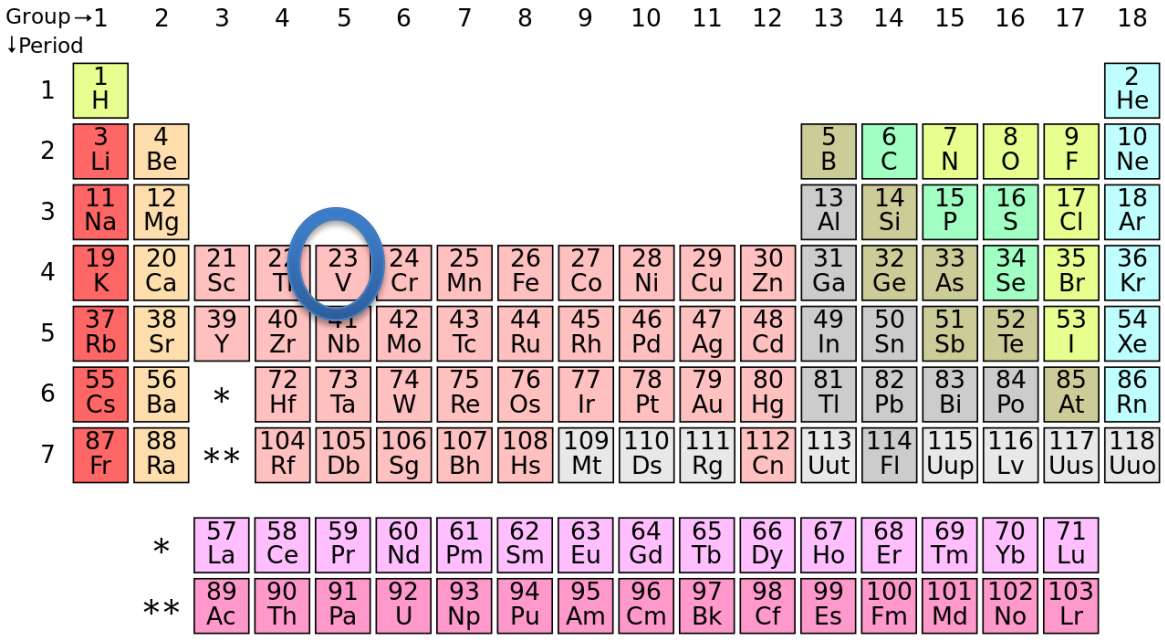
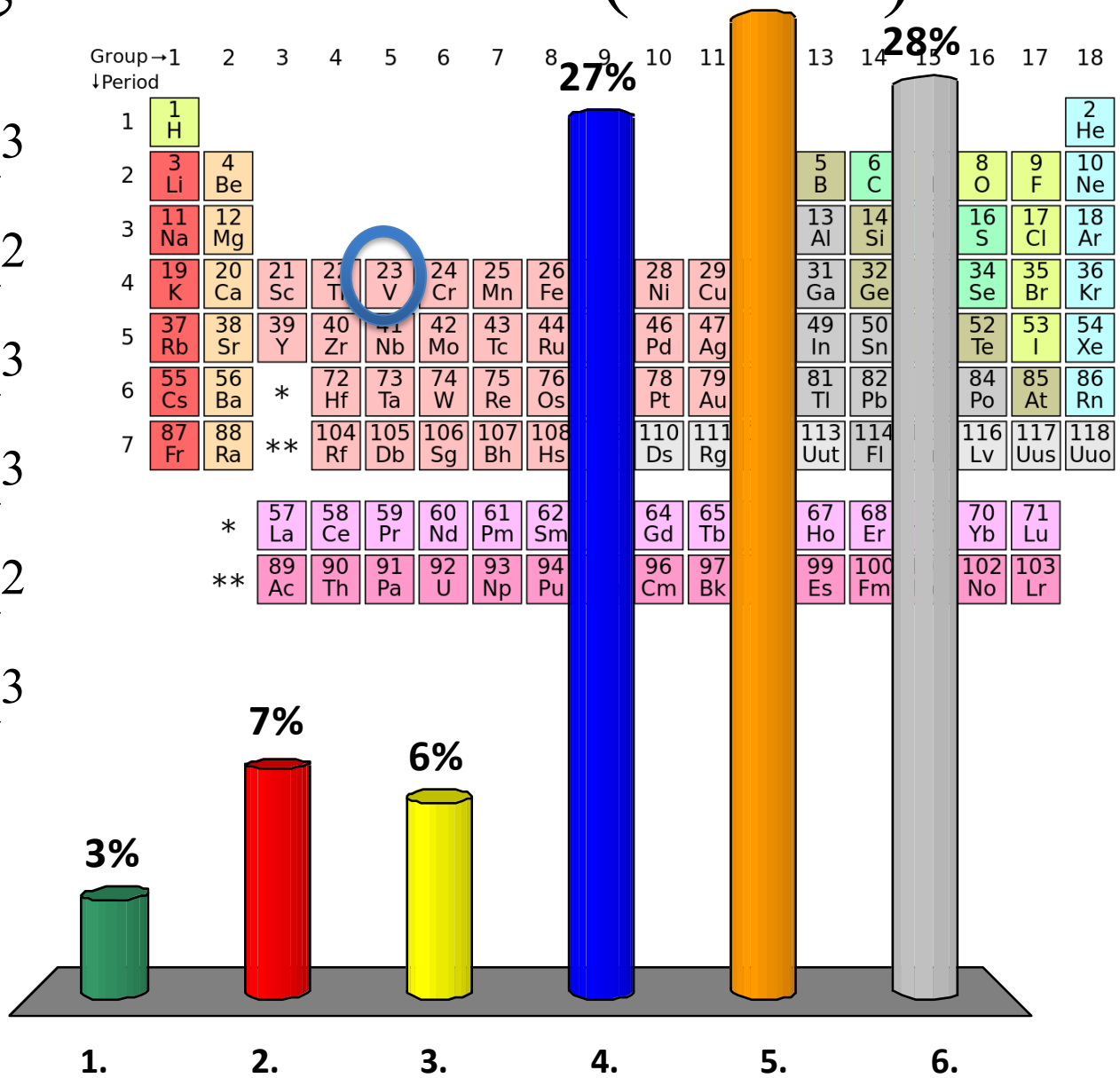
Select the correct electron configuration for V^{+1} (Z = 23).

1. $[Ar]4s^2 4d^3$
2. $[Ar]4s^2 4d^2$
3. $[Ar]4s^1 4d^3$
4. $[Ar]4s^2 3d^3$
5. $[Ar]4s^2 3d^2$
6. $[Ar]4s^1 3d^3$



Select the correct electron configuration for V^{+1} (Z = 23).

1. $[Ar]4s^24d^3$
2. $[Ar]4s^24d^2$
3. $[Ar]4s^14d^3$
4. $[Ar]4s^23d^3$
5. $[Ar]4s^23d^2$
6. $[Ar]4s^13d^3$



Which electron ejection requires the **least** amount of energy?

1. $Si\ ([Ne]3s^2 3p^2) \rightarrow Si^+\ ([Ne]3s^1 3p^2) + e^-$
2. $Si\ ([Ne]3s^2 3p^2) \rightarrow Si^+\ ([Ne]3s^2 3p^1) + e^-$
3. $Si^+\ ([Ne]3s^2 3p^1) \rightarrow Si^{+2}\ ([Ne]3s^2) + e^-$

Which electron ejection requires the **least** amount of energy?

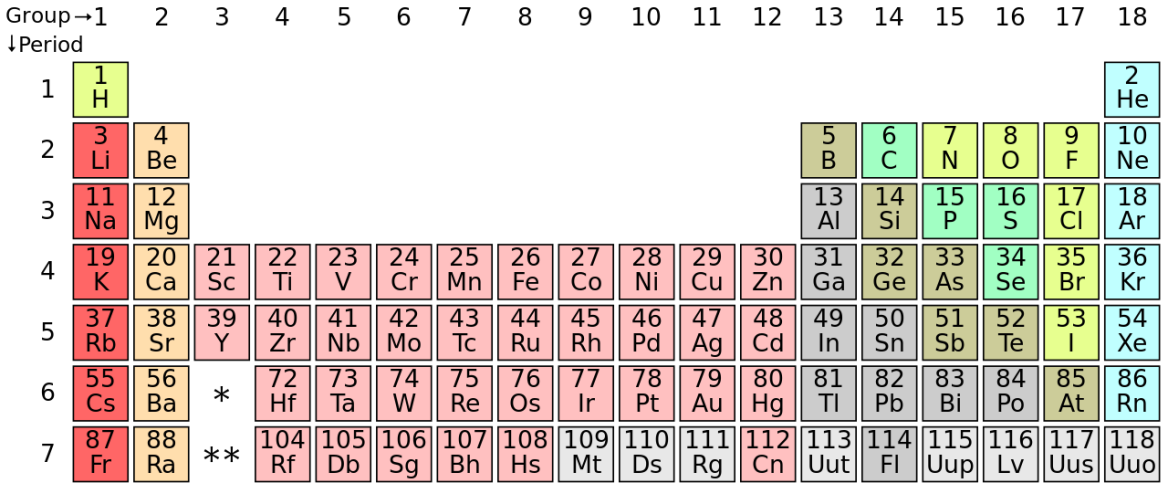
11% 1. $Si\ ([Ne]3s^2 3p^2) \rightarrow Si^+\ ([Ne]3s^1 3p^2) + e^-$

68%  2. $Si\ ([Ne]3s^2 3p^2) \rightarrow Si^+\ ([Ne]3s^2 3p^1) + e^-$

21% 3. $Si^+\ ([Ne]3s^2 3p^1) \rightarrow Si^{+2}\ ([Ne]3s^2) + e^-$

Which of the following statements explain this trend for IE: B's 4th IE > Be's 3rd > Li's 2nd?

1. The electron configurations for Li^+ is [He], which is inert.
2. The Z_{eff} for B > Be > Li.
3. The binding energy of the 4th electron in B is a negative value.

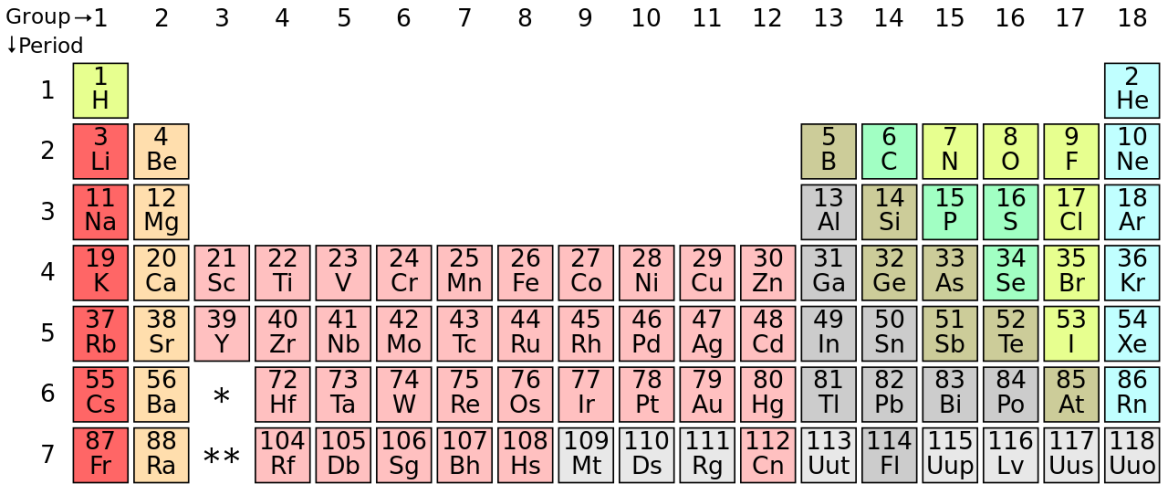


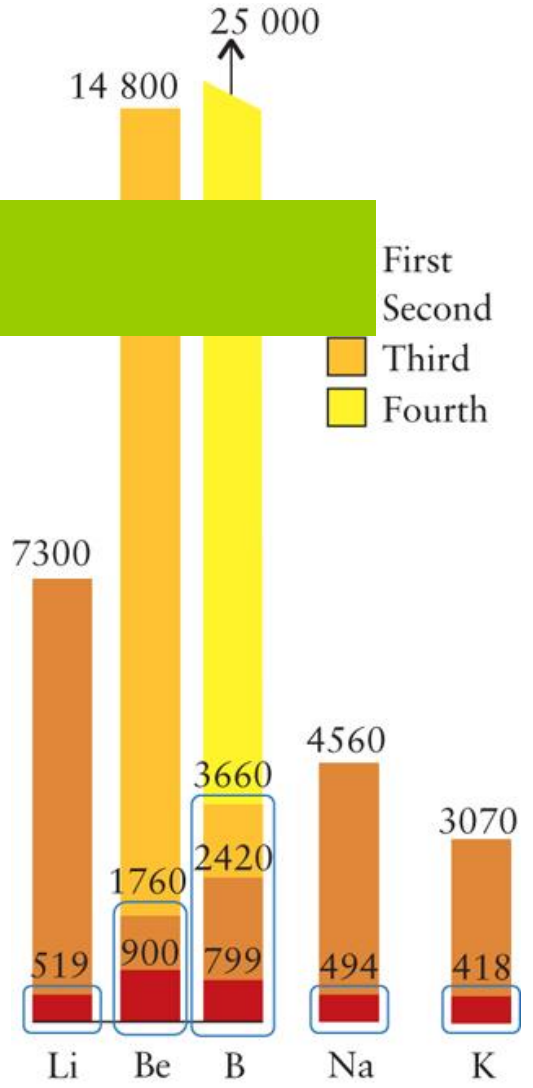
Which of the following statements explain this trend for IE: B's 4th IE > Be's 3rd > Li's 2nd?

8% 1. The electron configurations for Li^+ is [He], which is inert.

91% 2. The Z_{eff} for B > Be > Li.

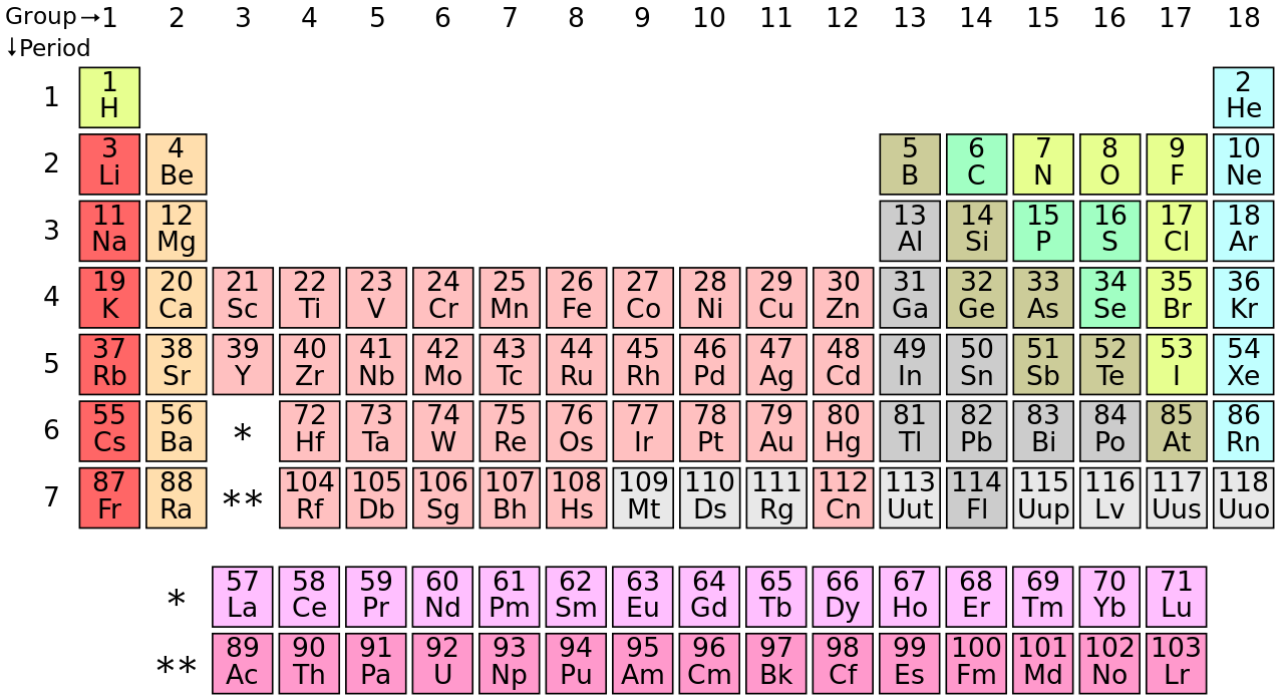
1% 3. The binding energy of the 4th electron in B is a negative value.





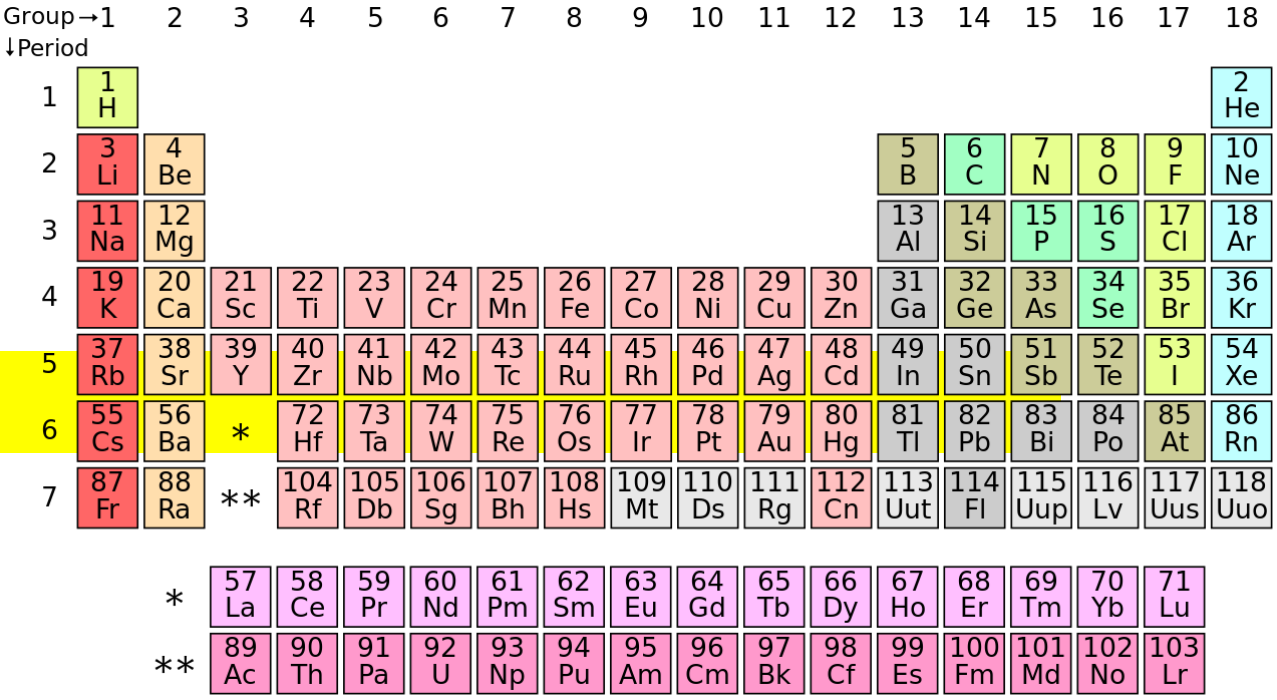
How many distinct kinetic energies would be displayed in an X-ray PES emission spectrum of arsenic (Z = 33)?

1. 5
2. 6
3. 7
4. 8
5. 9
6. 10
7. 15
8. 33
9. 66



How many distinct kinetic energies would be displayed in an X-ray PES emission spectrum of arsenic (Z = 33)?

6%	1. 5
6%	2. 6
6%	3. 7
63%	4. 8
8%	5. 9
2%	6. 10
2%	7. 15
6%	8. 33
1%	9. 66



Noble gases have…

1. high (positive) electron affinities.
2. low (positive) electron affinities.
3. negative electron affinities.

Noble gases have…

1. high (positive) electron affinities.
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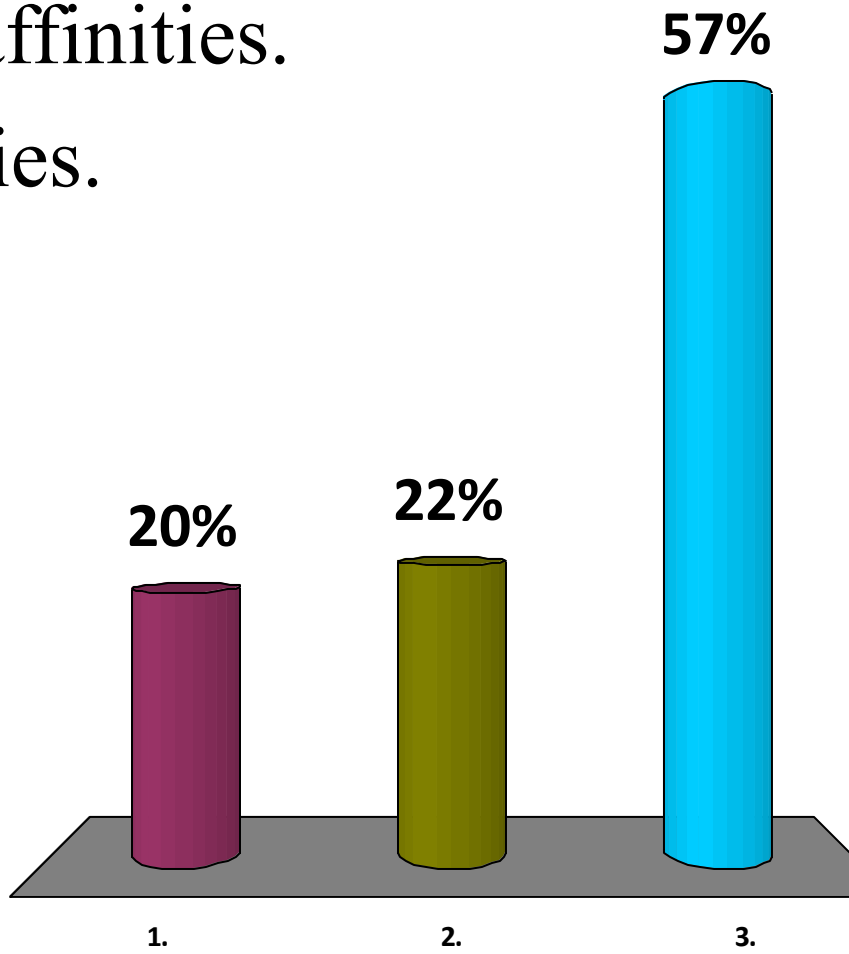
3. negative electron affinities.



5.111 Principles of Chemical Science
Fall 2014