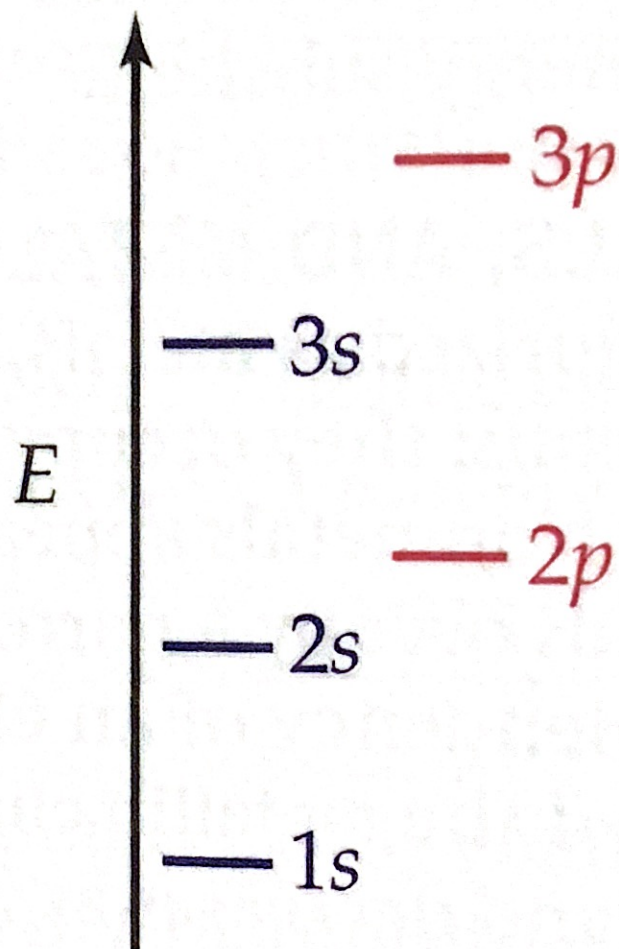


7.6 Shown below is a qualitative diagram of the atomic orbital energies for an Na atom. The number of orbitals in each subshell is not shown.



7.43 Based on their positions in the periodic table, predict which atom of the following pairs will have the smaller first ionization energy: **(a)** Cl, Ar; **(b)** Be, Ca; **(c)** K, Co; **(d)** S, Ge; **(e)** Sn, Te.

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- 7.45** Write the electron configurations for the following ions, and determine which have noble-gas configurations: **(a)** Co^{2+} , **(b)** Sn^{2+} , **(c)** Zr^{4+} , **(d)** Ag^+ , **(e)** S^{2-} .
- 7.46** Write the electron configurations for the following ions, and determine which have noble-gas configurations: **(a)** Ru^{3+} , **(b)** As^{3-} , **(c)** Y^{3+} , **(d)** Pd^{2+} , **(e)** Pb^{2+} , **(f)** Au^{3+} .
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- 7.47** Give three examples of ions that have an electron configuration of nd^8 ($n = 3, 4, 5, \dots$).
- 7.48** Give three examples of ions that have an electron configuration of nd^6 ($n = 3, 4, 5, \dots$).
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