

# Energy Levels in Atoms

## Review of Atomic Emission Spectra

### Learning Target

Describe what Bohr proposed in his model of the atom.

Explain what causes atomic emission spectra.

1) What are the three "rules" that electrons follow as they move energy levels in an atom?

1) An electron can move from one energy level to another.

2) The electrons in an atom cannot exist between energy levels.

3) To move from one energy level to another, an electron must gain or lose energy.

2) Explain how the energy levels in an atom are similar to the rungs of a ladder.

Rungs on a ladder correspond to electron energy levels; however, in an ordinary ladder, the rungs are evenly spaced... the energy levels in an atom are unequally spaced.



3) Is the amount of energy an electron gains or loses in an atom always the same? Explain your answer.

No! The higher the energy level occupied by an electron, the less energy it takes the electron to move from that energy level to next higher energy level.

4) What is the quantum mechanical model?

Determines the allowed energies an electron can have and how likely it is to find the electron in various locations around the nucleus of an atom.

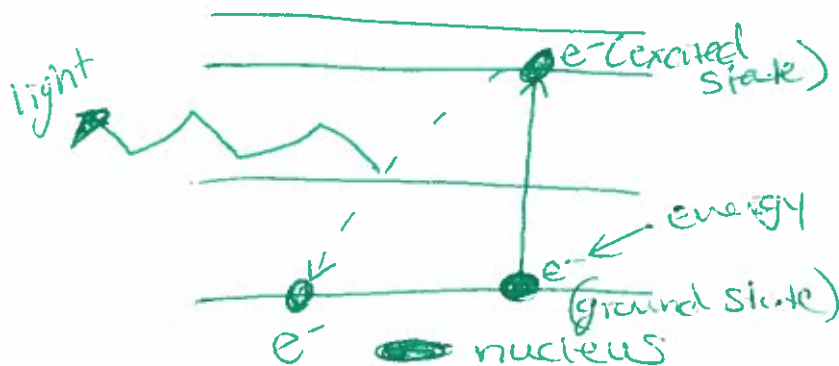
5) How is light related to atoms?

When atoms absorb energy, their electrons move to higher energy levels. These electrons lose energy by emitting light when they return to lower energy levels.

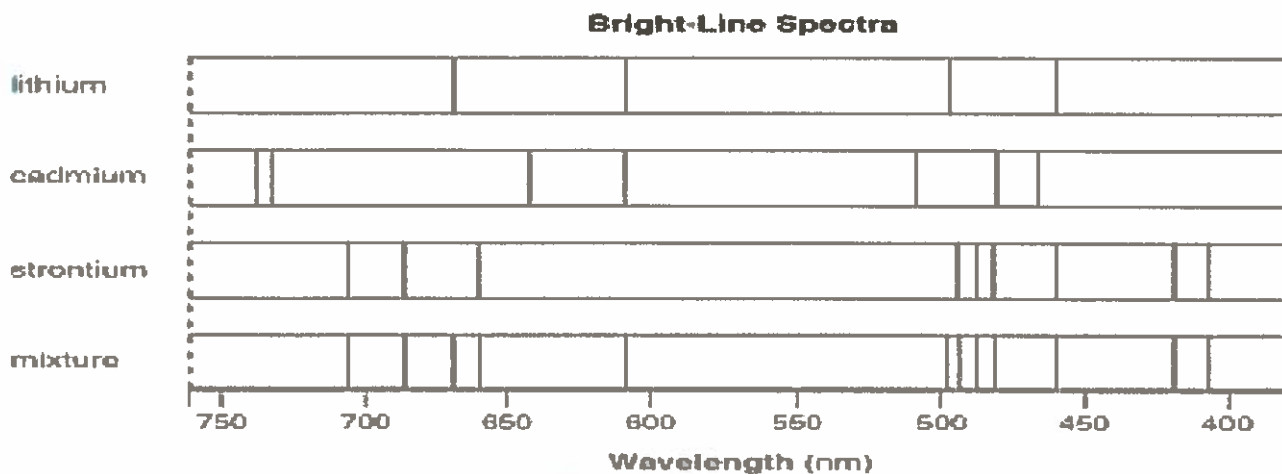
6) What is the atomic emission spectrum?

The unique set of spectral lines of an element that result from excited electrons "falling" down back to ground state.

7) Explain the story of an electron as it moves from ground state to excited state and back to the ground state (a drawing may be useful).



8) Use the atomic emission spectra below to determine what elements are found in the mixture.



Strontium } in mixture  
Lithium }