

## Creating a Spectrum

You have an atom with the following energy levels. You know that an electron can transition between energy levels and—when it falls to a lower energy level—the lost energy is transmitted as a photon.

1. Choose a possible transition for the electron to “fall” through and calculate the corresponding energy and wavelength of the photon that is emitted.
2. Repeat step 1 until you find a wavelength of visible light. Determine all of the visible light photons that could be emitted. (There should be four possibilities.)
3. Create a spectrum showing the visible light photons that get emitted as a result of the transitions. You may use colored pencils to represent the colors of the photons.

Energy Level	Energy
1	0 eV
2	10.2 eV
3	12.1 eV
4	13.1 eV
5	13.22 eV



Show your work:

### Spectrum

Make an emission line spectrum below to show spectral lines that correspond to the wavelength of visible light produced by the atom.

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Wavelength

**Table of Electromagnetic Radiation Wavelengths**

<b>Type</b>		<b>Wavelength</b>	
Radio Waves		> 0.3 m	
Microwaves		0.3 m	1 mm
Infrared		1 mm	789 nm
Visible Light	Red	789 nm	625 nm
	Orange	625 nm	600 nm
	Yellow	600 nm	577 nm
	Blue	577 nm	491 nm
	Violet	455 nm	390 nm
Ultraviolet		390 nm	8.82 nm
X-Rays		8.82 nm	6 pm
Gamma Rays		< 6 pm	