Instructor's guide This activity follows the lecture Quantum waves and spectra

Here is an expression for the energy levels of an electron in a particular situation (an electron bound to a single proton):

$$E_n = \frac{-13.6 \text{ eV}}{n^2} \qquad n = 1, 2, 3, \cdots \tag{1}$$

1. Sketch the energy level diagram
2. Find at least one allowed transition which produces a photon with a visible color

Note:

$$\lambda = \frac{2\pi\hbar c}{E_{\text{photon}}} \tag{2}$$

$$= \frac{1240 \text{ eV} \cdot \text{nm}}{E_{\text{photon}}} \tag{3}$$

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Figure 1: Visible light spectrum