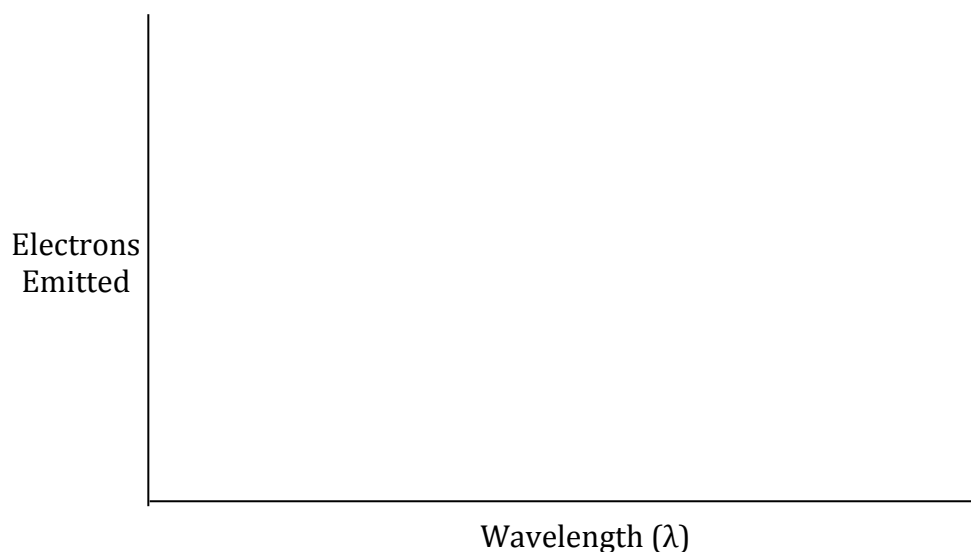


Download the applet on the photoelectric effect from
http://phet.colorado.edu/simulations/sims.php?sim=Photoelectric_Effect

1. Draw and label a schematic of the set-up. Explain what each part is for (ignore the voltmeter, and everything on the right hand side where there are various settings - we will come back to that).
2. Set the wavelength to 400 nm and turn up the intensity to 100% - what do you observe? What are you changing when you increase the intensity (the energy of an individual photon or the number of photons)?
3. Now keep the intensity at 100% and change the wavelength of the light from 400 to 700 nm. What do you observe?
What are you changing when you change the wavelength (the energy of an individual photon or the number of photons)?
4. Choose a wavelength of light where electrons are emitted and change the intensity – what happens? Explain in terms of photons why this happens.

5. Choose an intensity and wavelength where electrons are emitted, and increase the wavelength. What happens? Explain in terms of photons why this happens.
6. Draw a graph that represents the number of electrons emitted as a function of wavelength of light illuminating the target at 100% intensity (change the wavelength with the slider from 400 to 700 nm).



7. Explain why the photoelectric effect provides evidence for the quantized nature of light.