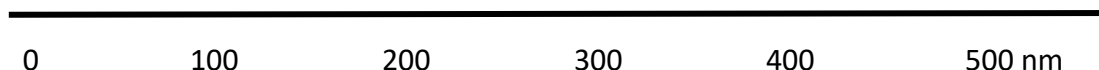# Worksheet 2.1
Light as a Wave

1. Draw a picture of a wave with a wavelength of 200nm on the measure below. Be sure to take care with your drawing! *Indicate on your drawing both the <u>wavelength</u> and the <u>amplitude</u>.*

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0          100         200         300         400         500 nm
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2. Now on the same picture of the wave in Question 1, use a dotted line to draw a wave with the same velocity but half the frequency. Explain how halving the frequency would affect the wavelength. (Hint: $c = \lambda \nu$, think about what region of the EM spectrum Q1 and Q2 would lie in)

3. What is the wavelength of light with a frequency of 7.26×10^{14} Hz? What region of the EM spectrum would this lie in?
    (Hint: $c = \lambda \nu$, where $c = 3 \times 10^8$ m/s, 1Hz = 1/s)
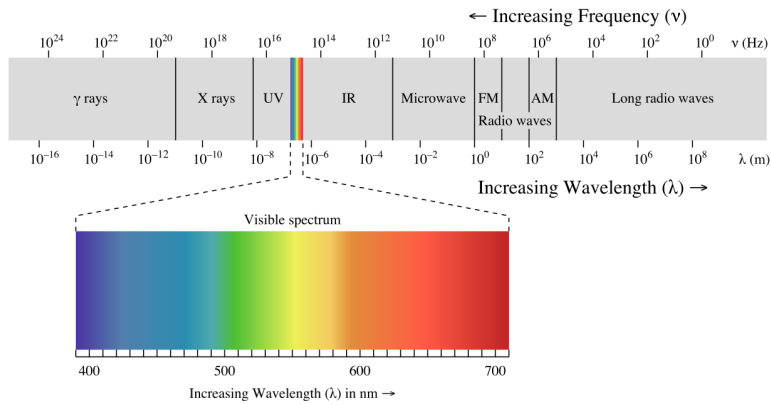
4. Now draw two waves – and predict what would happen if they arrive at the same spot at the same time – in phase.

   Predict what would happen if they arrive out of phase.

5. If the intensity of a beam of light is related to the number of photons passing per second, how would you explain intensity using the model of light as a wave? What would change, what would stay the same?