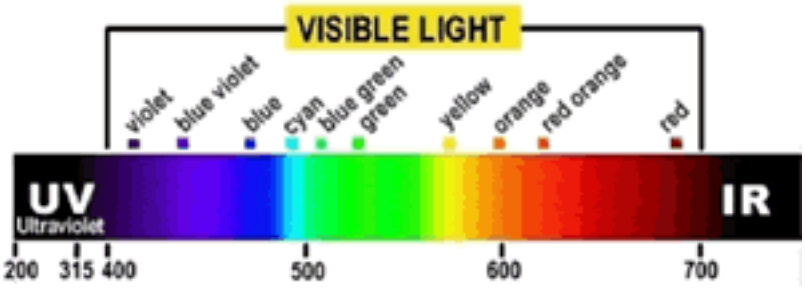


Name:
Period:

Wavelength and Energy

The wavelength, energy, and frequency of a wave are related through the following equations:

$$E = h \cdot v \qquad\qquad v \cdot \lambda = c$$

In these equations, E is energy, v is frequency (in 1/sec), λ is wavelength (in nanometers), h is Planck's constant (6.63×10^{-34} J · s), and c is the speed of electromagnetic radiation (3.00×10^{8} m/s).

***PART I**: Use the above information to fill in the chart below. Show your work for each step in the space provided below the chart.*

	Energy (J)	Frequency (1/s)	Wavelength (nm)	Color
1.			410	
2.	3.28×10^{-19}			
3.		5.45×10^{14}		
4.	2.74×10^{-19}			
5.			670	
6.		6.32×10^{14}		

Show work:

1.

2.

3.

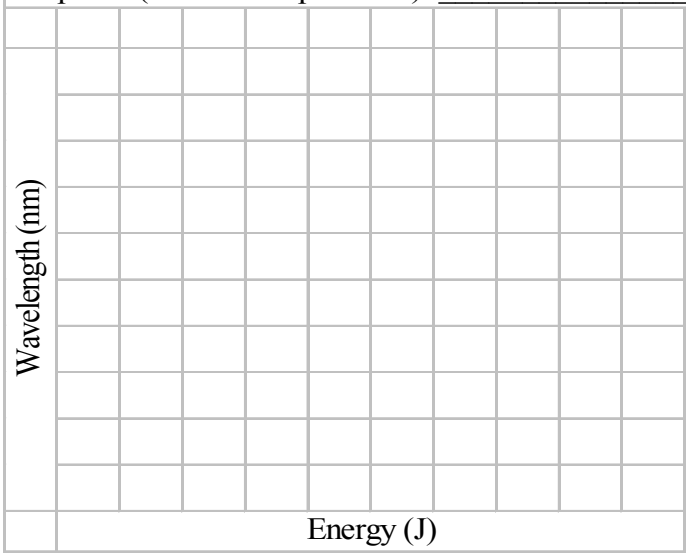
4.

5.

6.

***PART II**: Using the chart you just filled in on the other side of this page, create the following graphs:*

Graph 1: (insert descriptive title) _____



Using the graph to the left, what can you generally say about the relationship of wavelength to the energy of light?

_____

_____

Write in where the different colors of light are on the graph.

What can you say about the energy of purple light compared to the energy of red light?

_____

_____

_____

Using the graph at the right, what can you generally say about the relationship of frequency to the energy of light? _____

_____

_____

Does this make sense? Use an example from a demonstration in class to explain. _____

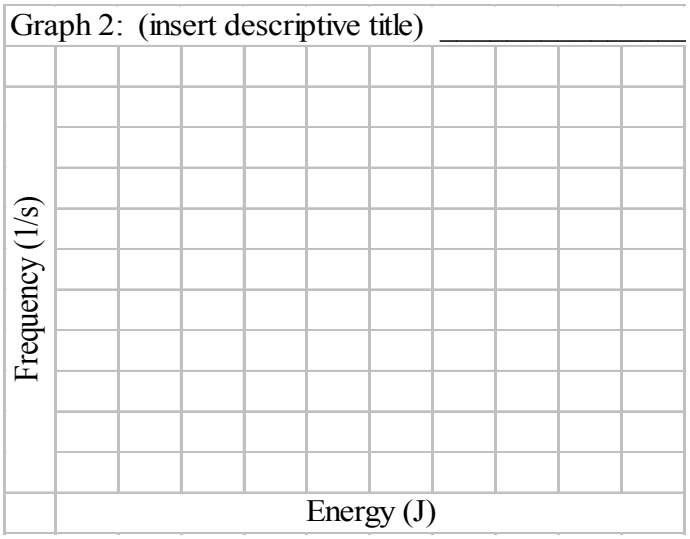
_____

_____

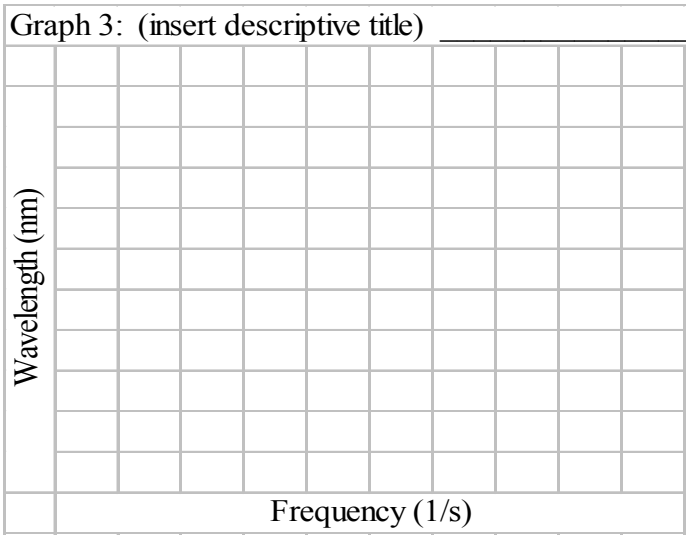
_____

_____

Graph 2: (insert descriptive title) _____



Graph 3: (insert descriptive title) _____



Using the graph at the left, what can you say about the relationship between the wavelength and the frequency of light?

_____

_____

In the space below, draw a wave of purple light. Show the wavelength, labeling it with the correct wavelength for purple light.