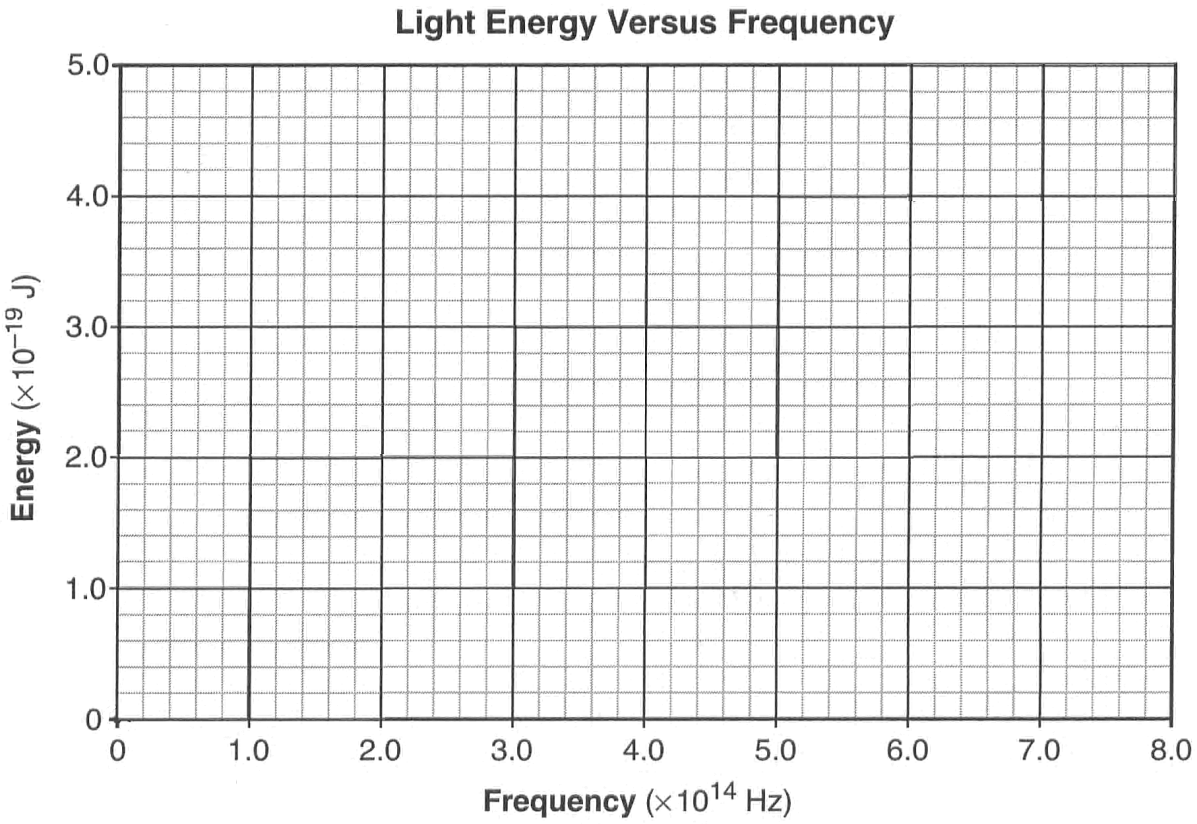
Name: **Graphing Worksheet**

Base your answers to questions **1** and **2** on the following information.

In a laboratory, a glass tube is filled with hydrogen gas at a very low pressure. When a scientist applies a high voltage between metal electrodes in the tube, light is emitted. The scientist analyzes the light with a spectroscope and observes four distinct spectral lines. The table below gives the color, frequency, and energy for each of the four spectral lines. The unit for frequency is hertz, Hz.



Visible Spectrum of Hydrogen

Color	Frequency ($\times 10^{14}$ Hz)	Energy ($\times 10^{-19}$ J)
red	4.6	3.0
blue green	6.2	4.1
blue	6.9	4.6
violet	7.3	4.8

1. On the grid, plot the data from the data table for frequency and energy. Circle and connect the points, including the point (0,0) that has already been plotted and circled for you.

2. Based on your graph, what is the relationship between frequency and energy?

Base your answers to questions **3** through **5** on the information below.

Have you ever seen an insect called a water strider “skating” across the surface of a calm pond? Have you ever “floated” a sewing needle on the water in a glass? If you have, then you’ve observed one of water’s many amazing properties.

Water’s surface tension keeps the water strider and the sewing needle from sinking into the water. Simply stated, the surface tension is due to the forces that hold the water molecules together. Without these intermolecular forces, the water strider and the sewing needle would sink below the surface of the water.

The surface tension of water at various temperatures is given in the data table below.

Surface Tension at Different Water Temperatures

Water Temperature (°C)	**Surface Tension** (mN/m)
10.	74.2
25	72.0
50.	67.9
75	63.6
100.	58.9

3. Plot the data from the data table. Circle and connect the five points.

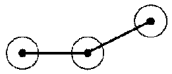
4. According to your graph, what is the surface tension of water at 60.°C?

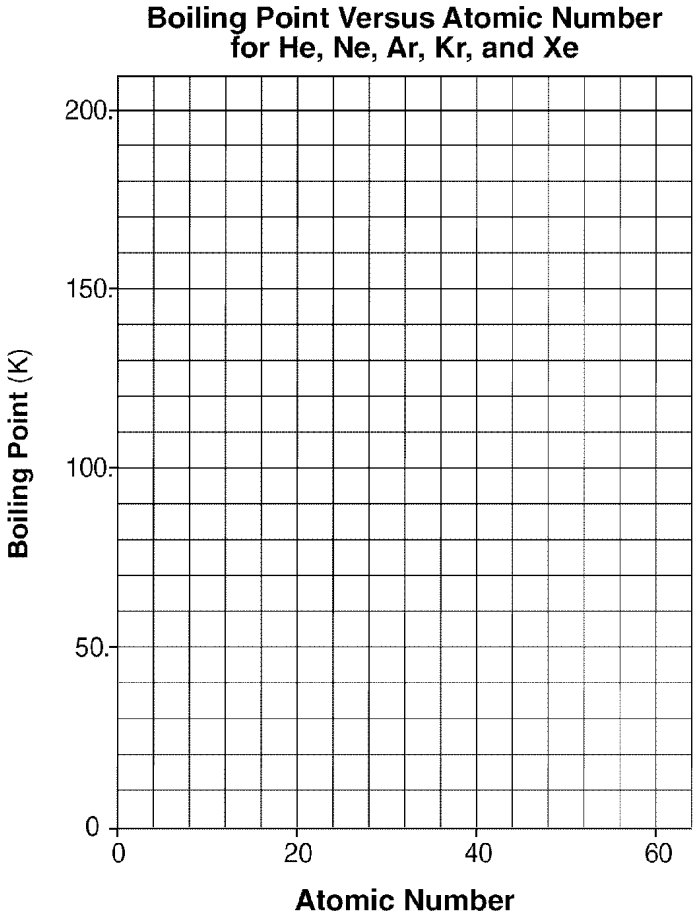
5. State the relationship between the surface tension and the temperature of water.

6. Base your answer to the following question on the data in Reference Table *S*.

Data Table

Symbol	Atomic Number	Boiling Point (K)
He	2	
Ne	10	
Ar	18	
Kr	36	
Xe	54	

Example: 



a On the data table above, record the boiling points for He, Ne, Ar, Kr, and Xe.

b On the grid above, plot the boiling point versus the atomic number for He, Ne, Ar, Kr, and Xe. Circle and connect the points.

c Based on your graph, describe the trend in the boiling points of these elements as the atomic number increases.