Electromagnetic Spectrum Quiz Lv 5 Name ___________________________

The infrared portion of the electromagnetic spectrum is typically broken into three categories: near-infrared, mid-infrared, long-wavelength infrared, and far-infrared, with near-infrared being closest to visible light. [very creative, I know!]

Type of Wave	**Energy Range**
Far-infrared	1.2 – 155 mili electron volts
Mid-infrared	155 – 886 milli electron volts
Near-infrared	886 – 1653 milli electron volts

On a separate page, create a scale that represents this range.
The scale should contain three parallel axes, and on each axis the range of the far infrared, mid-infrared, and near-infrared should be labeled. The three parallel axes should be labeled:

$$\log_{10}\left(\frac{\lambda}{\text{meter}}\right)$$

$$\log_{10}\left(\frac{\nu}{\text{Hertz}}\right)$$

$$\log_{10}\left(\frac{E}{\text{eV}}\right)$$

As you go about conducting any necessary analysis, note that the energy ranges above are NOT given in SI units!

Planck's constant = 6.626×10^{-34} Joule-Seconds

The speed of light is three hundred million meters per second.

6.242×10^{18} electron-Volts = 1 Joule

Electromagnetic Spectrum Quiz Lv 5 Name ___________________________

On the separate page where you made your graph, below your graph, answer these four questions:

1. If you drew this graph on a traditional, linear scale, which of the types of waves would have the longest range? Which would have the shortest?

2. On a logarithmic scale, which type of wave has the longest range? Which has the shortest?

3. Unlike the full electromagnetic spectrum, these ranges *could* fit onto a traditional, linear scale. What, however, is the advantage of using a logarithmic scale? [open-ended question!]

4. What famous TV theme song invites us to a place "where everybody knows your name"?