Wave Formulas 2 Name _____

Reference:

$$E = h\nu$$
$$\nu\lambda = c$$

Planck's Constant = 6.626×10^{-34} J s

1 electron-volt = 1.6×10^{-19} Joules

Metric Unit Reference

Text	**Symbol**	**Multiplier**
Exa	E	10^{18}
Peta	P	10^{15}
Tera	T	10^{12}
Giga	G	10^{9}
Mega	M	10^{6}
Kilo	K	10^{3}
Centi	c	10^{-2}
Milli	m	10^{-3}
Micro	μ	10^{-6}
Nano	n	10^{-9}
Pico	p	10^{-12}
Femto	f	10^{-15}

Wave Formulas 2 Name _____

Level: 4

The table below asks for three pieces of information regarding each wave.
Each piece of information is requested in two different units:
On the left side, information must be presented in the SI unit, but on the right side the same information must be presented in some other unit, which is written in each box.
Please complete the table with the information provided.
In the SI unit box, please give all information in proper scientific notation. In the Non-SI unit box, please give the number in standard notation. None of the numbers in the Non-SI Units box should be a ridiculously large or small, thus not requiring scientific notation.

The photon named "near infrared" has a wavelength of 1200 nanometers.
The photon named "gamma ray" has an energy of 6.0 Mega electron volts.
A photon named "FM radio wave" has a frequency of 98.5 Mega Hertz.

Name of Photon	**Non-SI Units**			**SI Units**		
	Wavelength	**Frequency**	**Energy**	**Wavelength (meters)**	**Frequency (hertz)**	**Energy (Joules)**
Near Infrared	Nanometers	Tera-hertz	Electron-volts			
Gamma Ray	Femto-meters	Exa-hertz	Mega-Electron-volts			
FM Radio Wave	meters	Mega-Hertz	Nano-electron-volts			

Wave Formulas 2

Name _____

Wave Formulas 2 Name _____

Answers:

Type of Wave	**Non-SI Units**			**SI Units**		
	Wavelength	**Frequency**	**Energy**	**Wavelength (meters)**	**Frequency (hertz)**	**Energy (Joules)**
Near Infrared	1200 nanometers	250 terahertz	1.04 Electron-volts	1.2×10^{-6}	2.5×10^{14}	1.66 e -19
Gamma Ray	207 femtometers	1450 Exa-hertz	6.0 Mega-Electron-volts	2.07×10^{-13}	1.45×10^{21}	9.6 e -13
FM Radio Wave	3.05 meters	98.5 Mega-Hertz	408 nano-electron-volts	3.05	9.85×10^{7}	6.53 e-26