LIGHT WORKSHEET_WAVELENGTH, FREQUENCY and ENERGY (You must show all work to receive full credit.)

Name:_____Date_____ Period_____

Visible Light Wavelength:

Red	700- 650 nm
Orange	649- 580 nm
Yellow	579- 575 nm
Green	574- 490 nm
Blue	489- 455 nm
Indigo	454- 425 nm
Violet	424- 400 nm

_____1. Which has the greater λ: blue or indigo light?

_____2. Which has the greater ν: red or yellow light?

_____3. Which has the greater energy...a photon of yellow light or a photon of green light?

_____4. Which has the longer wavelength: light with a frequency of 7.32×10^{14} Hz or light with a frequency of 6.8×10^{14} Hz?

_____5. Which has higher energy: λ of 674 nm or λ 480 nm?

_____6. Which has a higher frequency...orange light or indigo light?

_____7. A certain red light has a wavelength of 7.25 nm and another red light has a frequency of 4.28×10^{14} / sec. Which would have higher energy per photon?

_____8. Find the color of light whose frequency is 5.21×10^{14} cycles/sec.

_____9. What is the frequency of light if its wavelength is 5.4×10^{-5} cm?

_____10. Which would have the higher frequency, light of wavelength of 5.21 nm or light with a wavelength of 605 m?

_____11. Which would have the longer wavelength, light with a frequency of 4.5×10^{14} Hz or light with a frequency of 6.19×10^{14} Hz?

_____12. Find the frequency of light if its wavelength is 7.8×10^{-5} centimeters. (3.8×10^{14} Hz)

_____13. Find the wavelength in centimeters of light whose frequency is 7.00×10^{14} Hz. (4.29×10^{-7} cm)

_____14. Is the light in # 13 visible? How do you know?

_____15. How many [units of energy are there in one photon of yellow light whose wavelength is 620 nm? (3.2×10^{-19} J)

_____16. Find the color of light whose photon has 4.75×10^{-19} J.

17. While doing an experiment in light, Inca Dupe finds that the light emitted by his sample has a frequency of 4.62×10^{14} Hz. Help him by finding the following:

_____(a) the wavelength of the light (649 nm)

_____(b) the color light he would see if there were a sufficient number of photons of this light available.