Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Electromagnetic Radiation and Date \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ Period \_\_\_\_\_

Quantum Numbers Worksheet

**Perform the following calculations and answer the following questions involving energy, wavelength, and frequency for the various forms of electromagnetic radiation.**

1. Calculate the frequency of that light and identify the color of light has a wavelength of

 565 nm?

2. Calculate the wavelength in nm of a photon with energy of 2**.**71 x 10-19 J and identify the

 type of electromagnetic radiation.

3. Calculate the wavelength used to transmit the radio signal for WISH 99**.**7 MHz.

4. Compare the red part of the visible spectrum to the violet part of the visible spectrum by

 applying frequency, wavelength, and energy.

5. Calculate the frequency and energy for a particular wave of electromagnetic radiation that

 has a wavelength of 0**.**010 m and identify the type of electromagnetic radiation.

6. The energy of a photon of EM radiation is 2**.**09 x 10-18 J. Calculate the wavelength of the

 photon.

7. Calculate the wavelength and energy for a particular wave that has a frequency of

 5**.**0 x 10 17 Hz and identify the type of electromagnetic radiation.

8. What is the frequency of a wave that has a wavelength of 7**.**6 x 10 7 nm? What type of

 electromagnetic radiation is it?

9. What is the color of the visible light that has a wavelength of 5**.**0 x 10 -7 m?

**Complete the following questions relating to quantum numbers.**

10. Which orbital in each of the following pairs is higher in energy?

a. 5p and 5d

b. 4s and 3p

c. 6s and 4d

11. Determine what orbital (example – 3s2) each of the following electrons are in and draw the

|  |  |
| --- | --- |
|  expected orbital for each set of quantum numbers. porbital | porbital |
|  |  |
| sorbital | dorbital |